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Original Articles.

DENTAL HYGIENE: ITS REAL SIGNIFICANCE.*

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UNTIL very recently the necessity of caring for the mouth and teeth of children has not been a matter of public interest. An important part of medical inspection in schools has been neglected. Medical school inspection is the most important work carried on by departments of health; it is one of the most important functions of the state. Only within the year just passed has dental hygiene and its urgent need received any serious attention in this country. By its practice the general public health can be greatly augmented. In the fight against tuberculosis it is a factor of the first importance. Dental hygiene is the practical application of dental science to the individual, the home and the school. Public interest in the care of the teeth must be created. Everybody should know that the general health of the individual and of the community depends largely upon the condition of the mouth and teeth; that the highest efficiency and happiness in life cannot be gained when the gateway to the body is neglected.

To attempt to force an inspection of the teeth of school children as an arbitrary demand is unwise. It would be opposed by children and parents as unwarrantable interference, and this movement which has so fair and favorable a start would be shorn of half its breadth. To open and maintain a vigorous campaign of popular education in oral and dental hygiene is the first step. The public should be instructed and educated so that dental inspection in the schools will be demanded. It is unwise to push too vigorously the spoken and written propaganda. Each advance in human knowledge should be deliberate and cautious. More than one good cause has miscarried because a faint interest has been forced into an enthusiastic demand. Always it is the better method to encourage only a reasonable and steady growth. This method works broad, deep and increasingly effective benefits. It should be our earnest endeavor not to let our enthusiasm lead us into exaggeration. It is never wise to tell any more of the truth than will be believed — an old saying and a wise one. We need to keep an even keel and our rudder true. Back of this great crusade for health which is on foot all over the country is a faith in humanity, and a belief and a confidence which animates it. An enthusiasm is merely temporary; it is short-lived unless there is behind it some persistent and tireless force. In the crusade for better care of the mouth and teeth, the Dental Hygiene Councils are this force. There are now three councils — the Massachusetts, the New York and the Rhode Island. This crusade is practical and concrete, and it wears the hall-work of plausible simplicity. Such a movement grows. It accumulates force.

In order to make clearer than ever before the fact that a clean mouth is closely related to efficient living, and to bring an illuminating and close-range vision upon its importance, the recent Boston Conference on Oral and Dental Hygiene was planned and accomplished. This conference was noteworthy in that it is the first series of meetings to go on record as giving serious and exclusive consideration to the care and use of the mouth and teeth. The dentist, the physician, the nurse, the social worker, the educator, the teacher, the sanitarian and the layman, each and all gave to the public at these meetings first-hand and convincing testimony that much preventable and wasteful damage to health, efficiency and happiness now comes from the neglect of the gateway to the body — the mouth and teeth. In "The Call to Public Health" the dentist, up to within very recently, has not been summoned. But now a clear summons comes for him, and the responsibility and the part he is to play in the prevention of disease and the prolongation of life stand in his path of public duty. He knows better than does any one else the havoc that neglect and decay of the teeth is working, and the alarming prevalence of disease and inefficiency resulting from it — a wanton waste which can be greatly checked. Every other organ of the body is safeguarded with the minutest care, and helped to perform its particular function, and saved. The teeth alone are neglected and oftentimes knowingly sacrificed. And yet, the fact is, decayed, diseased and inefficient teeth are important factors in the origin of many diseases, besides being in themselves the first cause of much ill-health with the resulting loss of time and money.

Never has there been any organized attempt to prevent dental decay and disease. Forty thousand dentists in this country are kept busy making repairs on teeth in which decay has not been prevented,— only somewhat retarded,— or making substitutes for those which have been lost through neglect, and that, too, for the relatively few who are able and willing to pay generous fees. All those who buy this work practice cleanliness, and make an effort to follow the advice given them that they may save their teeth. The great mass of people have no instruction in the necessity of cleanliness and do not practice dental hygiene. They have no repairs made; they have no resort but submission to the forceps, when pain-driven. No definite knowledge exists as to the prevention, predisposition or immunity to dental disease; no closer knowledge than that cleanliness is obtained by brush and powder or paste. Dentists themselves must acknowledge that their efforts at prevention at best are but partial. These efforts are inadequate to hinder appreciably destructive processes upon the teeth and health. The situation demands concerted and organized efforts to add to this knowledge; it calls for scientific investigation to be undertaken to discover the relation of the oral secretions to the mouth; to determine the reactions which favor or restrain the processes of decay or erosion; and to determine the general bodily conditions causing variations in those secretions. This is a part of dental hygiene which falls particularly to the dentist. Important facts can be revealed by patient and organized research work.

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The far-reaching relations of dental health or disease to health or disease in general are very little appreciated. The teeth lie at the gateway of the alimentary canal, and their use or abuse makes the first step in the process of digestion and assimilation. Upon that step, whether it is the right one or wrong one, everything depends. A wrong first step causes vicious and unmendable damage. The fact that dental decay is so common in civilized man, far more common than in uncivilized man or animals, is the weightiest of evidence that there is something wrong with what men eat, how they eat it, or both these conditions. Among civilized people the average man eats without sufficient mastication. He tries to avoid the necessity of deliberate chewing by having his food prepared in pulverized, liquefied or pappified form. He invents machines for grinding food, and he concocts appetizing liquids to "wash down" his nourishment. He hangs over himself the great pressure of time; he lives by the clock. Engagements and appointments at fixed hours are kept at the cost of abbreviating his meal times. He eats too fast — a fact that is emphasized by the few who eat slowly generally having better teeth. Through hurried and incomplete mastication he reduces his general health and his efficiency. Individual and national efficiency is the foundation upon which government and progress rest. It is from the economic point of view that dental hygiene demands first consideration. The working power even of the so-called "well man" is but a small fraction of what it might become if all the factors which make for increased efficiency could be fully utilized. Mastication takes an important place among these influences.

Prevention is a good investment; there is no sounder or more profitable investment anywhere. At a recent meeting of the Association of Life Insurance Presidents, in New York City, Prof. Irving Fisher, of Yale University, said that it is sound business for the life insurance companies to work for the prevention of disease just as it is sound business for a fire company to work for prevention of fires. By this method the insurance companies will increase the lives of their policy holders; they will be financial gainers. One third of all the deaths that occur could be postponed, and an average of from eight to fifteen years could be added to life, by simply teaching the necessity for hygienic living and good sanitation. "Life insurance is not a philanthropy," said Professor Fisher; "it is at beneficent business. By far the largest cost of insurance to-day comes from mortality. Reduced mortality would be a saving of a large percentage in money paid out. If the casualty companies work for improved safety, why should not the life insurance companies work for improved hygiene?" Fewer men would be suddenly stricken dead in the prime of life had closer attention been given to the care of their mouth and teeth. More than one death from pneumonia after an operation would have been prevented had the condition of the mouth been considered before the operation was undertaken.

The great wave of enthusiasm for health reform now spreading over the country and the world, and particularly the interest in the subject of diet and thorough mastication, gives a great opportunity for dentists to co-operate in this good work, of which they will not be slow to avail themselves. The opportunity is not one for making larger or more numerous professional fees. Dentists, like medical men, make best progress in their profession by doing work which tends to dispense with their services. Many dentists to-day are turning with enthusiasm from the old habit of merely mending defective teeth to prophylaxis. The most important message which the dentists have to give is the simplest — thorough mastication. The fact that there are very few of us who do not come to the dentist gives him a wonderful opportunity. Says Professor Fisher: "A long experience in preaching hygiene convinces me that the psychologic moment to interest the unbeliever is when he is ailing. Dentists have their patients at just such moments when they are especially willing to listen to good advice in order to avoid the aches and expense and the time lost by neglecting their teeth. If every dentist in the United States had in his office standard leaflets on the care and use of the teeth, including thorough mastication, the good which could be accomplished with millions of patients and, through them, with tens of millions in their families would be incalculable."

A community can make no better use of its taxpayers' money than to afford him the protection which health inspection of school children gives. The care of the child is the conspicuous subject of the year. The care of the teeth is an important factor in the care of the child. Soon school health inspection will be the rule in every city and town. The mental and physical efficiency of school children can be greatly augmented by the proper care of the mouth and teeth. This is fully attested by the experience in Germany — an experience which covers a wide field. Dental infirmaries connected with the schools have been in operation in that country for a sufficient length of time to demonstrate:

First. That the time expended in putting the teeth in order was far less than the time formerly lost from toothache and disability caused by diseased teeth.

Second. That the cost of keeping the teeth in order was more than compensated for by better health and a consequent reduction in hospital expenses.

Third. That the child became physically stronger, secured a higher average in his studies, was easier to control and was apparently happier.

Diseased teeth are a fruitful cause of disturbances in other parts of the body, and hygiene of the mouth has a direct connection with as well as a controlling influence over the health of every individual.

Nearly every form of bacteria benign or evil at some time gets into the human mouth. The healthy gastric juice destroys bacteria. Therefore it is important that the stomach should be in a healthy condition. It is necessary not only for a healthy condition of the stomach, but also that bacteria may be destroyed by its secretions that the food is finely ground by the teeth before entering the stomach. Perfectly healthy epithelial tissue offers strong resistance to bacteria, and it is difficult, if not impossible, for bacteria to pass through it. Epithelial tissue is the membrane which lines the entire alimentary tract. So long as this lining is in a healthy condition, there is less danger of disease germs passing through into the circulation and causing disease. If by reason of diseased teeth the lining membrane of the mouth is irritated and becomes unhealthy, or if by reason of indigestion or a lowering of vitality by cold or excessive nervous strain, by sudden changes in temperature, or by any of the causes which disturb the equilibrium of the body the tone of the mucous membrane of the mouth, tonsils and other portions of the alimentary tract is lowered, the entrance of disease germs or their toxins is rendered possible.

Soil and surroundings make a very great difference in the growth of plants, whether they are of the higher vegetable world or belong to the almost sub-microscopic order known as bacteria. Disease germs found in filthy mouths which contain broken-down and diseased teeth are usually intensely virulent. When those same mouths are cleaned and the diseased teeth filled and treated, and when, following treatment, the mouth is kept in a clean and healthy condition, many of the bacteria disappear and those which remain lose in a marked degree their virulence and activity. A clean mouth and sound teeth furnish one of the best protections against disease. A diseased condition of the ears or eyes may be due to bad teeth. The serious diseases of the bony cavities of the facial bones, and swelling of the glands of the neck, are often dependent upon dental disease.

Between the sixth and twelfth years is a period when the teeth need especial care. In these first teeth decay proceeds rapidly. Nutrition is interfered with and the purulent discharges from diseased teeth and roots lower the vitality and make the child more susceptible to the invasion of infectious diseases. A child forced to swallow the discharges from an unclean mouth and having nutrition interfered with by his inability to chew his food is unable to resist disease. One of the reasons why the children of the poorer districts of a community succumb more readily to infectious diseases than do the more favored children of the well-to-do classes is that their parents have neither the money nor the time to see that the teeth are properly cared for; nor have they learned the importance of such care. Disease germs find a ready entrance into these mouths and a suitable place for growth. It is altogether probable that a more general attention to the hygiene of the mouth will result in reducing the number of cases of infectious diseases among children and particularly with the children in the public schools.

Thorough mastication prevents over-eating and the eating of unsuitable food. Besides the effect upon the digestion and assimilation, the effect on the teeth themselves is important. Decay is hindered in the mouths of those who eat slowly. In such mouths the teeth are kept clean and well polished, and in children the facial bones and muscles are developed by the exercise of chewing. The teeth and the jaws need exercise for their perfect development just as much as the arms need it. Instruction in this particular, and insistence upon its importance, should go hand in hand with instruction in the use of the tooth brush. Dr. William H. Potter has well said: "That whereas the process of restoring decayed and diseased teeth usually called for the expenditure of more time and discomfort than was required to restore other organs to normal condition, we have the advantage of being able to do more in the way of prevention. In a majority of instances, when the eyes or ears are affected, speedy relief may be given them, but it is difficult to apply measures of prevention. In the case of tooth-decay a great deal can be done in the way of prevention, and as an economic measure we must apply our intelligence and our forces largely to this end."

Children should learn to eat slowly, and in time they will acquire or return to the habit. The condition of the teeth is a telltale as to diet. They are the guards which stand at the gateway to the body, ready to divide the food which enters into manageable portions, to bring peace of mind and healthful bodily activity. No greater kill-joy exists than dyspepsia; no more vicious a menace to life and efficiency obtains than a disordered condition of the process of nutrition. Among physicians there exists a disregard for the teeth as organs to be reckoned with medically. Many a case of dyspepsia is due to defective teeth. Dental irritation is of very considerable importance in affections of the intestinal tract. Affections of sensation, of motion and of nutrition may all be dependent upon dental irritation. Even the cerebral faculties themselves may suffer from this cause. The reflex nervous conditions in children — fretfulness, fever, convulsions — are generally ascribed to digestive disorders, and not to teething or tooth-rot. Teething is nothing but teeth is the general belief.

Mastication divides the food into small particles so that it can be readily acted upon by the digestive juices. Chewing of food causes the flow of saliva, and in turn the action of saliva causes the food to taste agreeably. Pleasant taste of food in the mouth produces a flow of the digestive juices of the stomach so that the stomach is prepared to carry on its part in digestion. In the pouch of the stomach starchy foods, if well chewed, continue to be digested by the saliva; if not well chewed, they may undergo fermentation with the production of gases, and not only are lost to the body, but interfere with the natural processes of digestion. In the small churning part of the stomach pieces of food which have not been thoroughly chewed must be rubbed by the walls of the stomach until softened and made ready to be discharged into the intestines. The soft lining of the stomach is not suited for this work which the teeth should do. It is perhaps significant that the churning end of the stomach so likely to be injured is the seat of gastric ulcer and cancer.

In the question of infection, air infection is held to be of minor importance. Air infection means infection through the respiratory tract — entrance through the nose. Excluding the respiratory tract as the important entrance of infection, we are compelled to conclude that the gastro-intestinal tract, with the mouth as its gateway, is the avenue through which most disease-producing bacteria make their way into the body. The work of the French hospitals indicates that we must include in the class of infections through the mouth the exanthemata, smallpox, scarlet fever, measles and chickenpox, as well as diphtheria and erysipelas. Infectious material introduced into the mouth with food or drink meets with little resistance to its growth until it enters the stomach. The saliva is poor in antiseptic qualities. The first real resistance to bacterial growth comes after food has entered the stomach where the gastric juice is secreted.

The value of the gastric juice in the destruction of bacteria depends upon two factors — its strength and an opportunity to come in contact with the bacteria. The dog bolts its food, and though its stomach secretes a gastric juice having many times the strength of the human juice, it is unable to destroy a large percentage of the bacteria contained in food. The herbivora, such as rabbits, who more thoroughly masticate food, show a stomach content remarkably free from bacteria. Clinical observation in man tends to establish the belief that complete mastication which results in a finely divided food-mass favors thorough mixture with the gastric juice and enhances its activity.

Cancer of the stomach is eminently a disease of gross and rapid feeders. The part played by mechanical injury — traumatism — in the production of gastric ulcer has been demonstrated. Eighty per cent of the cancers of the stomach start on pre-existing ulcers. A gross feeder overdistends his stomach; frequent overdistention may result in injuries to the lining membrane. Of more importance is the bolting of food. Most of the injuries produced are readily repaired, but repeated insults are apparently less well borne. A second agency in the causation of cancer, a factor which is only now beginning to be appreciated is the influence of physical-chemical action. It is believed that extreme variations in the osmotic pressure of the fluids which bathe mucous membranes is an important factor in the cause of cancer. Proper mastication of food corrects both of these dangers.

An exposed or irritated nerve anywhere in the human body, except in the teeth, is regarded, and rightly so, both by the medical man and the layman, as a cause for much anxiety and the promptest possible treatment. On account of the common, almost universal, occurrence of dental disease, and because the teeth during the period of their development grow through the solid framework of the jaw, a region highly innervated and clothed with a membrane sensitive to impact and to corrosive toxins, they have an important relationship to the more obscure nervous and mental derangements. This is a new field of research, and it emphasizes anew the fact that the physician and dentist should work together. There is a close relationship between dental conditions and nervous diseases.

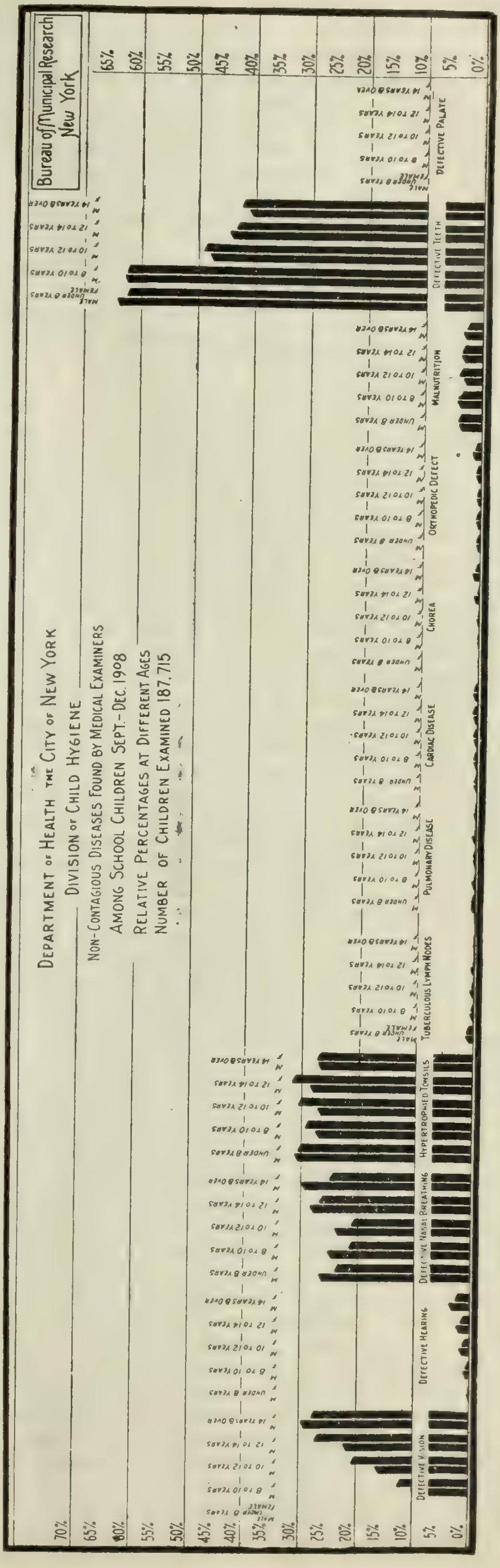
During the past year the children and a number of adults who came to my clinic for nervous diseases at the Boston Dispensary were the subject of closest observation as to their dental condition as well as the condition of their eyes, throat, nose, heart, blood, nutrition and secretions. Full and exact records of these cases are being kept. The first step in the treatment is to have the mouth and teeth attended to so that good nutrition may be established and all dental irritation removed. One of these patients, a boy of ten years, is of particular interest. This ten-year-old boy is undersized and poorly developed. He was undernourished, not because of lack of good food — his parents provided amply for him. He weighed sixty-three pounds. Frequently he had seizures which bore the earmarks of epilepsy. His heart and lungs were normal. There was general glandular enlargement. The only complaint the boy made was toothache — and this was vouchsafed only after close questioning, and his mother laid but little importance upon that fact. " Every child had toothache," she remarked. An examination of the boy's teeth showed that he did not have a sound tooth. The lower jaw had but one six-year molar on either side; the upper jaw was equipped in the same manner. All these four permanent teeth (grinders) were rotten. The boy could eat nothing but soft foods. He never tried to eat crusts of bread, and all the meat or solid foods he ate his mother first cut up into the smallest possible pieces. Most of his food he bolted, or he washed it down with liquids. In the week before his mother brought him to the clinic the boy began to develop a cough. First of all the boy's teeth and mouth were given close attention and care. In three weeks his weight had increased to sixty-seven pounds, his seizures stopped, and his mother allowed that the boy was much improved. And she said that she was going to begin to take care of the teeth of her two younger children, one a baby, both of whom have " bad " teeth.

If an ounce of prevention is ever worth a pound of cure, it is keeping the teeth in good condition. There is probably no one who sees more neglected mouths than the nurse, and particularly the district or school nurse. She brings weighty testimony as to the pressing need of a far-reaching crusade to promulgate the practice of dental hygiene. Many a desperate situation would yield more quickly to her patient administration if she were not obliged to contend with the subtle foes to health which are intrenched in the soil of the foul mouth. The nurse is trained to regard the mouth as a fertile soil for infection, and her first duty to her patient is to clean the teeth with a strong mouth-wash applied to cotton. We can imagine her feelings when she finds the mouth of a patient with tuberculosis, typhoid fever or pneumonia containing teeth that are crumbly and with large foul cavities and suppurating abscesses oozing from their roots. In the home, nursery, schools, hospitals, factory, everywhere, she sees the suffering and the cost from neglected mouths and teeth. She is patiently waiting for the dentist to answer his summons, "The Call to Public Health."

The readiness to make the application is just as vital in the triumph of dentistry and medicine as the readiness to go to the bottom of things to discover first causes. To make this practical application the social worker stands in the foremost rank. They are the ones who know best the real value of every-day life. The science of preventive medicine has added not only to the length of life, but to its breadth and depth. Every day of life is worth at least ten or fifteen per cent more than it was before the modern triumphs in hygiene. No one has a larger opportunity than the social worker to put new knowledge into practice, to bring the priceless information gathered by the professional man to the utmost points and depths of the community. And the social worker has the faith in humanity, the belief in the individual, which is necessary to carry the gospel of hygienic righteousness into the homes so that parents can give their children their birthright — a healthy, wholesome and useful life.

The most important work among children for the betterment of their teeth must be done in the line of prevention rather than cure. Children and parents must be taught the value of the teeth and how the teeth enter into the question of physical development and protection of the body against disease. They must be taught the importance of daily care of the teeth and how to prevent decay and pain; that decay can be prevented by keeping the teeth and mouth clean. The child must be instructed to be its own dental adviser and inspired to practice every day the simple procedures of dental hygiene. But little progress can be made in improving the condition of the teeth of school children until the initiative has been established in the individual, training the child to assume the preventive care of his own mouth and teeth. The children and the parents can be best guided into taking this first step towards hygienic and dietetic righteousness by social workers whom they readily accept as auxiliary members of their household.

Social workers have welcomed this crusade for hygiene, and they are eagerly waiting to become working disciples and carry the gospel into every home and to emphasize the economic and social advantages of clean, sound teeth. And social workers everywhere are ready to socialize the dentist's skill by enlisting his co-operation in



social work; to "follow up" the education of parents and children; to assist in organizing and maintaining dental infirmaries; to urge upon hospitals, school boards and boards of health the necessity of preventing decayed or crippled teeth; and to help bring the physician into a keener interest in dental hygiene. Being a part in the home life of those of the community who have but limited means, social workers are the most effective agents in checking dental quackery and the painless humbuggery of dental parlors. And through their organizations and the influence of those who support them, social workers can help dental leaders in education and journalism to establish the ethical and professional standards of the physican and the social standards of the practical philanthropist.

Every manufacturer knows that however perfect his machine is, if the material that goes into it is bad he can turn out nothing but seconds; and the manufacturer has the advantage of school people in that he can put his goods on the market and label them seconds. School people cannot do this. We are beginning to learn to think that possibly there has been some trouble with the materials. Medical inspection in public schools in recent years has thrown more light upon school problems than has come from any other source. In Massachusetts there is in operation the most complete system of medical inspection of public schools that exists in this country. It is the only state that requires the appointment of school physicians in every town and city. Though no penalty is imposed upon school committees who fail to appoint school physicians, yet in 1908, in all but 21 of the 355 municipalities, towns and cities, school physicians have been appointed and have been at work. Medical inspection is revealing the fact that very large numbers of children in the public schools are suffering from physical defects and disabilities which tend to interfere with their school work, which make good school work impossible. With all these disabilities, school work cannot be as effective as it should be. The significant fact is that the period in life when these diseases are most common in school children is when elementary facts are learned and memorized, when school habits are formed which underlie and contain all subjects of intellectual effort. It is the time when children must learn reading, writing, spelling and numbers. If they are not learned at this time, if this work is not done in the earlier years, it never can be done. Time lost here is lost forever, because if the time for drill,—these earlier years,— if that time is lost, the mind in the years that follow has other business to attend to. Through medical inspection we are getting a flood of light upon this whole matter of public school work. Dental inspection, even the little there has been, throws still more light and throws it a little deeper into the whole system. At the Hygiene Congress in London last year, reports showed that children having defective teeth are often defective in other ways. Enlarged glands and diseases of the digestive tract are quite proportionate to the number of children with defective teeth. If it is true that the defects in the teeth are accompanied by and cause a large number of other defects which appear in the lists in medical inspection reports, then it is evident that we are getting nearer the real secret of the whole trouble through dental inspection than we have been before. We are getting down to the root of things. Therefore this whole matter assumes much importance as a part of public school work, aside from its relation to general public health.

Ninety per cent of all the school children of Germany have defective teeth. Reports this year of dental inspection in Massachusetts show no better condition. Defective teeth are causing a great variety of other diseases, many of them serious. The lesson of this matter is to get down to the seat of the trouble. The ignorance of the public is the trouble. Parents are not wilful in their neglect in most cases; they are simply ignorant. A law compelling parents to send their children to the dentist and to the surgeon is impossible. Instruction in physiology and hygiene should be a more important and fundamental part of the school work. We talk about essentials. The essentials are supposed to be certain subjects of study — reading, writing, arithmetic and a few others of that kind. We are neglecting the essential of all essentials — a sound body. Until we can secure that, it makes very little difference about the rest. Toward and along that road we are to travel in the future. That is the supreme lesson of this whole matter of health inspection.

In the application of dental hygiene to the school system, care must be taken not to lose sight of the big issue — the preservation of the general health of the children. Nothing should be done to foster even in a small way overspecialization. But little definite data are available to determine conditions as to dental disease in the public schools. As a standard upon which to carry on school dental investigation, the classification of Dr. William H. Potter in the Brookline public schools should be used in order that the data gathered may be of fullest value. Dr. Potter groups his examinations in three classes — good, fair and poor. No readily observable defects constitute a good condition; several small defects or one or two sizable defects, a fair condition; and all others, a poor condition. In the Brookline schools the examinations are made by dentists, and they are made in such a way as to create no disturbance in the running of the schools.

Dr. Scannell, a member of the Boston School Board, is authority for the statement that of the 100,000 school children in Boston, 75,000 need dental attention; that 75% of the pupils in the public schools have dental disease. These data were gathered by the school nurses. The figures undoubtedly understate the real condition, for it is but just to assume that a nurse could not make as accurate a dental examination as would a dental surgeon. The world is spending time, money and much thought on the general subject of tuberculosis, and yet the public, who should be most interested in this modern scourge, gives little thought to the fact that unquestionably a large part of tuberculosis can be traced directly to improper mastication of food and foul mouths.

In the Boston public schools at the present time there is no organized systematic method of inspection of the teeth. If any thorough work is to be done in dental inspection, it must come from men trained in the work. A system with no particular organization, no matter how well intentioned may be the members concerned in the operation of it, must prove ineffective and unprofitable. Much good has been done in the educational way both in the school by the teachers and in the home where the nurses visit, but such benefits are too sporadic to deserve the name of system. The problem affects first the individual. Dental disease unfits him for full utilization of his bodily and mental activities. In Boston, with a school population of over 100,000 children, and a probable percentage of dental disease in 75% of them, the matter of correction is a formidable one; it should not be undertaken lightly. The work should grow along definite lines; there should be no failure of execution. The Dental Hygiene Council has pamphlets entitled, "Care and Use of the Teeth," and "How to Care for the Mouth and Teeth and Why." These pamphlets are written in simple, convincing English and cannot fail to promote interest in oral hygiene. Says Dr. Scannell: "I believe that the School Board should distribute these pamphlets among the school children. I believe that we should have more compulsory instruction by the teachers in this matter. It would take but a few moments each school day for the teacher to dwell on the matter of cleanliness of the teeth, and by practice and instruction teach the children under her the care and proper methods of treating the mouth. The number of school children, particularly those in the period of their first dentition, who have never known the use of a tooth brush is at least 50%, and in certain districts as high as 75%. I should like to see some plan adopted similar to that in Brookline where tooth brushes are sold at cost prices to the children, who are invited to bring them to school so that they may have practical demonstrations from their teachers."

Short lectures illustrated by photographs, charts and diagrams could be made a regular part of the school teaching, particularly strong emphasis being placed on the physical, mental and moral evil resulting from neglect of the teeth. The public in a short time will ask for the establishment of municipally-conducted dental service not connected with a dental school. School committees look for definite guidance as to the direction of their policy of advance from the deliberate and careful advice of public-spirited dental associations.

For real human testimony as to the urgent need of better condition of school children's teeth we must listen to the teacher. It is she who speaks from her heart; whose message comes straight from the hearts of her children, the boys and girls whom she loves and whom she is striving so earnestly and patiently to help grow up into strong and happy men and women. Her appeal carries its lesson even to those who might not care to see it. In the state, the city, colleges and universities, all along the line there is to-day a wonderful quickening in public health movements. Prof. William T. Sedgwick, a foremost sanitarian, says: "I, who happen to be in rather close touch with these things, am astonished to see how, after many years of crying in the sanitary wilderness, I find the world at last waking up; universities talking of establishing public health schools; books being written on 'Civics and Health'; and movements like this in dental hygiene. The commonest of all diseases are diseases of the teeth." One of the foundations for right and happy conduct of life is a good set of teeth properly cared for. At last attention is being turned to the most important thing in the world, man himself. We are getting to believe that the care of things in this life is worth while. The value of human life is beginning to be realized. The kingdom of health is very largely within us, and any one who has given attention to such matters as the teeth or the feet and to clean hands knows that these are quite as important in many ways as many another endeavor for human betterment.

The layman's foremost obligation to-day in furthering dental hygiene is not "to widen the bounds of human knowledge," but to widen the ranks of those who possess such knowledge and "*to narrow the gap between human knowledge and human action.*" With teeth, as with so many other portions of our bodies, our yards, our houses and our morals, the presence and appreciation of our neighbor are very important when not determining factors in our conduct. Neglected cleanliness almost always becomes noticeable to our neighbor, soon or late, even though accidentally or carefully concealed. There is no offense we are so reluctant to commit as that of having our uncleanliness offensive to those about us. The layman's economic motive must be informed and stimulated. No regular family investment will earn more money than the price of prompt and efficient dental care. One good "house cleaning" for a girl with sixteen teeth in offensive and unsanitary condition will not only increase her immediate earning power, but can be shown to cost more than the preventive care of a whole family's teeth for ten years. No child should be allowed to go to work whose teeth cause malnutrition or disgust.

This problem of dental hygiene is not altogether one of benevolence. "It is in large measure," says our first layman, Dr. Eliot, "a problem of economics. Health is needed for great industrial production. Every case of disease involves an immediate economic loss to the community in which such events occur. This is not only a problem of benevolence, of good will towards our fellow creatures; it is in a high degree an economic problem. There is coming a great change in the practice of medicine and surgery and dentistry, and a much greater proportion of the attention of these professions is hereafter to be devoted to prevention rather than cure." In a conquering campaign against disease a pliable, close-knit organization is the first need. The foundation must be firmly laid. It must be deep and broad. Then comes the wider phase when the entire profession through ways of professional fellowship acquires the new knowledge and method. Then the final vast program of creating a specific, formulated, hygienic gospel and going out into all the world to make disciples of every fellow creature.

For many years a few individual dentists have been advocating a broader appreciation of the importance of dental hygiene. But no organized or directed efforts to promote this teaching along broad lines were undertaken until a little over a year ago. The Massachusetts Dental Hygiene Council was organized in December, 1907; and now the dental profession finds itself called upon to provide guidance for an ever-growing movement for the elevation and enlargement of individual, family, community and civic life. It is the duty of every citizen, no matter what his profession, business or trade, to give as much attention as he can to the public weal and to take as much of an active part as he can in promoting public health. The dentist's opportunity has come, and every dentist who has the true professional spirit will meet his duty, and being a man he will give substantial aid willingly and generously, according as it is his privilege, in helping his fellowmen profit by his knowledge and skill.

Dental hygiene is an important part of a broad and universal movement for better care of the public health through a more complete knowledge of the conditions that promote health. The dentist must now take his active part and responsibility in the great progress for preventive medicine which is everywhere working. He must give to it his skill, his time, his money.

We have faith that dentists individually and as a profession will give this movement the earnest endorsement and support it merits. The dentist belongs to the medical profession. One of the best and surest marks of civilization is found in the attitude of its medical men; and those medical men who consider themselves a kind of glorified mechanic remain in a purely shop point of view. To no group of men and women is given a larger opportunity to render real human service than falls to the dentist and dental nurse. Through the practice of their knowledge and their services life can be made more effective, more useful and fuller. It can be lengthened in years; it can be given more enjoyment and pleasures; and some of the obstacles which prevent clean living can be leveled. The meager dental inspection which has been made has thrown a flood of light, and that flood a little deeper into the problems of home and school hygiene. Facts are being discovered — great truths the momentous bearing of which upon life and health are new to all thoughtful people. One more layer of symptom is bored through to the foundation of cause where tinkering and cure must give way to prevention.

No form of practical philanthropy ever had so fair and favorable a beginning. Dental clinics can be established on a proper foundation, the patient paying a nominal charge for service received. Hospital boards and social workers are ready to co-operate with dentists in establishing and maintaining these clinics. Medical inspection of school children has been organized and put into practice, and school authorities are ready to include the examination of the teeth in school inspection and provide instruction upon the care of the mouth and teeth. Dental and medical schools are beginning to instruct their students in oral annd dental hygiene and the important part it has in helping to increase and maintain public health. The Dental School of Harvard University has been given one thousand dollars, and a promise of more, to carry on research work in preventive dentistry; and a working fellowship has been created. In the free popular lectures on medical subjects offered to the public by medical schools and other institutions are lectures on dental hygiene. In the crusade against tuberculosis oral and dental conditions play an important part. And the spread of infectious diseases through the neglect of the mouth and teeth is a subject of growing importance.

All these broad and human activities are distinctly within the dentist's sphere. This movement should not depend entirely upon the efforts of the dentist. A class of men who are so closely engaged in office practice cannot know intimately the social, educational and economic needs, and the most effective way to meet those needs — how best to extend their work in public health. The co-operation of all workers who deal with children is necessary for the proper development of this crusade, and they are ready and waiting eager to assist in carrying on a broad and effective work. But to be effective and to secure this co-operation the work must be made and kept absolutely impersonal. No dental school, no dental society, no individual need expect to gain anything by it.

The single motive must be a desire to help along the cause and a willingness to sacrifice personal interest. There must be maintained a spirit that will be above all small jealousies and petty strifes. A sustaining faith is needed, a faith that will surmount all difficulties and rise above all discouragements; a faith that will lose sight of the individual in an earnest endeavor to do God's work in improving the physical and moral condition of his children. Upon all such workers the Dental Hygiene Councils will bestow their unqualified endorsement and give their heartiest assistance.

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The Harben gold medal for eminent services to the public health has been awarded to Prof. E. von Behring, of Marburg, and Lieut.-Col. W. B. Leishman, professor of pathology, Royal Army Medical College, has been appointed the Harben lecturer for the year 1910, and Prof. Angelo Celli, of Rome, the Harben lecturer for the year 1911. — *Science.*

RESUSCITATION AFTER RELATIVE DEATH. A PHYSIOLOGICAL AND CLINICAL REVIEW WITH REPORTS OF FOUR UNSUCCESSFUL ATTEMPTS.

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At a recent surgical meeting in Washington, it was said that there was a tendency on the part of practitioners to publish only their successful results; that cases which illustrated partial success or complete failure in practise were allowed to drop into oblivion. I wish to present four cases, three surgical and one medical, that belong in the group of failures. They are of interest because they bring forward the problem of resuscitation after sudden death. Experimentally in animals, and practically in man, this problem has for many years attracted interest. In France a considerable amount of literature on the subject has accumulated; in England a comprehensive article on its clinical aspects has been written by Green[1]; in this country, although Keen[2] contributed a clinical paper on resuscitation a few years ago, it has been the researches of Crile[3] and those of Stewart[4] and his collaborators that have givent or esuscitation the prominence which is, I believe, its due.

Resuscitation after sudden death is often out of the question. An organic lesion which is in itself fatal precludes the possibility of restoring life. But in sudden death from chloroform or ether, from asphyxia, from drowning or fromel ectrocution, a thorough effort at resuscitation may result in a successful issue. In crises of this sort most men rely chiefly on hypodermic injections and on artificial respiration. If the patient's heart is still beating well, such measures often suffice. If the heart-beat has ceased, such measures are useless. Artificial respiration has no effect on a pulseless heart. Nor have drugs. In this class of cases the adoption of some more radical method of treatment should be seriously considered. The more radical methods comprise massage of the heart, intra-arterial or intravenous injection of salt solution or of a salt solution plus adrenalin, artificial increase of the blood pressure, and, possibly, electrical stimulation of the heart.

Following the classification of d'Halluin,[5] we may divide death into three groups, — apparent, relative and absolute. In the first group, while there is *apparent* cessation of life, the heart beat persists and resuscitation may ordinarily be secured by artificial respiration. There follows a stage characterized by partial muscular contraction in the ventricles or auricles, lasting ordinarily for several minutes. Physiologically, death has not occurred and ordinary methods of resuscitation may still be of avail. Arrest of the heart signifies *relative* death. With the onset of flaccidity, recovery cannot occur spontaneously; it will follow only radical efforts. *Absolute* death implies non-recovery. It may not occur for many hours after apparent death. Twenty-nine hours after decapitation Rousseau[6] found a criminal's heart still beating; and under similar circumstances Regnard and Loye[7] observed beats of the entire heart lasting twenty-five minutes. The auricles remained active for about an hour.

The pulse or auscultation of the heart yield notoriously uncertain evidence of the absence of the heart beat. Brouardel[8] cites the case of a boy who was alive although the heart sounds could not be heard with a stethoscope; I have had recently a case of atelectasis treated by insufflation. The apex beat was visible for two hours after birth, but at no time were the heart sounds audible. Only by inspection of the heart may one determine accurately the onset of the stage of relative death.

It is an attested fact that the several organs of the body lose their vitality at varying times after the cessation of circulation. The epithelial cells of the skin are viable for one or two weeks if left *in situ* and kept on ice. Peristalsis survives cardiac arrest. Muscle tissue conserves its irritability thereafter and the renal cells form urobilin (Gilbert[9]). The myocardium is resistant. Porter[10] found that any part of the ventricle (dog) would beat for hours if supplied with dog's blood through its nutrient artery. The central nervous system, on the other hand, is quickly damaged by total anemia.

With the absence of circulation, then, more or less harm befalls the various organs. The function of a given organ may be susceptible to partial restoration only; the functions of the bulb and higher parts of the brain may remain definitively in abeyance. To be sure, the bulb is not essential for the maintenance of vital functions. But complete recovery is possible only if a proper circulation can be re-obtained within a definite brief time limit. Within this time limit, despite the cessation of respiration and circulation, it seems obvious that we should try to revive the heart-beat. As the circulation is re-established in the brain, the nervous centers recover their activity. Spontaneous respiration and reflex movements return.

Radical efforts at resuscitation in relative death are warranted by the success that has attended similar attempts in animal experimentation. The research has dealt with the problem of renewing the cardiac cycle both with the isolated heart and with the heart *in situ*. A third line of work has considered the resuscitation of the entire animal.

EXPERIMENTAL HEART MASSAGE.

To Schiff[11] (1874) is given the credit of first employing direct massage of the heart in resuscitation, in dogs killed with chloroform. After determining that artificial respiration and electrical stimulation were unavailing, he insufflated the lungs, opened the thorax, and compressed the heart rhythmically with his hand, at the same time forcing blood to the head by continuous pressure on the abdominal aorta. Although most of the dogs died in a few hours without exhibiting voluntary movement, Schiff found that it was possible to re-establish the heart-beat if massage was begun within 11½ minutes after the heart had become flaccid. Hoch,[12] a pupil of Schiff's, published a review of the latter's work in the same year, and in 1898 the statements of both were in general corroborated by Tuffier and Hallion,[13] who were able by massage to restore the heart beat up to five minutes after its cessation.

Prus [14] (1899–1901) carried out a comprehensive series of experiments on one hundred dogs, causing the death of the animals by suffocation, by chloroform and by electrocution. His results may be thus summarized: Prus utilized heart massage, artificial respiration by insufflation and, in some cases, an intra-arterial infusion of salt solution (plus 3–100% saccharate of soda). During massage the manometer showed a gradual elevation of blood pressure. Systole, at first weak and irregular, became gradually regular and strong. Of 44 cases (following suffocation), 32, or 70%, were restored. Resuscitation was begun in from one minute to one hour after the cessation of the heartbeat. Massage was needed for from fourteen seconds to one hour and forty-seven minutes.

Of 21 cases (following chloroform), 16, or 76%, were restored. Here massage was begun at periods varying from fifty-five seconds to one hour after cardiac cessation. The beginning of artificial respiration was usually synchronous with the beginning of massage, and in 14 of the 16 successful cases, artificial respiration had to be continued after the heart had begun to beat; in one instance one hour and thirty-two minutes thus elapsed before spontaneous respiration was secured. Of the 21 animals, 20 were killed after the experiment. The other was alive and well eight months later. On this particular animal massage was begun four minutes after cessation of the heart beat; the first cardiac pulsation occurred five minutes after beginning massage.

Prus believed that he was able to resuscitate an animal as long as an hour after relative death from suffocation, but he determined the stage of relative death by a manometer and not by inspection of the heart. In the light of our present knowledge his time limit is much too high. The central nervous system succumbs to total anemia long before the expiration of an hour, probably in less than twenty minutes (Batelli [15]). During the greater part of the hour, in Prus's cases, the auricles must have sent a supply of blood to the brain, small, but sufficient to maintain its integrity.

Batelli [16] (1900) confirmed the result of Prus in three dogs killed by chloroform. He began massage, however, within ten minutes after the heart had ceased to beat.

Bourcart [17] (1903) published the results of a series of similar experiments, in which he massaged the heart subdiaphragmatically through an abdominal incision. His animals were dogs; his method of causing death, chloroform. In one case his result was as follows: Heart arrested eleven and one-half minutes. Renewal of heartbeat after massaging thirty seconds. Massage was continued for three minutes. One and one-half months later the dog was alive and well.

Kemp and Gardner [18] (1903) reported their experiments on 23 dogs killed by chloroform. By massaging the heart through a thoracic opening, they succeeded in resuscitating 11 animals after varying periods of relative death. They secured artificial respiration by O'Dwyer tubes without tracheotomy.

Finally, d'Halluin [19] (1904) obtained results similar to the foregoing in dogs killed by chloroform, by ether and by asphyxiation.

EXPERIMENTAL CORONARY PERFUSION.

No less extensive than the utilization of cardiac massage have been attempts to restore the beat of a pulseless heart by intra-arterial or intravenous infusions. An intra-arterial infusion, directed toward the heart, on reaching the aortic valve, closes that structure. The fluid immediately enters the coronary arteries and thus comes in intimate contact with the myocardium. The question arises whether a suitable fluid thus infused may not, by its pressure, stimulate the heart into renewed activity. Martin,[20] Arnaud [21] and Porter [10] were among the earlier investigators. Their work has been reviewed by Magrath and Kennedy,[22] who, themselves, caused forcible contraction by perfusing with defibrinated blood the aorta in the isolated heart of a cat. "The researches of Sollman [23] showed that the inauguration of the beat was more dependent upon the physical factor of the increased pressure in the coronary arteries than upon the quality of fluid producing such pressure. He was able to inaugurate cardiac beats by perfusing the coronaries with metallic mercury."

A considerable impetus was given to this line of work by Kuliabko [24] (1902) who performed a series of remarkable experiments on the isolated hearts of rabbits. By the injection of Locke's solution * into the coronary arteries he was able to renew the heart-beat after long periods of cessation. In one instance the heart resumed contraction for three hours, forty-four hours after its removal from the animal's body. During this interval it was kept on ice.

Spina [25] (1902) and Velich [26] (1903) attained similar results. Spina, with intra-arterial injections of normal salt solution, was able to revive the heart (in dogs), both when the brain and cord had been destroyed and also when heart action had been arrested by alcohol and by other poisons. One dog, poisoned with nicotine, in which the heart had been quiescent ten minutes, was resuscitated by artificial respiration and by an injection into the femoral artery of 200 ccm. of normal salt solution (plus 1% grape sugar).

D'Halluin's [19] (1904) experiments, in which he employed Locke's solution on the isolated hearts of 66 dogs, are equally impressive. He further perfused the coronaries in the hearts of 10 infants who had died at birth. Here he was able to restore the rhythm of the ventricles twenty-four hours after death; the auricles alone responded as long as forty-two hours after death. His experiences with the human heart coincide with those of Hedon and Gilis,[27] on the heart of a decapitated

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* Locke made his fluid by adding 0.1% dextrose to a suitable inorganic salt solution.

criminal, three quarters of an hour after execution. They found mechanical and faradic excitation futile, but by injecting defibrinated dog's blood into the innominate artery were able to start normal rhythm in the right auricle and right ventricle. The phenomenon lasted twenty-three minutes, i. e., while the injection was continued.

Electrical stimulation as a means of invoking activity in a quiescent heart has received scanty consideration, — not enough, certainly, to warrant its use clinically. Floresco [28] has published some rather dubious statistics. Mathews [29] used electric shocks successfully in the resuscitation of dogs killed by the injection of magnesium sulphate. Mauclaire,[45] who used electrical stimulation of the heart once clinically, met with no success.

In numerous cases, both of massage and perfusion, success has been wanting because of the onset of a fibrillary tremor in the heart, instead of the normal pulsation. This complication is to be expected when the attempt at resuscitation is long delayed. Arabian [30] encountered it ten times in thirteen experiments, although he began cardiac massage in from eighteen to thirty-six minutes after death by chloroform. The tremor has apparently been overcome experimentally by the direct application to the heart of a current of electricity, by an intravenous injection of potassium chloride, and by a similar injection of adrenalin chloride. D'Halluin [19] believed that the frequent failure of massage in man might be due to the onset of these disorganized fibrillations. That this has been true in four cases we know.

RESUSCITATION OF ENTIRE ANIMAL.

The recent researches of Stewart and his collaborators and those of Crile deserve a chapter by themselves. These men studied the resuscitation of the entire animal. In some experiments Stewart induced cerebral anemia and relative death by clamping the innominate, left subclavian and carotid arteries; in others, death was caused by anesthetics, asphyxia, drowning and the like. Stewart's results may be briefly summarized thus:

Resuscitation is impossible if any essential organ has suffered irreparable injury. Intravascular or intraventricular clotting is not an absolute bar to resuscitation, although it renders permanent resuscitation improbable. Artificial fluids are not satisfactory substitutes for blood. None of these fluids will sustain the activity of the brain for any length of time, and all are ineffectual in maintaining the heart for more than a brief period.

Artificial respiration is essential. Manipulation of the thorax is fairly trustworthy, but rhythmical inflation of the lungs by some mechanical device is even more effective. Artificial respiration alone will restore the activity of a heart almost stopped from ether anesthesia.

Certain modes of death are more injurious than others, thus rendering resuscitation of varying difficulty. In order of increasing difficulty they rank thus: (*a*) asphyxia; (*b*) anesthesia; (*c*) hemorrhage; (*d*) electrocution. Chloroform is more deleterious than ether.

"Nothing is more disappointing than the deportment of the heart following injections of 0.9% sodium chloride or Locke's solution into the carotid artery or jugular vein. The heart remains as immobile as before, or fibrillates a little before going into rigor. . . . Indiscriminate and unconfined injections of fluid are, therefore, worse than useless." Pulmonary edema, in itself fatal, ensues. To be efficient the injected fluid must pass through the coronary arteries; if it is present there at suitable pressure, rhythmical beats of the heart will begin. The injection of adrenalin, when massage is used, is of considerable value. Adrenalin alone will not start the heart. Fibrillary contractions yield to continued massage and to the presence of a suitable blood pressure in the coronary vessels.

Five to fifteen minutes after the heart has stopped (inspection) from asphyxia, drowning, anesthesia or electricity, an efficient circulation has been re-established. *A combination of artificial respiration, heart massage, occlusion of the aorta and arterial injection gives the best results.* The time limit of total anemia of the central nervous system after which complete resuscitation is possible is probably below twenty minutes. This is about the same limit set by Batelli [15] and by Mayer.[49]

The findings of Crile agree in general with those above recorded. They follow:

By cardiac massage alone animals are rarely resuscitated at any time after quiescence of the circulation and respiration. By adding to cardiac massage artificial respiration and intra-arterial saline infusion, with the addition of adrenalin, one is markedly more successful in the deaths from asphyxia, though rarely so in the cases of death from chloroform. Failure is apparently accompanied by marked distension of the heart, indicating complete cardiac paralysis. A suitable coronary pressure is essential for resuscitation.

The success of the method is limited by:

(*a*) Ante-mortem clotting. The tendency to clotting increases in direct ratio with the lapse of time after death. Cardiac trauma predisposes to clotting, so that direct massage must be done in a gingerly fashion.

(*b*) Over-distension of the heart. This is due both to the accumulation of blood during its gradual failure and to the presence of the infused fluid, which passes through the coronary veins into the right chambers.

(*c*) Later failure of the heart, circulation and respiration, which occurs frequently in cases where more than ten minutes has elapsed before resuscitation is begun.

(*d*) Imperfect recovery of the brain.

For infusion any artery may be used. Experiments in which saline infusion is unsuccessful succeed with the addition of adrenalin. Too much or too little adrenalin spells failure. Nitroglycerin, alcohol and digitalis are useless. Finally, ten to fifteen minutes expresses the limit within which complete resuscitation is possible.

So much for a rather lengthy account of the experimental evidence. Summed up, it seems to prove that, in lower animals, the heart is viable many hours after death; that, following certain forms of death, restoration of the whole animal demands that the heart-beat be restored within a given time, in order to avoid irreparable damage to the weakest link in the chain of organs, namely, the central nervous system; that restoration may be accomplished by massage of the heart, aided by artificial respiration; that the intra-arterial (or intravenous) injection of some suitable fluid is a powerful adjunct to this radical treatment, because it distends the coronary arteries and increases the blood pressure.

CLINICAL RESUSCITATION.

While these facts are of great physiological interest, the question naturally arises whether or not they are of clinical value, in that they indicate the proper treatment to be applied to man. Can a patient who dies from asphyxia be resuscitated by these radical measures? Can a patient who succumbs to chloroform on the operating-table be revived from relative death by massaging his heart?

A certain amount of pertinent clinical evidence is at hand. Since Niehaus[31] first employed cardiac massage on a patient in 1880, 39 other cases have been reported in which this or a similar measure has been tried. I shall add 4 to this number. Of these 44 cases, 33 have been instances of syncope from anesthesia: 24 times chloroform, 6 times ether, once a mixture; 2 times the anesthetic has not been mentioned. Aside from the accidents of anesthesia, massage has been practised 11 times, as follows:

Pulmonary embolism, 1; suicide by hanging, 1; incision of post-pharyngeal abscess, 1; diphtheria, 1; acute dilatation of the heart, 1; tracheal asphyxia, 2; traumatic injury of brain, 2; electric shock, 2.

Of the 44 cases, 9 have met with complete success in that permanent recovery has been secured after relative death; 8 have been partly successful; the remaining 27 have been failures. Of the 9 recoveries, 4 have followed death from ether, 3 from chloroform, 2 from an anesthetic not specifically mentioned. Of the 8 temporary recoveries, 5 have followed death from chloroform, 1 from tracheal asphyxia, 2 from injury to the brain.

PERMANENT RECOVERY.

The 9 successful cases have been reported by Igelsrud,[32] Lane,[33] Gray,[34] Cohen,[35] Crile,[36] Sencert,[37] Conkling,[38] Smith and Daglish,[39] and Ramsay.[40] A synopsis of two will give a general idea of the methods employed and of the results accruing therefrom:

I. Igelsrud. Thin, cachectic woman, Age, forty-three. Total abdominal hysterectomy for cancer of the uterus. When the operation was nearly finished the patient passed into collapse. Artificial respiration, lowering of the head, faradization of the phrenics and other ordinary measures employed for three or four minutes. Heart then bared by partial resection of the fourth and fifth ribs. Pericardium opened. Heart seized between thumb and fore and middle fingers on its anterior and posterior surfaces. Quite strong and rhythmical pressure for one minute, when the heart began to pulsate for itself. Because the pulsation grew weaker massage was continued for one minute more. From that time the pulse was perceptible and the contractions of the heart regular. Patient discharged well in five weeks.

II. Sencert. Male, age fifty-one. Very cachectic and wasted. Cholecystotomy. Chloroform anesthesia. During the operation the patient struggled; pulse and respiration stopped. Artificial respiration, tongue traction, flagellation and injection of ether without result at the end of seven or eight minutes. The surgeon pushed his right hand up through the abdominal wound, grasped the heart easily at its apex between fingers and thumb, and rhythmically compressed it. After five minutes it hardened, soon contracted spontaneously, and two minutes later the first spontaneous inspiration took place. Abdominal wound closed. Good recovery.

Of the seven other successful results, 4 were incidents of laparotomies, so that massage was carried on beneath the diaphragm, utilizing the previously-made abdominal incision. The remaining 3 occurred during operations for goiter (Crile), for a razor cut of the thorax which opened the pericardium (Conkling), and in the course of a rectal examination under chloroform (Smith and Daglish). In the last-named case a median abdominal incision was made, through which cardiac massage was instituted. Conkling made use of the open wound in the thorax. Crile relied on his pneumatic suit and on rhythmical pressure of the thorax over the heart.

The elapsed time between cardiac arrest and the beginning of manipulation varied from one minute to five minutes; renewal of the heart-beat was never delayed beyond six minutes. The responsiveness of the heart varied inversely as the time elapsing before the inauguration of manipulation. In Lane's case artificial respiration was needed for twelve minutes after the restoration of the heart-beat. In the other 6 the restoration of circulation and respiration were practically synchronous. Except in Ramsay's case, where convalescence was complicated by a high fever and delirium, the recoveries were uneventful.

TEMPORARY RECOVERY.

Partly successful cases have been reported by Maag,[41] Sick,[42] Crile[36] (two), Gray,[34] Depage,[43] Lenormant,[44] and Green.[1] One case deserves brief description:

I. Sick. Male, age fifteen. Laparotomy for tubercular peritonitis. Chloroform. Syncope near the end of the operation. Artificial respiration and compression of the thorax with slight but temporary response. Forty-five minutes after the beginning of syncope an opening was made in the thorax and cardiac massage instituted. In fifteen minutes breathing was restored and a few irregular twitchings of the heart were followed by a good contraction. After fifteen minutes more the heart was beating firmly and regularly. Respiration was normal. Wound closed. In two hours patient conscious. Died suddenly twenty-four hours later. At autopsy there was a right fibrinous pericarditis; the heart was firmly contracted.

The remaining patients in this group were resuscitated for periods ranging from one-half hour to twenty hours. None of them recovered consciousness. In Green's paper may be found brief summaries of the other successful and partly successful cases and of those in which the results were wholly unsatisfactory.

My own cases, all of which were unsuccessful, follow:

Case I. Male, age fifty. Well developed and wiry. No organic disease that contra-indicated anesthesia. Operation for cancer of the tongue, with involvement of the cervical glands. The tumor, of a few months' duration, was of small size. The involved glands, few in number, were located chiefly along the anterior border of the carotid sheath.

The operation was in two parts: First, a complete dissection of the triangles of the neck on the right side (through a z-shaped incision), with removal of the submaxillary and sublingual glands and ligature of the lingual and facial vessels. Second, excision of the right half of the tongue through the mouth with the patient in the Rose position. During the second part of the operation ether was administered through the familiar nasal tubes, inserted as far as the pharynx, and connected at their outer ends with a funnel, packed with gauze.

The partial excision of the tongue was attended with so little bleeding that it was unnecessary to adopt the precaution of packing the back part of the mouth with gauze. I had just removed the diseased portion of the tongue when the patient, lightly etherized, coughed up about half a dram of ether. The anesthetist presumably had raised the funnel above the patient's head and a small excess of ether therein had trickled down into the pharynx. In the Rose position the greater part must have returned to the mouth; that all did not do so, however, is clear from the fact that respiration ceased immediately.

We resorted to artificial respiration, both by Sylvester's method and by tongue traction. The oxygen funnel was held over the patient's mouth. For five minutes there was no response except a single rather feeble gasp at the beginning of our efforts; the heart beat could no longer be heard with a stethoscope. An oblique incision was made on the thorax just to the left of the sternum. The costal cartilages of the fourth and fifth ribs were resected. The operation took about four minutes. In doing it a pneumothorax was caused.

The pericardium was not opened, but both on inspection and palpation the heart was motionless. The pericardial sac and heart were grasped gently in the right hand and squeezed rhythmically between thumb and fingers, as one would squeeze the bulb of a Davidson syringe, at a rate of about fifty per minute; after rhythmical pressure had continued for about a minute the heart started. Systole was not forcible, slower than normal (fifty per minute) and irregular. These beats continued for a minute or two, with infrequent stimulation from the hand, but then ceased entirely. Artificial respiration and heart massage were continued for twenty minutes without further response.

Autopsy. — Left lung crepitant throughout. Posterior portion dark purple-gray, with frothy exudate. Right lung similar. Mucosa of trachea and bronchi markedly congested. In the fourth left interspace the inner border of the left pleura was 4 cm. from the left edge of the sternum.

Heart: Weight, 395 gm. Stopped in systole. Muscle of good color. Few patches of calcification on aortic valve. Coronary artery and aorta sclerosed. Blood in the heart nowhere firmly clotted.

No other findings of interest.

Case II. Male, age forty-eight. No organic lesions. Operation for excision of varicose veins of one leg, — Mayo's method. Ether. This case was similar to the preceding. I had been operating about ten minutes when respiration suddenly stopped. After ordinary methods had been tried for eight minutes, massage was begun through a thoracic incision and was continued until twenty-two minutes had elapsed after apparent death. There was no response. A pneumothorax was caused.

Case III. Male, age forty-three. On admission, patient was in very poor condition. A hasty physical examination showed that he was cyanotic, stupid and breathing with difficulty. His lungs were not dull, but were filled with many squeaking râles. The heart sounds were faint, but regular; no murmurs were heard, and there was no enlargement on percussion, though this determination was far from satisfactory. The abdomen was large and contained fluid. There was no edema.

2 p.m. Patient suddenly began to gasp and became very cyanotic. Given oxygen, amyl nitrite and thirty minims of ether subcutaneously. These seemed to be of temporary benefit, but in a few minutes respiration stopped. Artificial respiration was started.

2.05 p.m. No response to artificial respiration. Heart sounds not audible. Abdomen scrubbed. Median incision (four inches) below ensiform. Escape of about one quart of clear yellow fluid. Liver, one inch below the costal border, of normal appearance. Right hand inserted over left lobe of liver. Diaphragm *firm, hard and tense.*

Artificial respiration continued. With each to and fro movement, two firm pressures were made on the diaphragm inside the heart apex, in an effort to compress the heart between the fingers and the chest wall. The hand was above and anterior to the left lobe of the liver, with the stomach to the left and behind.

2.15 p.m. No response. Patient regurgitated a small amount of food, probably from pressure on the stomach. Mouth cleaned out. Tongue had been held forward since the beginning of artificial respiration.

2.30 p.m. No signs of resuscitation. Patient pronounced dead and efforts ended.

Autopsy. — Lungs: Both dark gray-purple in color. Crepitant throughout. Much extravasation of dark blood on section.

Heart: Weight, 520 gm. Muscle of good color. Auricles crowded with blood, which, on cutting, gushed out briskly. Stopped in diastole. Right auricle contained soft currant jelly clot.

Wall of right ventricle 6 mm. thick; left ventricle, 10 mm. Auricular walls (3 mm.) unusually thick and heavy. All heart valves delicate. Papillary muscles showed some stiffness, but no change in color nor plaques. Coronary artery and aorta moderately sclerotic.

Passive congestion of liver and spleen. Small, red kidneys. Peritoneal cavity contained 20 ccm. of clear yellow fluid. A slight amount of bloody exudate between stomach and liver.

The several organic lesions made resuscitation impracticable.

Case IV. Male, age twenty-six. Fair condition. Operation: Incision of peritonsillar abscess. Respiration stopped during primary anesthesia, after ether had been administered less than two minutes. The patient was resuscitated readily with artificial respiration, but stopped breathing again after about three minutes. Artificial respiration was employed for five minutes without result. At this time the heart beat was inaudible.

Median abdominal incision. Heart flaccid. Subdiaphragmatic massage begun. With no response after ten minutes more, the diaphragm was incised and massage continued with the hand in the pericardial cavity. Massage and artificial respiration were used vainly for one-half hour after apparent death.

In this case the diaphragm was less rigid than in Case III, but was not completely relaxed. The case illustrates the danger of a general anesthetic in the presence of pharyngeal obstruction. Autopsy showed only edema of the lungs.

In several of the successful and partly successful cases, it may be objected that persistence in ordinary methods of resuscitation might have been followed by recovery. This is true. Igelsrud [32] himself said of his own case: "I have employed . . . all the ordinary methods used in resuscitation, but for a very short time, three or four minutes." Can this adverse criticism be made, however, in the cases of Crile (eight minutes), Lenormant (ten), Sencert (twelve), Maag and Depage (fifteen)?

It is evident that success attends those efforts which are begun shortly after cessation of the heart-beat. Permanent recovery has not been attained after a lapse of twelve minutes; fibrillary tremor is a complication to be dreaded after this time limit has been passed. Nevertheless, experimental data would warrant a radical effort at resuscitation fifteen minutes after the cessation of systole, in the hope, too often forlorn, that the brain might still be viable. In many cases massage lasting from thirty seconds to five minutes has been efficacious, but massage should not be discontinued for twenty-five or thirty minutes. Resort must be made to artificial respiration until spontaneous respiration is established. A considerable time not infrequently elapses between the return of the heart-beat and the return of normal respiration.

ACCESS TO HEART.

In nearly all reported cases reliance has been placed chiefly on manual massage of the heart. Three methods of access to this organ have been tried, — thoracic, transdiaphragmatic and subdiaphragmatic.

1. In the earlier cases an opening was made in the thorax. This method requires the resection of two or more costal cartilages, usually the fourth and fifth, which gives an opening large enough for the introduction of the fingers. When it seems advisable to introduce the hand, a rectangular flap may be made, with its base either to right or left (Wehr's [48] operation); the flap includes two or three ribs and may or may not include part of the sternum. The internal mammary vessels may have to be tied. It is unnecessary to open the pericardium.

There are several profound objections to this method. The operation is at best lengthy, and must usually be performed on an unsterile field with unsterile instruments. Again, an operation on the thorax interferes with the movements of artifical respiration which must be maintained. Finally, there is grave danger of causing pneumothorax, a complication that is, to say the least, undesirable in an attempt at resuscitation. In Lenormant's [44] case, massage quickly re-established the heart-beat, which was maintained for several hours, but it was found very difficult, probably on account of pneumothorax, to inaugurate spontaneous respiration. Pneumothorax occurred in both of my cases in which the thoracic opening was made, and has been reported five other times. I believe this accident has occurred in other cases.

The lengthy statistics of Delorme and Mignon [46] show that the inner border of the left pleura is very often in intimate relation with the left sternal edge. An examination of 32 bodies showed them that:

(*a*) In the third left intercostal space, the left pleura passed behind the left sternal border twenty-five times.

(*b*) In the fourth space, it did so seventeen times.

(*c*) In the fifth space, it did so twelve times.

Even when there are a few centimeters leeway, as in Case I, it is far from difficult, in the haste attending the operation, to make a small opening in the pleural sac. Nevertheless, the thoracic opening has been used in one successful and three partly successful cases.

2. Transdiaphragmatic massage has had five trials. None have ended successfully. It was first employed by Poirier,[47] in order to avoid the danger of pneumothorax. An abdominal incision made, the stomach and left lobe of the liver are packed out of the way with gauze, and a second incision is made through the diaphragm. According to Mauclaire,[45] the latter incision, 4 or 5 cm. in length, should be a little oblique from before backward and from right to left; it should extend towards the apex of the heart without reaching it. Its center is just in front of the summit of the diaphragmatic cavity.

3. Subdiaphragmatic massage is said to possess all the advantages of the preceding and is now accepted as the safest way of gaining access to the heart for purposes of manipulation. It is rapid, free from the danger of pneumothorax and does not interfere with the performance of artificial respiration. It obviates the necessity of suturing the diaphragm, a task that requires no little skill. The example of Lane,[33] who first used it, has been followed many times. It is especially applicable in those cases where the abdomen is already open for some other surgical purpose. The diaphragm may be reached through practically any abdominal incision.

If the diaphragm is relaxed, it is a simple matter to press the heart against the thoracic wall, using counter pressure from outside with the free hand. In Case III the diaphragm was so rigid that comparatively little pressure, I think, was exerted on the heart. The observations of others, however, would lead one to believe that in syncope a rigid diaphragm is the exception rather than the rule.

The incision in the abdominal wall may be made in the median line, downward from the xiphoid, as was done in Cases III and IV. Green prefers an incision along the outer edge of the left rectus, for the reason that the left lobe of the liver is less in the way. In whatever manner the heart is exposed, the technic of massage embodies rhythmical compression of the ventricles, at a rate of about sixty to the minute. Subdiaphragmatic pressure should be made nearly in the median line. There is a tendency to work too far to the left.

CRILE'S TECHNIC.

Crile's technic in the crisis of relative death differs materially from simple direct massage of the heart. He presses rhythmically on the chest wall over the heart and raises the blood pressure by the use of the familiar rubber suit or, better, by adrenalin infusions. "A canula is inserted toward the heart into an artery. Normal saline, Ringer's or Locke's solution, or, in their absence, sterile water, or, in extremity, even tap water, is infused by means of a funnel and rubber tubing. But as soon as the flow has begun the rubber tubing near the canula is pierced with the needle of a hypodermic syringe loaded with 1:1,000 adrenalin chloride, and 15 to 30 minims is at once injected. Repeat the injection in a minute if needed. Synchronously with the injection of the adrenalin the rhythmic pressure on the thorax is brought to a maximum. The resulting artificial circulation distributes the adrenalin that spreads its stimulating contact with the arteries, bringing a wave of powerful contractions and producing a rising arterial, hence coronary, pressure. When the coronary pressure rises to, say, 40 mm. or more, the heart is likely to spring into action. . . . Just as soon as the heart-beat is established the canula should be withdrawn, first, because it is no longer needed, and, second, because the rising blood pressure will drive a torrent of blood into the tube and funnel." It is reasonable to suppose that adrenalin, thus used, tends to prevent the onset of fibrillary tremor.

I have had one unenlightening experience with Crile's method. In a still-born child, the femoral artery was used for an infusion of salt solution and adrenalin. In view of the fact that the child had been dead for upwards of half an hour, restoration was not justly to be anticipated. It was not procured.

From the foregoing it seems reasonable to conclude that in cases of relative death from an anesthetic, from asphyxia, from drowning or from electrocution, we should employ more than ordinary methods in attempting resuscitation. It is probable that Crile's method of thoracic pressure and intra-arterial infusion offers the greatest chance of success. Crile states that it is possible so to drill an operative staff that the technic may be begun within two minutes. This is the method of choice. Yet occasions must surely arise on which, for lack of preparation, the technic would be impracticable. In such instances reliance must needs be placed on artificial respiration and on heart massage, which is "to the circulatory system what artificial respiration is to the respiratory." If, in this way, one can obtain the coronary pressure requisite for recovery, one may argue that the method, though heroic, is legitimate.

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A BRIEF SKETCH OF SEMMELWEIS AND HIS WORK ON PUERPERAL SEPSIS.

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TEXTBOOKS on obstetrics for the past few years mention the name of Semmelweis, but few acknowledge in an adequate degree the great debt which the medical profession and all mankind owe to him for his researches on puerperal sepsis, as well as for the unflagging zeal with which he fought to prove the necessity of antisepsis in the practice of obstetrics.

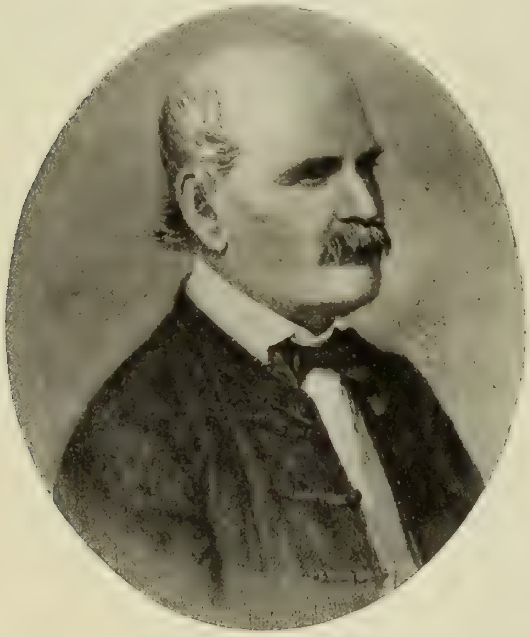
This omission is not altogether surprising, as the results of his practical application of antisepsis in labor, for the first time in the history of medicine, were in the beginning published in

Hungarian and also met such opposition from his contemporaries that they failed to receive well-merited support.

Like reformers in every age, he suffered persecution — a medical persecution — such as happens to few, and as real of its kind as has fallen to the lot of any physician who has progressed beyond the comprehension of his time.

He was born in Budapest on the first day of July, 1818, and received his preliminary education in the city of his birth. In 1838 he began the study of medicine in Vienna; then returned to the University of Pest; and finally was granted his diploma as Doctor of Medicine at Vienna, in 1844. Later in the same year he received the degree of " Magister " in obstetrics and also in surgery.

After acting as assistant for a few months in the obstetrical department of the Vienna General Hospital, he left, but returned again in March, 1847, and remained for two years.



Ignaz Philipp Semmelweis.

Shortly after the beginning of his second service, he became impressed with the fact that puerperal fever was due to the direct transmission of decomposed animal matter through the persons examining or caring for women in childbed. Accordingly, in addition to simple washing, he began the use of chlorine water as a disinfectant for the hands of those attending patients in labor. He also allowed no student who had been in the autopsy room to visit the ward until twenty-four hours had elapsed.

Previous to this time, it appears to have been the custom for students to come directly from the autopsies, where they handled pathological specimens, and proceed, often with insufficient washing of the hands, to examine women in the ward and go from one patient to another.

The effect of these precautions was marvelous, the death-rate falling at once from over 10 to 1%.

In 1847 and 1848, his preliminary work as an assistant was made known by Hebra, Routh, Haller and Skoda, and although he himself spoke on this subject twice in 1850, at the meetings of the Royal Society of Physicians in Vienna, only in 1858 did he publish the results of his investigations in Hungarian, and not until 1860 in the German language.

In 1850, owing to an altercation with the authorities of the institution over the publication of hospital material, he was refused the right to lecture and allowed to demonstrate on the mannikin alone. On this account he left Vienna and returned to Pest, where, in 1851, he became the head of the St. Rochus Hospital, and in 1855 professor in the university. During the latter part of July, 1865, he suddenly developed the result of a pyemia contracted during an operation, and died Aug. 13, 1865, a victim, as it were, of the malady to the combating of which he had dedicated his active years.

His monograph, " Die Aetiologie, der Begriff und die Prophylaxis des Kindbettfiebers," is the contribution to medicine upon which his fame rests. In this he showed by careful reasoning and criticism that puerperal fever could not be due to miasmic contagion, as Hippocrates and those after him had thought, nor yet to any other of the various theories contemporaneously held by those about him. Furthermore, he demonstrated the possibility of direct infection by animal experimentation and by publishing tables showing the small mortality in certain sections of the hospital where there was no teaching and the greater mortality where students who had been in the autopsy room and handling specimens were allowed to examine patients. Still further he proved that whenever his prophylactic measures were carried out the mortality in the teaching sections decreased, notwithstanding the attendance on autopsies and the contact with infectious material.

The results which he had obtained in Vienna were also supported in his German monograph by statistics from the literature of other lands, as well as by those of his own hospital in Pest.

He was apparently unaware, when beginning his work, that Kirkland, in 1779, and Gordon, in 1795, had proposed the idea that puerperal fever was contagious; that a positive statement to this effect had appeared in the report of the Registrar-General of England for the year 1843, and that this view was widely held among English physicians. Oliver Wendell Holmes had published an article in the United States in the last-named year, proving, from the existing evidence, that puerperal fever was contagious. J. Henle, a German, had also, as early as 1840, conceived the idea that certain diseases were caused by a contagium vivum.

Of the English views Semmelweis was fully aware, at least in 1860, for in that year he published an article explaining in what manner he differed from the English physicians, viz., that he considered puerperal fever due to one source, — decomposed animal matter, — while they viewed this only as an additional cause, to be classed with the epidemic and endemic theories of the past.

Great as was his discovery, his motives were misunderstood and his work considered a slur upon the institution with which he had been connected. It was possibly this fact which led him to delay his own publication for so many years.

From the time of his departure from Vienna, in 1850, the storm of criticism fell upon him, and his findings remained generally unaccepted. Even when his monograph was published, a decade after his investigations first became known, the feeling of unjust treatment still remained, for he states in his preface, that, although controversy and writing are distasteful to him, fate has selected him as the champion of the truths there set forth.

Semmelweis was not a prolific writer, and began to publish comparatively late in his career. Besides the monograph just mentioned, he wrote on gynecological subjects, turning to this field when the struggle to complete and defend his life-work had sapped his strength. At the time of his death he was engaged upon a work of this character.

His whole energy was spent in efforts to defend his theory from the attacks of brother physicians and to force them to adopt his methods of prophylaxis. It seems hardly credible that even after experimentation on birds, carried out by other investigators, had confirmed the essential truth of his theories, in 1861, thirteen years after his results first became known, only one physician of a representative gathering spoke in his favor. Virchow was among those who opposed him.

The failure of the medical world to acknowledge the truth of his conclusions embittered him and was the direct cause of some rather tart letters to the profession, which have been severely criticised. In Hungary, however, his word and teaching were accepted, and here, at least, his great contribution seems to have been appreciated.

Previous to his time, the cause of childbed fever, on the continent of Europe at least, was one of the mysteries of medicine. He was the first there to definitely perceive that it was the result of direct transmission of infective material through uncleanliness, and the first in the world to strive to avoid such transmission by proper methods of nursing, cleanliness and antisepsis. Although understanding the relationship of puerperal septicemia to surgical pyemia, and in 1863 performing an ovariotomy under his own methods of antisepsis, it is said that he lacked a clear appreciation of the parasitic nature of the infection. This is disputed by a recent Hungarian writer, who declares that faulty translation was responsible for the misunderstanding.

Whatever may be the truth of these assertions, the practical application of his methods reduced the mortality of childbed, and we can but admire the courageous, even though at times stormy, persistence with which he, a medical reformer, sought to establish an important truth, apparently beyond the understanding of his generation.

How deeply he felt his mission as the bearer of a great message to the medical profession, the following passage from this work clearly shows:

"Consequently, according to my conviction, I must here avow that God alone knows the number of those who, because of me, have gone to their grave.

"If I should say the same of another physician, I should purpose only to convey the knowledge of a truth which, to the unspeakable misfortune of mankind, has not been recognized through so many hundred years. Painful and humbling as such a consciousness is, the remedy does not lie in concealment, and if this calamity is not to be permanent, this truth must be brought to the knowledge of all those concerned."

It was not until long after the introduction of antisepsis in surgery by Lister, that the medical world made practical application in obstetrics of the truths which Ignaz Philipp Semmelweis had so clearly proclaimed many years before.

PRINCIPLES OF THERAPEUTICS BY SENSE CULTURE.

BY PAUL W. GOLDSBURY, M.D., BOSTON.

SOME CAUSES OF DISORDERS AND TREATMENT.

PATHOLOGICAL states, whether local or general, may follow (*a*) overstimulation or exercise at one point or another, (*b*) under-excitation or exercise at one point or another, (*c*) over-activity at one point, under-activity at another. Relief from such conditions should be obtained (*a*) by a reduction of activity, (*b*) by an increase of activity, or (*c*) an adjustment between these. Rest and exercise play a most important part in therapeutic procedure. One or the other may be applied for a given time, but for a longer period of time the adjustment of one to the other may be necessary as a means of influencing the tone of different organs or the metabolism of tissues of the body. Absolute rest, of course, cannot be obtained in the living organism, as nutritional activities must always be carried on to a greater or less extent. The rest of any one part may be obtained by the use of such agencies as will either diminish local action directly, or else by stimulating another or adjacent part divert action.

SOME APPLICATIONS OF REST.

The application of this method can be illustrated by the treatment of any of the particular organs. The brain when tired by normal actions and functions is rested by sleep, but when these activities have been more or less abnormal, various hypnotic elements may have to be used to induce sleep. Stimulation of other organs or muscles to increase activity helps to rest the brain to a lesser degree, as athletic sports entered into by a student promote general circulation and muscular action and reduce the mental activity to a certain extent. The effect of digitalis on the heart secures a limited amount of rest to its muscles. An indirect method of reducing the work of the heart is by decreasing peripheral resistance by means of dilatation of the smaller arterioles, whether by drugs or other measures. In diseases of the kidney, reduction of the amount of protein or of irritating elements in the diet reduces the work of excretion through that channel.

PHYSICAL CULTURE AFFORDS BOTH REST AND STIMULATION.

Physical culture is an important form of stimulative treatment, and sports, games and all forms of recreation benefit general or particular muscles and mental conditions. The distribution of muscular activities often promotes restoration to normal tone, better than mere cessation of effort would do. A growing child at bedtime craves natural sleep because all its members have been practically evenly tired. Its day is continually made up of being diverted from one play to another, and on account of its variation of exercise he does not overexert any one part. A child's play and work tend to a healthy distribution of mental, nervous and muscular exercise or stimulus. On the other hand, a man's work may tend to an overtaxing of mental effort of one kind or another, or to an overtension upon certain nerves or muscles. To recuperate from such forms of overtaxation, rest of the part is, of course, necessary in its place, but restoration may be hastened by particular lines of counter-stimulation or of exercise by groups of muscles and nerves. A man who is at a desk all day finds the swinging of a golf stick refreshing to the muscles of the arm which have been fatigued so long by restricted movements.

RELIEF BY VARIATION OF LOCAL STIMULI.

In this discussion, aside from the method of inducing rest in one member by stimulating a part adjacent, there may be employed local measures of stimulation so as to freshen and rest the whole. A part or organ is susceptible to different grades of stimulation or exercise and is refreshed by a change from one grade to another. General reading may freshen a brain tired by concentration along one particular line. "Variety" as "the spice of life" may be scientifically applied here. Mental rest may be promoted at one time by means of a light form of reading; at another by a more solid form. The concentration of the mind required by the study along some scientific line may wake up an apparently tired brain into a state of refreshing activity and give it a healthier normal tone.

MUSCLE AND NERVE DIFFERENCES.

Motility, the property of changing its size and shape, is a special characteristic of muscle, while in the nerve the particular characteristic is excitability, which includes its quick response to and manner and rapidity with which it conveys stimulus. Muscle must, of course, have special stimulus to start any degree of motility and responds to chemical and mechanical agencies of excitation other than those of nerve. In a muscle, then, excitability precedes motility, but the latter is a measure of its exercise. In nerve susceptibility to varying stimuli and transmission of these stimuli must be considered its special form of exercise.

EXERCISE AND HEALTH.

Stimulation is as necessary to the development of the nerve as muscle exercise is to that of the muscle. The offices and well-being of nerves must be guarded as carefully as those of the muscles. Frequent stimulation and excitation and the reactions which they produce are a part of the normal and healthy life of every organism, the means by which it grows and develops and performs its functions. Muscular health is dependent upon muscular exercise, and the health of the whole body is concerned not alone with muscular exercise but with nerve stimulation as well. In short, wherever harmonious inter-relations of muscles and nerve activities are established in the bodily life and functions, there follows a physical consequence, grace of movement and symmetry of outlines.

OBJECT OF PAPER.

It is the purpose of the writer to prove that the special senses as nerve organs, no less than the other organs and muscles, need for their healthful development this same adjustment of rest and stimulation, and, as the brain must be rested somewhat by readjustment of energies within itself, the different sense organs may be refreshed by varying and qualifying forms of stimulation peculiar to themselves. Physical culture seeks to recreate by variations of the expressive or muscular activities. Why should not variations of stimulation for the avenues of impressions, the special senses, be used for their tonic effect?

REST ONE SENSE BY STIMULATING ANOTHER.

The eye may be rested after protracted use by merely closing the lid. A photographer who does a good deal of delicate and trying work of retouching negatives tells me that the simple habit of closing her eyes when they begin to feel tired from the work has helped her to keep them in very good condition. But further rest may also be obtained by the playing off, so to speak, of one sense against another by diverting activity. If we stand and watch a circus parade for any length of time our eyes soon become tired by the "sights and features," but the bursts of music from the bands, by stimulating the ear, relieve and freshen the eye. Musical comedy of the present day presents an excellent opportunity to show how the tax upon the eye by the costumes, colorings and lights is relieved by the interpolation of music and songs. In other words, opera, light or heavy, is a complex of song and color harmonies so adjusted as to balance admirably the strain of stimulation on the senses of sight and hearing. It does not require a very sensitive organism to be fatigued by the chatter and clatter of an afternoon "tea," by the sound of many voices all pitched in the strained keys of excitement. But the refreshments served on all such occasions perform a useful function. They relieve the tax on the ear by exercising the sense of taste as well as the muscles of digestion. The writer experiences a very much stronger desire for food after attending a symphony concert or recital than after an operatic performance. In the former case, stimulation is applied to one sense with the consequent result of over-exercise; in the latter the distribution of stimuli between two senses is less likely to produce overtaxation. The popular concert where foods are served has a physiological basis.

BRAIN AND EYES RELIEVED BY SKIN STIMULATION.

The air, the water and the mud baths peculiar to the famous health resort called Hot Springs have a marvelous recuperative effect on tired minds and bodies; in other words, they stimulate the skin by drawing the blood to it, and they give it healthful exercise and so rest and refresh the brain and eyes and ears that have been tortured by the incessant strain and noise and ugly sights and incidentally by the strenuous life. To be more exact, that badly neglected sense organ, the skin, is given at Hot Springs exercise which ordinary surroundings and the routine of usual daily life can in no way afford.

VARIATIONS OF STIMULI LOCALLY.

As the brain is refreshed by a different line of thought, or the stomach and intestines may be improved by a readjustment of diet, so the senses may be recreated by a change of stimulation within their own related parts. The stenographer's ear is taxed by the clatter of the typewriting machine, the noise of which irritates certain nerves of the ear keyboard to extreme tension. A rational therapeutic application here would be, not only to diminish the amount and duration of such noise, but to stimulate this nerve keyboard in other parts. Thus, a more frequent indulgence in conversation during the day and the hearing of music whenever possible. For instance, the attendance at concerts would have healthful counteracting effects. The tired ear may be refreshed by simple variation in the sound it hears; that is, by being afforded stimulation in new directions.

A person who had been a proof reader for twenty years states that he believes his good eyesight is due to the fact that he early formed the habit of looking up from his work every two or three minutes, and allowing his eyes to gaze at some distant object through the window. Such habits are probably very common among those engaged in work which requires such short focusing of the eyes. They have unconsciously acquired the habit of gazing off, as they found by experience that it rested the eye. Drivers and motormen, as a class, have unusual sight. The demand of exercising the eye in those occupations by change of focus seems to have a tonic effect. Looking from one object to another not only affords muscular but sensory exercise. A change of form affords a change of stimulation for the retina. Different colors may be said to afford qualitative variations in stimuli. The colors of the spectrum stand for a variation of wave length. Under ordinary conditions, red tires the eye sooner than green or brown. In the summer, the eye is rested by the change from the glare of city pavements and red brick walls to the green of the country or the greenish-blue of the ocean. The first snow of winter affords a great relief to the eye which has seen so much of the brownness of fall. A child is so affected upon arising in the morning to find the ground covered with snow that he shouts with glee. A new world has been brought to him by a chance of dress upon the ground. A teacher describes her feeling one morning upon discovering as she looked out of the window that a warm rain had removed the snow which had lasted so long. She welcomed the sight of brown ground as a contrast to the previous white covering and said, " The sensation experienced was like a vacation to the eye."

PRACTICAL APPLICATIONS AND ADAPTATIONS.

The writer has a box with a series of small boards exhibiting different paint stains, and asks the patient to shuffle these over several times a day. For office workers whose eyes are so much upon white paper and black ink, these varied tints of color and the grain of the wood afford a little soothing and diverting eye exercise, and occasionally this is found to relieve the headache of eyestrain.

The phonograph may sooner or later be found to be no more trying upon the ears than is print for the eyes. There is a large field but little developed relating to the science of hearing. Very definite prescriptions of music can be made. The value of vocal training with its active exercise could be given extended discussion.

The strong smelling bottle when used is like a solar plexus blow; instead of this, the writer has a little case of four bottles containing mild selected odors. Occasional sniffs from these in turn result in a light form of gymnastics for the olfactory tract. To exercise this tract is to stimulate its circulation and this helps to relieve congestion in over-stimulated adjacent tracts, as of the eye or ear, whether in the brain or outside of it. A student preparing for examination obtained some refreshment while studying by such gymnastics. A case of rhinitis found relief to an appreciable extent by this kind of counter-stimulation. A case of neuralgia was directed in daily walks during the spring days not only to look for fresh colors, but fresh odors, whether of new wood or those of buds and blossoms, and this was found with other measures to contribute to a marked general and local improvement. How much the fresh odors of out-of-door life for tubercular cases by stimulating respiratory and cerebral activities have to do with general improvement has not been very specifically studied. Pharmaceutical preparations have certain virtue in their appeal to smell, and more consideration should be given such a property. Some scientists even go so far as to say that in the evolution of civilization this sense may be dispensed with, but the writer would argue to redeem it from its present state of neglect that it may be developed and exercised to a point of discrimination where it will supersede the use of other senses in many laboratory tests. Bodily health must be very closely related to the harmonic activity of the sense of smell.

As the skin is more or less susceptible to the feeling of all textures and dyes of clothing worn, there is plenty of opportunity for regulations as to changes at stated intervals of both inner and outer garments, shoes and stockings. Consideration should also be taken of the reactionary influence of the color of clothing upon the eye. Air, water and sun baths in all their various modifications are, in a way, subsidiary agencies of skin-stimulations. The hands in housework are brought into contact with a great variety of articles and surfaces, in shopping they are exercised in discriminating between fabrics, in gardening they are stimulated by contact with the soft soil or growing things, and in the care of animals they are soothed by stroking of the hair and fur, all of which tend to develop the sense of touch.

Taste must be indulged by being encouraged to choose more what it likes and by giving it more time to act. This would call for thorough mastication of food and the avoidance of flooding out the mouth when drinking.

In a gymnasium muscles are not developed by over-heavy weights and exercises, but by the lighter stimulating ones. The special senses call for even more careful systems of grading and apportioning exercises and forms of recreation than does physical culture. All the avenues for impressions in all their ramifications must be studied specifically and individually.

In Massachusetts School for Feeble-Minded Dr. Fernald has a most interesting equipment for developing and educating the special senses, and a visit to this schoolroom offers many suggestions as to ways in which therapeutic adaptation of these principles may be carried out.

COMMERCIALISM AND PSYCHOLOGY.

The successful advertiser appreciates the practical psychology of form and color. The picture postal affords a mental excursion via graphic color illustrations. The growth of this fad and the picture shows emphasize the demands for such lines of stimulation, which, after all, have some educational value. These cheap picture and song halls have diverted pennies and nickels from the saloons so as to lessen the drink traffic in some localities. The science of diversion as well as physical culture must be incorporated in the program of physiological therapeutics.

SUMMARY.

Rest and stimulation are the principal lines of therapeutic procedure and have been employed for general and local disorders by various measures.

Muscular activities have been used in promotion of both these lines.

Nervous activities, including those of the special senses, have not been as systematically studied, though instances of their empirical introduction as healing measures are common.

Recreation by means of the special senses should be employed as contributing to local and general health. The employment of these agencies may be made more systematic and scientific.

THE GUAIAC TEST FOR BLOOD.*

BY ROSCOE W. KING, LAS ANIMAS, COLO.

Concerning the chemistry of hemoglobin, but little is known further than that it is a complex ferrated albuminous molecule, which may, upon decomposition, be made to yield an albumin and an iron-containing pigment — hematin.

There is no controversy regarding the importance of the rôle played by iron in the formation of hemoglobin, although it is present to the extent of probably less than 5%.

The chemical formula for hematin is usually regarded as $Fe(C_{16}H_{16}O_2N_2)_2$. It is obviously not permissible to speak of iron-free hematin any more than it would be to speak of $(C_{16}H_{16}O_2N_2)_2$ — free hematin. The iron-free product, hematoporphyrin, is an entirely different compound. The reaction represented by the equation

$$Fe(C_{16}H_{16}O_2N_2)_2 + H_2O = Fe + C_{32}H_{36}N_4O_6$$

shows that in obtaining hematoporphyrin from hematin, not only is the iron removed from the latter, but that an addition of two atoms of oxygen and four of hydrogen occurs. No compound could be subjected to such important changes without a very considerable alteration of its chemical properties.

The formula given above for hematin is misleading if it conveys the impression that the compound is in any way analogous to such salts as ferric acetate or salicylate represented by the formulæ $Fe(C_2H_3O_2)_3$ and $Fe(C_6H_5O_3)_3$. In these latter compounds the iron may be completely removed by rendering their solution alkaline with sodium carbonate and filtering. The iron present in the hemoglobin molecule cannot be removed in this way, and, as will be seen below, advantage may be taken of this fact in order to render the guaiac test for blood pigment applicable in the presence of iron and similar metals.

It may be safely assumed that hemoglobin contains less than 5% of iron. Now if the guaiac test for blood were due to the iron contained in the hemoglobin, we should naturally — and scientifically — conclude that a solution containing .05 gm. of iron would give a reaction corresponding to a solution containing 1. gm. of hemoglobin. Experiments, however, show that such is by no means the case, but that, on the contrary, a solution of hemoglobin responds to the test in a dilution which is twenty times as great as would be the case were the iron alone the source of the reaction. A solution of 1 part of hemoglobin in 200,000 parts of diluted alcohol was found to give a positive reaction. This would correspond to a solution of iron containing one part in four million, a dilution which would have no effect whatever. The limit of delicacy for the iron reaction is about 1:100.000, whereas a solution of hemoglobin of this strength — containing only one twentieth as much iron — gives a decided reaction.

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* This article is intended chiefly as a review of the one contributed by Dr. Whitney to the Boston Medical and Surgical Journal, Jan. 18, 1909, in which it is stated that the guaiac test was not a test for blood, but simply for the iron which the blood pigment contains, and that it was of no value in the presence of traces of foreign iron such as might be obtained from a knife blade, hammer or axe head.

Dr. Whitney recognizes that the reaction as obtained from blood is " extremely delicate and the coloration deeper and more beautiful." His conclusion that this intensified phenomenon may be due to the slight alkalinity, or to the sodium chloride, of the blood is certainly not securely anchored. In the first place, the test is always carried out by the writer in the presence of a large excess of acetic acid; and in the second place, the hemoglobin used in the above experiments contained no sodium chloride. It would seem that these experiments clearly indicate that while iron will duplicate the reaction, — as will some other metals, though perhaps to a less extent, — yet that obtained in the presence of blood pigment is so much more delicate that it must be attributed to the hematin molecule as a whole and not to its contained iron. Dr. Whitney concludes his article as follows:

" From the above it will be seen that the guaiac test is not a test for blood, but for its contained iron, and is utterly valueless for suspected stains upon any iron article, such as a knife blade, hammer or axe head. Finally, it enables us to understand better why its chief value is a negative one, and that the failure to obtain such a delicate reaction shows the absence of any normal blood coloring matter with its contained iron."

In answer to this the writer submits the following extract from the *United States Naval Medical Bulletin* (Vol. 4, No. 2).[1]

" *The guaiacum test.* — This is Van Deen's old test, and, after all the adverse criticism that has been leveled at it, still remains, in the author's opinion, the best, most delicate, as well as the most reliable, means for detecting traces of blood pigment.

" It has been objected to on the ground that many other substances than blood will respond to it. But the same objection may, with equal propriety, be applied to perhaps all the tests of analytical chemistry. Sulphuric acid is a splendid reagent for the detection of barium, with which it gives a heavy white precipitate. A precipitate having a similar color characteristic is also produced with many other metals, as calcium, strontium, lead, etc. But this is no valid objection to the use of sulphuric acid as a reagent for barium. Nor does the fact that subacetate of lead will produce a bluish-green coloration with guaiacum constitute an objection to the use of guaiacum as a test for blood pigment. All the tests of analytical chemistry presuppose that they are to be applied under proper conditions. Thus, in hydrochloric acid, we have a delicate and reliable means of detecting silver, but the reaction is totally unreliable in the presence of salts of lead and mercury (ous) unless special precautions are taken. Likewise, guaiac is a delicate and reliable test for hemoglobin (hematin) in the absence of interfering substances. The laws of chemistry are inflexibly exact, but it matters not what reagents we use; unless other conditions are properly guarded, no one can predict or decipher the results."

The following experiments show that the guaiac test for blood is not only valuable, but is exceedingly delicate and reliable in the presence of salts of iron, as well as other metals, when the proper precautions are taken.

First experiment. — A solution containing 1 part of metallic iron — as Fe_2Cl_6 — to 2,000 parts of water was found to give a strong reaction with the guaiac. Ten or fifteen cubic centimeters of this solution was placed in a small beaker containing a small piece of red litmus paper, and sodium carbonate added until a decided alkaline reaction was obtained. The insoluble iron salt is then easily and quickly removed by filtering through a small white filter paper. Five cubic centimeters of the filtrate is poured into a perfectly clean test tube containing a bit of blue litmus paper, and acetic acid (36%) added until a strong acid reaction is produced. It is usually preferable to add about 1 ccm. of the acid. To this iron-free acid solution is now added an equal volume of alcohol.[2]

The test is then applied to this alcoholic solution by adding a few drops — not too much — of the guaiac solution, followed by about 2 ccm. of the hydrogen peroxide. The reaction is negative.

Second experiment.— To the same iron solution as used above is added sufficient hemoglobin to make a 1:100,000 solution of the latter. Ten or twenty cubic centimeters of this fluid is then rendered alkaline, filtered, acidulated, etc., as directed above. In this case we get a positive reaction. It would seem that these experiments afford sufficient evidence to warrant the conclusion that not only is the test a valuable one in the presence of salts of iron and similar metals, but that its delicacy is not at all abated by the process employed for the removal of these interfering substances.

To again quote from the article in the *United States Naval Medical Bulletin* above referred to:

" It is the writer's opinion that what we need is not a new test for blood, but a better and more reliable way of applying the old one — a method that will enable us to obtain, if possible, the hemoglobin derivatives in a solution which is free from all other substances that may prevent, duplicate or confuse the reaction."

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A CLASS of one hundred and eleven was graduated this year from the University of Pennsylvania Medical School; the annual address was delivered by the dean of the college department, Josiah Penniman. — *Jour. Am. Med. Asso.*

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[1] Detection of Occult Blood in the Urine, Feces and Stomach Contents. By Roscoe W. King.

[2] Alcohol is added to the suspected fluid, since by rendering the guaiac soluble it greatly increases the delicacy and beauty of the test. An aqueous solution of hemoglobin of such a dilution as will not respond to the test has been found to give a very emphatic reaction when an equal volume of alcohol was added.

SCHISTOSOMIASIS (JAPONICUM) WITH SPECIAL REFERENCE TO OBSERVATIONS IN HUNAN PROVINCE, CHINA.*

BY O. T. LOGAN, MEDICAL MISSIONARY, CHANGTEH, HUNAN, CHINA.

History and geographical distribution. — For many years it has been known that a peculiar disease characterized by enlarged spleen, liver, dysentery, etc., existed in certain parts of Japan, but not until Katsurada discovered the specific cause to be a trematode, which he described [1] and named Schistosoma japonicum in 1904, was the true nature of the disease known. Catto was working on his classical case, a Chinese from the province of Fukien, who died of cholera in Singapore, synchronously and independently of Katsurada, and they published articles describing postmortem findings and the fluke that was then new to science, Katsurada's article in 1904 preceding Catto's [2] by several months.

The second Chinese case was found in June, 1905, in our hospital in northwestern Hunan, which is in south-central China, this being some twelve hundred miles from Fukien province, the home of Catto's patient. A history of this case, together with a specimen of the feces, was sent the Naval Medical School with the request that the case be published if our diagnosis was found correct. This was done by Beyer,[3] who was at that time attached to the school. Since this time we have had more than a dozen cases [4] that came from different parts of the province, and the fact that some of these patients report many of their neighbors to be suffering from a disease similar to their own makes it highly probable that schistosomiasis is not an uncommon disease in our part of China at least.

In 1906 Wooley [5] reported the disease in the Philippines, Taylor [6] in Nanking, which is midway between Shanghai and Hankow, on the Yang-tse, and Booth [7] observed several cases in Hankow. Thus it is proven that the distribution of the disease is a wide one, taking in parts of Japan, central, south-central and southeastern China, and parts of the Philippines. We need not be surprised to hear that it occurs in many other locations in the Orient where wet farming is carried on, especially where people are dependent upon ponds and reservoirs for their water supply. It is not improbable that there are patients among the Chinese and Japanese in the United States at the present time who act as hosts and suffer from the effects of this fluke.

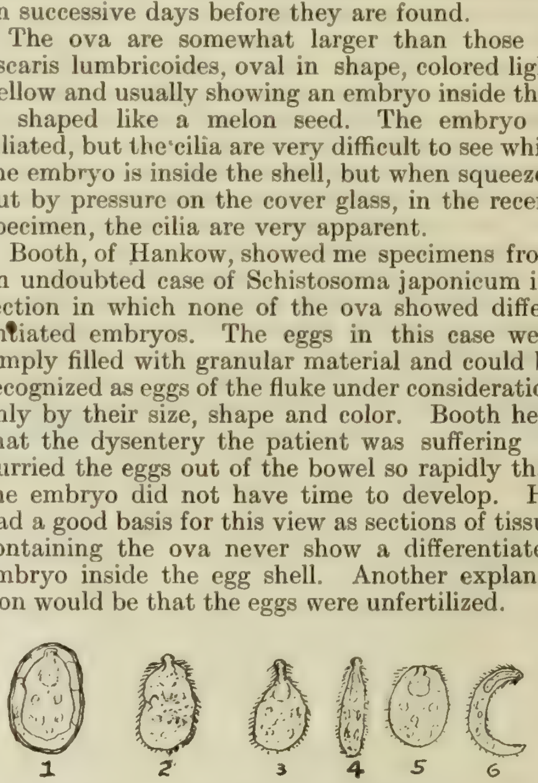
The clinical picture is extremely variable; most of our cases have had marked anasarca, but one showed extreme emaciation. Usually the liver, the spleen, or both, are enlarged, but this is not an invariable rule. Bloody stools are common, but there may be only diarrhea of varying grades. In children, the growth is retarded, as in anchylostomiasis. It should be remarked in this connection that most of our cases have had a light infection with hook worms, and this may have modified the picture somewhat.

Katsurada lays stress on the shape of the abdomen. He says, "The hypogastric region seems to shrink, while the epigastrium enlarges and a transverse furrow forms directly above the umbilicus so that the general appearance of the abdominal region is that of an inverted gourd." Studying the only photograph I possess of a case confirms Katsurada's observation except as to the transverse furrow.

Diagnosis is easy, as a rule, if the microscope is used. The characteristic ova are usually found in every specimen of feces mounted. As the presence of these eggs in the feces is dependent upon the habitat of the fluke, which never leaves the blood vessels, and also upon the ulceration necessary to allow the ova to reach the lumen of the bowel, it may be necessary to make examinations on successive days before they are found.

The ova are somewhat larger than those of ascaris lumbricoides, oval in shape, colored light yellow and usually showing an embryo inside that is shaped like a melon seed. The embryo is ciliated, but the cilia are very difficult to see while the embryo is inside the shell, but when squeezed out by pressure on the cover glass, in the recent specimen, the cilia are very apparent.

Booth, of Hankow, showed me specimens from an undoubted case of Schistosoma japonicum infection in which none of the ova showed differentiated embryos. The eggs in this case were simply filled with granular material and could be recognized as eggs of the fluke under consideration only by their size, shape and color. Booth held that the dysentery the patient was suffering of hurried the eggs out of the bowel so rapidly that the embryo did not have time to develop. He had a good basis for this view as sections of tissue containing the ova never show a differentiated embryo inside the egg shell. Another explanation would be that the eggs were unfertilized.



1. Ovum of Schistosoma japonicum in feces.
2, 3, 4, 5, 6. Shapes assumed by embryo outside the ovum.

The mode of infection is not known. Katsurada [1] believes it takes place through the skin, in people who wade through stagnant water. It is interesting to note that cats are especially prone to this disease in Japan, for this animal, I have always understood, is proverbially averse to wading. If this is the case, it would seem that infection through the alimentary tract is more likely. The only experiment on the mode of infection I know of was recorded by Tsuchiya[8] in a recent and very full article on the subject. He found that the embryo develops and breaks out of the shell when infected feces are mixed with water and kept warm. It lives several months without further development and then diminishes in size and dies. He fed such material to a dog and a cat with negative results.

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* Read at the sixth annual meeting of the American Society of Tropical Medicine, held at the United States Naval Medical School, Washington, D. C., April 10, 1909.

Prognosis, the Japanese declare, is bad in heavy infections, and even in light infections the disease is serious because it makes the patient more liable to concurrent affections on account of his lowered resistence.

From our observations and from the reports our patients and their relatives give, I judge that the disease is to be regarded as very serious when it has developed so that symptoms are noticeable. The only two of our cases that we have been able to trace have died. It would seem that the seriousness of the disease due to Schistosoma japonicum in a given number of cases is much greater than that caused by Schistosoma hematobium.

Treatment. — Three cases have come into our hospital wards for treatment. One promptly died, another stayed only a few days, while one remained about two months. This patient improved rapidly under laxatives and iron tonics; his hemoglobin rose from 10% to 35% (Talquist) in less than a month and the dysentery, anasarca and prolapsed rectum entirely disappeared by the time he left the hospital. Although the ova were still present in the feces, the patient considered himself well. In spite of this improvement, however, we learned that he died, presumably of the disease we are considering, a few months after he returned home.

Tsuchiya [8] strongly advocates tapping the abdomen, in addition to the above treatment, when ascites is present, declaring that this condition is often cured after several repetitions of this operation.

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SOME ANALOGIES BETWEEN MALARIA AND SYPHILIS.*

BY WILLIAM H. DEADERICK, M.D., MARIANNA, ARK.

MALARIA has many points of similarity with Texas fever and kala-azar. Syphilis is closely allied to tuberculosis, leprosy and the eruptive fevers. But for striking analogies with reference to clinical course and to treatment, malaria and syphilis are probably more closely related than any other two diseases.

Both are notoriously protean in nature and are manifested by an infinite variety of expressions. Malaria with her mildest chill, deadliest blackwater fever, cachexia, masked forms and pernicious paroxysms, and syphilis attacking every tissue in the body, from top to toe, from skin to bone, are probably unparalleled for diversity of aspect.

Both diseases, to be acquired, must be innoculated.

Both have stages of latency during which there are no symptoms and the patient is apparently cured. Malaria may lie entirely dormant for many months after the last possibility of infection, and then become sufficiently aroused to prove fatal. For example, the cases of pernicious malaria that occur months after leaving the focus of infection. So, also, does syphilis behave and may surprise the patient years after infection or may even appear in the children of a parent believed to be long free from the disease.

The pathognomonic evidence of malaria, the deposition of melanin in the viscera, may aptly be likened to the characteristic process of syphilis, the formation of the gumma.

In the field of therapy, malaria and syphilis present almost perfect parities.

The only two diseases for which we possess almost true specifics are malaria and syphilis.

The specific effect of drugs is, however, correspondingly limited in the two diseases. In syphilis, appropriate medication causes the rapid dissolution of the visceral gumma, but is impotent against the resulting cicatrix which may prove fatal. In pernicious malaria characterized by localizations of parasites, while quinine may promptly kill the organisms, it avails nothing toward the amelioration of perivascular exudation, hemorrhage or necrosis depending on parasitic occlusions.

Following both diseases are "para-affections," in the treatment of which the respective specifics are relatively useless. Such are hemoglobinuric fever and certain forms of splenomegaly after malaria, and tabes and general paresis following syphilis.

The too early application of the specifics has the same disastrous effect on the diagnosis in both cases. After the administration of quinine in malaria, it is almost, if not quite, impossible to find the parasites, and the temperature curve is thereby so distorted as to be valueless. The effects of anti-syphilitic treatment on the induration and other diagnostic criteria in syphilis is too well known to call for comment.

The happy effect of mercury and the iodides in syphilis rendered, for a long period, very uncertain the length of time necessary to continue the treatment. This was learned only by experience and at the expense of lives, and is usually fixed, more or less arbitrarily, at two or three years. At the present day, physicians no longer mistake the complete disappearance of syphilitic symptoms for a cure, but continue the treatment daily during the first months, then interruptedly, commonly during alternating months. But not so with malaria. As soon as the temperature is normal, and even before the blood destruction is compensated, the specific is often discontinued, to be resumed only when relapses occur, which is the rule. A few days' treatment with quinine no more cures malaria than does a few weeks' rubbing with mercury cure syphilis. This abortive quinine treatment may destroy the asexual forms of the parasites, but the parthenogenetic forms, by a sort of immaculate conception, have the faculty of tiding the generation over the catastrophe and occasioning a fresh outbreak or maintaining latency for months or even years.

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* Read by title at the sixth annual meeting of the American Society of Tropical Medicine, held at the United States Naval Medical School, Washington, D. C., April 10, 1909.

The danger to the community arises from the latent stage in each disease. The syphilitic, with enlarged lymphatics, syphilides or other evidence of disease is shunned, and from mortification, if from no other motive, will take treatment, but the victim of latent syphilis may infect a score of people.

The subject of active malaria usually seeks treatment of some sort. He often feels too bad to move in public, and the duration of the active stage is short. With latent malaria, however, the patient believes himself cured, is able to follow his occupation, takes no specific and may be a fountain of infection for an indefinite time.

For these reasons the chief obstacle to the eradication of syphilis from society is the subject of latent syphilis; the reason for the failure in permanent results of the Koch method of the prophylaxis of malaria is the detection and control of the subject of latent malaria.

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Reports of Societies.

CONNECTICUT STATE MEDICAL SOCIETY.

One Hundred and Seventeenth Annual Meeting, Hartford, May 26–27, 1909.

The President, **Dr. Seldom B. Overlock**, of Pomfret, in the chair.

BACTERIAL VACCINES IN THE TREATMENT OF DISEASE.

Dr. Charles J. Bartlett, New Haven, first briefly outlined the development of the opsonic method. Bacterial vaccines were contrasted with antitoxins, and the general principles underlying vaccine-therapy were discussed. This method of treatment is specific in the strictest sense of the word. In the majority of infections, autogenous vaccines must be used in order to obtain satisfactory results. Wright insists that the frequent determination of the opsonic index is essential, but in this country many of those who are using vaccines are evidently disregarding the index and have obtained good results. Localized staphylococcus infections are particularly favorable to this form of treatment. From theoretical considerations it seems probable that better results than any yet reported may be obtained in general infections if appropriate vaccines can be used very early in the disease. Latham's results in administering vaccines by mouth indicate the possibility of simplifying vaccine therapy. For the successful employment of this method of treatment, more accurate diagnoses than in the past must be made. Laboratory experts must be called upon more frequently than heretofore. The dosage of the different vaccines and the intervals between injections were then discussed.

Dr. George Blumer, of New Haven, said that when the infection is localized and walled off by inflammatory products the stimulation brought about by bacterial vaccines would theoretically be of great benefit, but that in a case of general infection one would rather expect that at its height one would not get marked results from vaccinotherapy. If the body were going to react in a general infection to that particular organism, it should have already reacted to the bacteria in the circulation. He thought that the point of most importance was to make the diagnosis early enough to introduce the bacteria while there are few organisms in the circulation. He did not consider finding the opsonic index a practical procedure, but he questioned whether any other method of reaching a diagnosis except that furnished by the general condition of the patient could be substituted for it.

Dr. A. H. Griswold, of Hartford, referred to some experiments in which different men working with the same slide had obtained such varying results in regard to the opsonic index that they had decided that the test was not reliable. He mentioned the remarkable lessening of the pain of carbuncles and furuncles caused by the use of a heterogeneous vaccine.

Dr. Bartlett, closing the discussion, said that heterogeneous vaccines can be obtained within twenty-four hours if it is a pure culture and one that grows rapidly.

PHLEBOTOMY IN DERMATOLOGY.

Dr. Thomas M. Bull, of Naugatuck, referred to the antiquity of venesection as a remedial measure, discussed its value and emphasized the necessity of selecting the proper patients for this purpose. He related the histories of cases of eczema and psoriasis in which this procedure had been of value, and closed with some theoretical considerations as to its use, describing the technic.

Dr. Mark C. Bradley, of Hartford, said that he had never practised venesection in dermatological cases, and that he had been unable to find any reference to the use of this method in such cases in medical literature.

Dr. Ralph A. McDonnell, of New Haven, could not understand how venesection could do good in dermatology, unless because the skin disease in question was caused by high blood pressure or because it was due to something circulating in the blood.

Dr. Bull, closing, said, in answer to a question, that he had removed from eight to twelve ounces of blood, and sometimes sixteen in high-tension cases. He did not consider venesection a specific, but merely a procedure to be used with judgment in any case of skin disease with high tension.

LOCALIZATION OF LESIONS OF THE GENITO-URINARY TRACT.

Dr. Frank H. Coops, of Bridgeport, dwelt upon the necessity of having a definite and systematic plan of procedure in order to arrive at an accurate diagnosis. The perfection of the older clinicial methods and the invention and use of such modern instruments as the urethroscope, the cystoscope, the different urinary segregators and x-ray photographs have made urology one of the most exact of the medical sciences. The outline of the plan of procedure as pursued by the present-day urologists was then given in detail. As complete a history of the case as possible should first be obtained. Next the secretions and excretions of the tract should be thoroughly investigated mechanically, chemically and microscopically. When one has thus arrived at certain conclusions regarding the nature and location of the trouble the different instruments and other mechanical devices at hand should be made use of in order to clinch the diagnosis. The patient and experienced investigator, going over in this way each portion of the tract in turn, and noting and properly interpreting all that he hears, feels and sees, will be fully rewarded for the pains that he has taken.

Dr. P. Duncan Littlejohn, New Haven, said that when a man of middle age complained of *any difficulty whatever* with urination that a careful search should be made for hypertrophy of the gland, finishing his discussion by saying that diagnosis was the rock on which all successful treatment of disease must rest. Therefore we could not afford to overlook the smallest symptom in examining these patients.

Dr. C. S. Stern, of Hartford, dwelt in some length on the incomparable assistance in diagnosis rendered by the urethroscope and by the cystoscope, especially in the localization of lesions of the genito-urinary tract.

OCULAR MANIFESTATIONS IN SYSTEMIC DISEASES.

Dr. Michael H. Gill, of Hartford, emphasized the importance of using silver nitrate in the eyes of the newborn, and urged the making of that practice obligatory by statute. He also spoke of the necessity of examining a child's refraction on the first appearance of a "crossed eye." He also advised frequent inspection of the eye ground in general constitutional disturbances and showed the wisdom of referring patients to oculists rather than to opticians.

Dr. Edward M. McCabe, of New Haven, said that he merely desired to emphasize the point brought out by Dr. Gill concerning the early recognition of strabismus and the application of the proper treatment to prevent further muscular deformity.

Dr. E. Taylor Smith, of Hartford, said that, contrary to the usual idea, the eye manifestations are late manifestations of nephritis. A condition that is early manifested in the eye is hysteria. He had collected a number of cases of hysteric hemiplegia occurring in children under twelve years of age. No pathological condition except narrowing of the visual fields was found in these cases, and all of them cleared up under proper systemic treatment.

Dr. O. T. Osborne, of New Haven, expressed surprise that Dr. Gill should state that there must be some pathological basis for a difference in the pupils.

Dr. D. F. Sullivan, of Hartford, laid stress upon the importance of investigating eye troubles in children, especially in tuberculous families. Eye troubles disturb digestion, and anything that decreases the vital resistance will render a person more liable to infection.

Dr. George Blumer said that one of the diseases that can often be recognized by the oculist before the internist is arteriosclerosis. A point in connection with interstitial nephritis often overlooked is that this disease can produce a picture in the background of the eye that is essentially like that produced by brain tumor. Another point mentioned was that exophthalmos is sometimes present in cases of chronic interstitial nephritis, especially in patients who are in a uremic or nearly uremic state.

Dr. Gill, closing, said that, according to Fuchs, a difference in the size of the pupils is always pathological. In connection with the fact that there is pending a bill before the Connecticut state legislature to license so-called optometrists, he thought it was interesting that his patient had consulted several of these gentlemen instead of going to an oculist, with the result that she lost the sight of one eye and is now losing that of the other. He considered it very dangerous to license such persons.

PARTIAL RESPONSIBILITY OF THE INSANE.

Dr. Frederick T. Simpson, of Hartford, said that psychiatrists, while studying all other aspects of insanity, have ignored the question of responsibiltiy. In the most recent textbooks the authors have included under insanity such conditions as neurasthenia, psychasthenia, hysteria, chronic alcoholism, etc. All the psychoses may be mild, moderate or severe in intensity. There are all degrees of departure from the normal type of mental soundness. It is, therefore, an absurdity for the law to require that a physician declare a man either totally sane and responsible or totally insane and irresponsible. The fact must be recognized that there are different degrees of impairment of responsibility, as there are different degrees of impairment of any and all of the other powers and capacities of the individual. Many patients belonging to these classes of mildly insane cannot be shut up in asylums. Since they are allowed to go at large, they must be held responsible for their conduct. In point of fact, with most insane persons, the knowledge of right and wrong is well preserved, and a large proportion of them are, in their outside social relations, well behaved. They can do wrong like other persons and usually acknowledge it or excuse it in the natural way. Punishment or discipline of any sort has the same deterrent effect upon them as upon sane persons. The physician has too often sought to rescue the accused on the ground of trivial disturbances of mental health. If the medical profession frankly acknowledge that the insane are by no means irresponsible and that the degree of responsibility is a matter to be determined by careful investigation of all the facts, the present irrational distinction made between medical and legal responsibility will be dropped, and the interests both of justice and of humanity will be furthered.

Dr. Whitefield N. Thompson, of Hartford, said that there was great need of some modification of the methods now in vogue, and that border-line cases were frequently subjected to unfair hazards. He thought that they should be examined by an impartial board of experts that should render an opinion to the presiding judge.

J. M. Keniston, of Middletown, said that too little attention was given to insanity and thought that too little restraint was placed on those considered "partially insane." He approved of the Fowler bill regulating expert testimony, but did not see why there should be a ten-year limit in cases of homicide. No homicidal or dangerously insane persons should be discharged unless recovery has been established beyond a doubt by a competent commission.

Dr. Simpson, closing, said that it seemed to him that the members of the Society generally were interested in having some reform in the method of calling medical experts in medico-legal cases of all kinds. He made a motion to the effect that a committee of five be appointed by the chair to endeavor to secure co-operative action with the Connecticut Bar Association to modify procedure in medico-legal cases. This matter came up at the next meeting of the House of Delegates, where the matter was referred to the Committee on Public Policy and Legislation.

HEMOLYSIS.

Dr. Harold Sears Arnold, of New Haven, reviewed some of the literature upon this subject and gave his experience with hemolysis in fifty-three tests at the New Haven Hospital. Of 13 malignant tumors, 12 gave positive hemolyses. Four benign tumors gave negative tests. Of 32 cases of acute and chronic disease, 1 only (a case of lobar pneumonia) gave a positive reaction. Arnold concludes that the test, while not infallible, is, nevertheless, a valuable aid in the diagnosis of malignant growths.

Dr. Charles J. Bartlett, of New Haven, said that he felt that the hemolytic test, if proved to be reliable, would offer a very delicate means of testing in cases of tumor. He referred to the discrepancies between the results obtained by Crile and Weil, the former having a much smaller percentage of positive results in cancer than the latter. According to Crile, the serum obtained immediately after drawing the blood did not contain the hemolytic substance to such an extent as it did twenty-four hours afterward. The reaction disappears in twelve to twenty-one days after the tumor has been removed. In cases of recurrence the reaction again becomes evident. When the operation is incomplete the reaction fails to disappear.

Dr. George Blumer said that two separate changes occur in the blood in carcinoma. One is the property that the serum acquires of dissolving red blood corpuscles; the other, the resistance that the red blood corpuscles acquire to the action of the serum. It is the former property that is being most investigated; the latter has not been investigated to anything like the same extent. He thought it important to discover whether any other of the other diseases in which the serum acquires the property of splitting blood corpuscles are likely to be confounded clinically with carcinoma. He thought that certain of these conditions are likely to be mistaken for neoplasms; for instance, it is difficult to differentiate between pernicious anemia and latent carcinoma of the stomach. It is also difficult to differentiate gummata of various parts from neoplasms.

Dr. Arnold, closing, said that Weil in his experiments had used only one control, whereas Crile had used two or three.

THE INFLUENCE OF THE THOUGHTS AND EMOTIONS IN THE CAUSATION OF DISEASE.

Dr. Samuel D. Gilbert, of New Haven, treated the subject from the standpoint of the general medical practitioner and said that our environment is chiefly responsible for the prominence of mental conditions as a factor in the etiology of disease. This begins at birth; hence the importance of right influences exercised by nurse and parents at this early period, as a healthy and normal child makes a healthy and sane man or woman. Three of the most common emotions are fear, worry and selfishness. Fear is a direct cause of paralysis agitans, and the doctor, by making too frequent and minute examinations of patients with chronic diseases, will sometimes be responsible for the production of this emotion.

Dr. Frank K. Hallock, of Cromwell, confined his remarks principally to the pathogenesis of a functional disorder of psychic origin, such as indigestion. He also said that the mind had a great effect on the digestion.

Dr. Frederick T. Simpson, of Hartford, doubted whether thoughts and emotions had any relation to any of the great plagues of humanity or any of the organic diseases, as these will occur in persons free from troublesome thoughts and emotions.

Dr. James Keniston, of Middletown, referred to cases of catatonia in which there is often a condition of stupor. One frequently finds sluggish circulation, cold extremities and edema of the legs, which are due to the initial phase of stupor. Functional disturbances of the heart are also often discovered, but no symptoms of cardiac or arterial disease are found. In such cases, however, the disturbance often becomes organic.

Dr. Edwin A. Down, of Hartford, remarked that from the old saying, " a healthy mind implies a healthy body," one may infer that an unhealthy mind would imply an unhealthy body. This, however, is far from being true, as many persons with unhealthy minds have extremely healthy bodies. He referred to patients who had been in asylums for forty to fifty years in perfect physical condition, and stated that when a patient's bodily health improves without a simultaneous improvement of his mind, his mental state is usually hopeless.

THE PHYSICIAN AS AN EDUCATOR IN SANITATION.

Dr. Frank E. Guild, of Windham, said that our present knowledge of the cause of disease is due to the comparatively recent discoveries of the nature and activities of bacteria. With this new knowledge the responsibility of the physician to the public has been greatly increased, especially when one considers that 50% of all maladies are extrinsic and preventable. Pure and cheap milk is a necessity, and how to get it is one of the problems that sanitarians are called upon to solve. How to prevent the contamination of rivers with urban sewage and that of suburban wells and springs, how to quarantine families safely, and how to disinfect rooms in such a manner as to render them safe for future habitation, are other problems to be solved.

Dr. Joseph H. Townsend, of New Haven, said that the introduction of public water supplies in many villages, together with the installation of water-closets and bathrooms, had resulted in the discharge of a large amount of waste material into cesspools and drains not sufficiently large to take care of it. He thought that this demanded the installation of sewage systems in these villages.

Dr. Edward K. Root, of Hartford, thought that the physician should be honest in informing patients of the fact that they were suffering from tuberculosis, as people are gradually coming to realize that tuberculosis is like other diseases, running its course, with majority of patients getting well and only a moderate percentage of those infected dying.

Dr. George Blumer referred to the fact that there are but four universities in this country that have a department of hygiene and a hygienic laboratory. He thought that before the medical profession attempts to educate the public they should educate medical students in sanitation.

Dr. Charles J. Bartlett called attention to the rôle of the common house fly in the spread of disease.

APPENDICITIS DURING PREGNANCY.

Dr. Otto G. Ramsay, of New Haven, said that there has been a slow change in general opinion as to the severity and fatality of appendicitis in pregnancy. There is no apparent relationship between pregnancy and a primary attack of appendicitis, although it is probable that pregnancy increases the liability to a second attack. Pregnancy increases the severity or fatality of suppurative cases. Operation is indicated in every case in which there is the least suspicion of suppuration.

Dr. Everett J. McKnight, of Hartford, said that although pregnancy is an exciting cause of gall-bladder disease, he did not believe this to be the case with appendicitis, unless there had been a previous attack. He thought, however, that pregnancy had a tendency to light up an old appendicitis. He also believed that in suppurative cases the severity of the attack was increased. That in simple cases with a low leucocytosis operation had better be deferred, he considered to be contrary to Dr. Ramsay's second conclusion that pregnancy increases the tendency to light up an old appendicitis. Unless a contra-indication exists, one should operate upon every case of appendicitis in the early months of pregnancy.

Dr. O. C. Smith stated that suppurative appendicitis in the later stages of pregnancy carried a mortality of 75%. The cases should be divided into the two classes of early and late. He approved of an operation for mild catarrhal appendicitis in the former, but not in the latter, as there was more danger of fringing on shock.

Dr. Ramsay, closing, said that he merely deferred operating until the acute symptoms had disappeared. If there were adhesions the operation would be less bloody.

(To be continued).

Book Reviews.

The Etiology and Nature of Cancerous and Other Growths. By W. T. Gibson, A.R.C.S. London: John Bale, Sons & Danielsson, Oxford House. 1909.

This book of 123 closely printed pages is an irritating book. Its table of contents (xxv chapters) is attractive, and one feels that he has a treat before him; but the author presents his views in such boggled and confused form that he can be understood only after close study and many re-readings. He begins with six pages of elaborate "Tables Showing the Occupational Incidence of Cancer, etc.," tables which are incomprehensible. We believe that the author has within him valuable thoughts, and we suggest that he rewrite his book six months hence, after having mastered T. Clifford Allbutt's invaluable "Notes on the Composition of Scientific Papers."

Conservative Gynecology and Electro-Therapeutics. A Practical Treatise on the Diseases of Women and Their Treatment by Electricity. By G. Betton Massey, M.D., Attending Surgeon to the American Oncologic Hospital, Philadelphia; Fellow and Ex-President of the American Electro-Therapeutic Association; Member of the American Medical Association, etc. Sixth edition, thoroughly revised. Royal octavo. Pp. 462. Illustrated with twelve original full-page chromo-lithographic plates and fifteen full-page half-tone plates of photographs taken from nature and numerous engravings in the text. Bound in extra cloth. Price, $4.00 net. Philadelphia: F. A. Davis Company, Publishers, 1914–1916 Cherry Street.

In this edition there is a new chapter on the principles of electro-chemical surgery in the removal of new growths and the use of high-frequency, high-potential currents in gynecology. The portion of the work relating to the treatment of cancer by fine mercury ions has been brought up to date, and the author shows his latest wall cabinet in a plate in the early part of the book.

Medical Inspection of Schools. By Luther Halsey Gulick, M.D., and Leonard P. Ayres. Russell Sage Foundation. New York Charities Publication Committee. 1908.

Most of the available matter of importance relative to school inspection in the chief cities and countries of the world is contained in this volume. The subject is discussed, and opinions of authorities given, both from the medical standpoint of community protection and the educational standpoint of growth. The work of the teacher in detecting the presence of eye troubles, defective hearing, nose and mouth defects and signs of contagious diseases, and that of the nurse in seeing that the instructions and recommendations of the school physician are followed, is clearly set forth. The book tells of the duties of the school physician, and includes suggestions and rules which have been adopted in America for his guidance, as well as copies of blanks and forms used in European and American cities.

Administrative problems are discussed, and a summary of the existing systems of medical inspection of schools is given; while the book contains the most extensive bibliography of the subject yet compiled.

Although the authors state that medical inspection of schools involves "the functions of both the departments of health and of education," and that any distinction between these two forces is a philosophic one, they conclude, in summing up the evidence presented, that "medical inspection for the detection of contagious diseases may well be a function of the board of health," but that "physical examinations for the detection of non-contagious defects should be conducted by the educational authorities, or at least with their full co-operation, because they are made for educational purposes," and that "the records of physical examinations must be constantly and intimately connected with school records and activities," but "do not need to be connected with other work of the board of health."

It seems to the reviewer that stress should have been laid upon the wisdom of having the administration of school inspection work rest upon a broad basis of public health, even though the actual controlling authority is the board of education. In Massachusetts, for example, the state which has the most far-reaching legislation of school inspection, some of the privileges of the school physician are open also to the state health officer with an unquestionable advantage to the school children, a fact not touched upon by the authors. The work of the fifteen state health officers, all of whom are physicians, who are under the supervision of the State Board of Health, is, among other things, to see that schoolrooms are maintained in a cleanly condition, that they are properly lighted, well ventilated and not overcrowded. With the training which these physicians have in factory hygiene, and their experience in examining minors in factories, it is to be expected that the results of their examinations of school buildings will throw much light upon the entire subject of school hygiene. Similarly, in England, although the central authority for the execution of the law is the board of education, said board advised at the time the legislation was enacted that medical officers should be made responsible for smooth and effectual administration and that they should be instructed to advise the educational committees. This fact, again, does not appear to have been emphasized.

The book is practical, and should be read and studied by school authorities, social workers and public health officers.

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SUMMER MEDICAL TEACHING.

During the past ten years there has been a decided increase of enthusiasm for summer teaching in medicine. This has been due to a variety of causes, among which the advance in special lines of practical investigation and the increasing facilities offered by medical schools and hospitals are conspicuous. Not only does the work in a special course of study give the practitioner much needed information, but it also affords him opportunity of securing a profitable vacation and respite from his own particular round of duties. The result of this has been that many of the more prominent medical schools are offering courses of great variety by excellent teachers during the months of summer, when not many years ago the doors of the schools were closed until the fall influx of students. That the system of summer instruction may be developed to a still higher degree is self-evident, following the plan in somewhat modified form of the German universities, which provide a summer semester under the same general conditions as a winter semester. In this country the desire for or supposed need of long vacations takes many of the older teachers away from work connected with summer teaching. Herein lies a peculiar opportunity, not always secured during the winter months, for younger teachers to manifest their capacity. The result is, or should be, an enthusiastic body of teachers which should attract a no less enthusiastic body of students. Certainly the facilities of a modern medical school are such that no season of the year should see a relaxation of its activity. Although the tendency sometimes observed of subordinating undergraduate to graduate departments should not be encouraged, there is no reason under proper management why these two distinct parts of medical instruction should be in any sense antagonistic or should lead to a subordination of the fundamental work of the medical school, which must always be the general training of physicians.

This summer at the Harvard Medical School a special attempt is being made to offer a wide range of attractive courses in somewhat more coherent manner than has hitherto been attained. To this end a series of lectures to all those taking summer courses, as well as to physicians in general, is being offered by the teachers of this school on a variety of fundamental medical topics, as indicated in a notice published in another column. This idea may well be further elaborated in the future so that men coming from distant places may not only have the opportunity of studying to advantage certain special departments of medicine, but may also have the means of seeing and hearing various men of prominence in allied fields.

It is, in general, a hopeful sign that physicians are realizing in increasing degree that to do full justice to their practical work it is essential that they should continue to renew and add to the knowledge acquired during their medical course. For this a summer school provides in greatest measure.

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THE SUMMER HYGIENE OF SCHOOL CHILDREN.

The closing of the public schools marks the end of a definite period in the hygiene of childhood. In the country and in the more rural suburbs the advent of vacation is an unalloyed advantage, but in the heart of the city its blessing is not unmitigated. Slum children have few resources beyond those to be found in the street, and the gutter from many points of view is not an ideal playground. The coming of hot weather and enteric disease complicate the condition and make the medical problem of summer in town one of special importance.

In our own city, and in many others, much is done to relieve the situation. The work of the Floating Hospital is of incalculable value, though its field of application is unfortunately very limited. Public parks and bath houses do much to improve and maintain the health of the community, especially of its children. College settlements and other philanthropic institutions continue their efforts to teach the poor how to live. But all these agencies, however beneficial, fail to make up in summer for the removal of that most salutary civilizing factor, school-discipline.

The school is not only the bulwark of the country; it is the self-defense of our native race against obliteration. If, as seems probably true, we New England Yankees must look forward to ultimate extinction, we must strive as far as possible to improve the physical and intellectual status of the supplanters who are to inherit our institutions, activities and ideals. In the crude material from which we are to make the citizens and the civilization of the future are the results of centuries of wrong living and hereditary disease, which it is our interest to eradicate. We have begun to recognize that the school is the place to start this process. The routine of school-life is a valuable influence. The hygiene of school buildings, in its contrast to that of the tenement, has the benefit of example. Compulsory vaccination, the medical examination of school children, the supervision of athletics and direct teaching of hygiene and physiology are some of the more definite means by which we aim to attain our end.

In summer, these agencies are largely suspended, and ground gained is inevitably lost in part; whether it were possible, by a system of summer schools, to remedy this is an open question. Medically it would seem that an extension of the systematic inspection of children through July and August might serve to bridge the gap and maintain a continuity of hygienic influence. In this way the school, really our most valuable clinic and laboratory, might be converted into an out-patient department, and the medical supervision and education of school children made, as it deserves to be, one of the highest practical duties and services of the profession to mankind.

ABNORMAL DENTAL CONDITIONS.

Since the first systematic examination of the general physical condition of the public school children of New York in 1905, when it was found that malnutrition was the most common defect, it has frequently been asserted that bad teeth were a prominent cause of this. To find out the extent to which the children were suffering from abnormal dental conditions, an investigation was begun in May and has just been completed. The work was carried on under the combined auspices of the Health Department, the New York Dental Council, the Bureau of Municipal Research, the Children's Aid Society and the Junior League. Five hundred pupils, ranging from fourteen to sixteen years of age, representing different nationalities, and taken from all parts of the city, were examined by Dr. Wallace Van Winkle, under the supervision of Dr. Baker, of the Bureau of Child Hygiene, and Dr. Arthur Merritt, in charge of the dental clinic of the industrial school of the Children's Aid Society in West Fifty-third Street. Of the 500, only 14 were found with teeth in good condition, and altogether, there were 2,808 unsound teeth among the other 486 children. The girls' mouths generally were in worse condition than the boys'. Only 25 out of the 500 children had had any dental treatment except extraction; only 41 teeth had been filled, and even in most of these instances the work done was unsatisfactory. The report also includes an estimate of the expense which would be necessary to remedy the dental defects of the public school children of New York, as calculated from the conditions found in these five hundred.

As a result of this investigation, the findings of which were to a considerable extent anticipated, action in the matter has already been planned by several agencies. The New York Dental Council has appointed an executive committee, which includes Dr. John W. Brannan, president of the board of trustees of Bellevue and Allied Hospitals, and Dr. William Allen, of the Bureau of Municipal Research, to enlist the co-operation of hospitals, dispensaries, school officials and various philanthropic agencies in arranging a comprehensive educational program to prevent similar conditions in the future and in insuring treatment for the thousands of neglected cases. In Manhattan the Children's Aid Society, which has for some time maintained dental clinics in two of its industrial schools, has offered to equip similar clinics in fifteen of its schools if dentists can be found who will volunteer their services. The Committee on the Physical Welfare of School Children, the Association for Improving the Condition of the Poor, the Charity Organization Society and United Hebrew Charities have also agreed to take active measures to remedy the existing conditions. Bellevue Hospital has introduced free dental treatment for the patients in its wards and also for those in its floating tuberculosis hospital; and the teeth of every child are examined on admission. The instructions in the care of the teeth given are on the plan of the "tooth-brush parties" now in vogue in some of the English schools. The dental experiment inaugurated at Bellevue has proved so successful that Dr. Brannan is endeavoring to have similar treatment established at the Gouverneur, Harlem and Fordham hospitals, which are under the same jurisdiction. In Brooklyn, Dr. William I. Nichols, secretary of the Bureau of Charities, has offered to pay for the work of al children in the borough whose families are unable to meet the cost, and to find dentists to serve at reasonable prices for others.

MEDICAL NOTES.

Heart, a New Publication. — A new special medical journal, with the title, *Heart, A Journal for the Study of the Circulation*, has been begun, edited by Dr. Thomas Lewis and published in London. Many well-known names are given as collaborators. The object of the journal is to bring together the increasing literature on the circulation, and, therefore, its sole aim will be to chronicle the progress of knowledge of the mechanism by which the blood circulates.

BOSTON AND NEW ENGLAND.

Acute Infectious Diseases in Boston. — For the week ending at noon, June 29, 1909, there were reported to the Board of Health of Boston the following cases of acute infectious diseases: Diphtheria 31, scarlatina 22, typhoid fever 7, measles 80, smallpox 0, tuberculosis 57.

The death-rate of the reported deaths for the week ending June 29, 1909, was 16.57.

Boston Mortality Statistics. — The total number of deaths reported to the Board of Health for the week ending Saturday, noon, June 26, 1909, was 190, against 168 the corresponding week of last year, showing an increase of 22 deaths and making the death-rate for the week 15.90. Of this number 102 were males and 88 were females; 182 were white and 8 colored; 120 were born in the United States, 63 in foreign countries and 7 unknown; 46 were of American parentage, 109 of foreign parentage and 35 unknown. The number of cases and deaths from infectious diseases reported this week is as follows: Diphtheria, 39 cases and 2 deaths; scarlatina, 33 cases and 1 death; typhoid fever, 6 cases and 1 death; measles, 75 cases and 1 death; tuberculosis, 54 cases and 14 deaths; smallpox, 0 cases and 0 deaths. The deaths from pneumonia were 13, whooping cough 1, heart disease 26, bronchitis 1 and marasmus 2. There were 14 deaths from violent causes. The number of children who died under one year was 36; the number under five years 47. The number of persons who died over sixty years of age was 60. The deaths in public institutions were 76.

Of the above the following were non-residents: Consumption, 3 cases and 1 death; diphtheria, 1 case; measles, 4 cases; scarlet fever, 1 case; typhoid fever, 1 death.

Deducting deaths of non-residents, the total is 160. The corrected death-rate is then 13.39.

Purchases of Land by Massachusetts General Hospital. — The Massachusetts General Hospital has secured practically an acre of land adjoining and in the immediate vicinity of its present property. Much of this land is covered with cheap wooden structures which will probably give place to others of more substantial character. The acquisition of this land by the hospital will undoubtedly lead to its very great improvement.

Field Day, Boston City Hospital. — On Tuesday, June 22, the annual field day of the Boston City Hospital was held at the Riverside Recreation Grounds on the Charles River, a few miles out of the city. The events of the day were a baseball game between the alumni and the house officers, field events of varied character, all terminated by a dinner. The success of this meeting emphasizes the desirability of such yearly festivities.

President Emeritus C. W. Eliot, an Honorary Doctor of Medicine. — At the commencement exercises of Harvard University, held June 30, in addition to a degree of LL.D., former President Eliot was given an honorary M.D. In bestowing this unusual honor, President Lowell stated that Dr. Eliot had accomplished more for the progress of medical education in this country than any other living man, and that "not in its buildings alone, but also in the instruction and research within its walls, he found our Medical School brick and had left it marble." Unbounded enthusiasm prevailed during the bestowal of these degrees.

NEW YORK.

Hewitt Will Settled. — It has just been announced that a settlement has been effected in the suit to break the will of the late Frederick Charles Hewitt, of Owego, N. Y., who left an estate of over $5,000,000, $2,000,000 of which was bequeathed to the New York Post-Graduate Medical School and Hospital. The objection to the probate of the will has now been withdrawn, as the public institutions which were the chief legatees have agreed to an arrangement by which the relatives of the deceased, who by the terms of the will are left but $310,000, shall share in the estate to the extent of about $1,300,000.

A Hygiene Mission. — Intercession Chapel of Trinity parish, which is located at Washington Heights, has organized for the summer a hygiene mission on a neighborhood scale. There will be no clinic in the ordinary sense, but three young physicians and two trained nurses have been engaged to look after ailing children among the poor of the district. The hall of the parish house is to be used for kindergarten and other educational work, and a vacant lot in the rear of the church has been filled with sea-sand and provided with swings for the children.

Central Board of Ambulance Service. — The Central Board of Ambulance Service, to have the direction of the ambulance service throughout the city, which was authorized by the last legislature, has been completed by the appointment by the mayor of two citizen members. These are Nathan Bijier, who is well known in charity work and who was largely instrumental in securing the passage of the ambulance bill, and Harold I. Pratt, a banker, who is a prominent member of the governing board of the Brooklyn Hospital. The *ex-officio* members of the ambulance board are Dr. John W. Brannan, president of the board of trustees of Bellevue and Allied Hospitals, Police Commissioner Bingham, and Commissioner of Charities Hebbard.

Trained Nurses under Direction of Health Department. — The Association for the Improvement of the Condition of the Poor has assigned four trained nurses from the Junior Sea Breeze Home, at the foot of East 84th Street, to act as visiting nurses, under the direction of the Health Department, in the portion of the city lying between Fifty-fifth and Seventy-second streets. This is in the line of the co-operation between the official and the private health and philanthropic agencies as agreed upon by the Conference on the Summer Care of Babies. The Health Department announces that sixty-eight public and private institutions are now engaged in this co-operative summer work.

Work of People's University Extension Society. — During the past year the People's University Extension Society has maintained 96 free classes in manual and domestic training, with an enrollment of about nine hundred crippled children. The work among this unfortunate class also included twenty-three classes for physical training, with an enrollment of over three hundred and fifty members, and, in addition, the society conducted 24 free classes for mentally defective children. Still another feature of the work has been the instruction of crippled and blind men and women from sixty to eighty years old in connection with the classes for manual training, and some of these are reported as having done very good work. One of the largest departments carried on by the society has been the providing of free lectures by physicians for meetings of tenement-house mothers. The president of the society is Dr. Rossiter Johnson.

Current Literature.

Medical Record.

May 8, 1909.

1. Robinson, B. *The Point of View in Medicine.*
2. *Jacoby, J. R. *The Re-educational Treatment of Locomotor Ataxia.*
3. Rosenwasser, C. A. *A Plea for the Establishment of Hospitals for the Rational Treatment of Inebriates.*
4. *Hubst, H. *Examination of the Lungs by Roentgen Rays.*
5. Biklé, P. H. *The Relation between Aneurysm of the Aorta and Tabes Dorsalis; with the Report of a Case.*
6. *Stern, S. *Eczema.*
7. Golley, F. B. *Two Cases of Cancer Treated with Trypsin. Supplementary Report.*
8. Northrup, W. P. *Wholesale Baby Washer.*

2. The article contains a summary of the methods of treatment and the results in a series of cases treated by Frenkel's re-educational method.

4. Hubst presents many arguments in favor of the necessity of x-ray examination of the lungs.

6. Stern's article deals with the treatment of eczema. He outlines many methods of treatment, among others the treatment of chronic eczema with x-rays. [W. B. R.]

May 15, 1909

1. *Satterthwaite, T. E. *Newer Conceptions of Cardiac Arrhythmias and Their Treatment.*
2. Moseley, E. L. *The Cause of Trembles and Milk Sickness.*
3. *Smith, H. E. *X-Ray Diagnosis.*
4. Stow, B. *Cerebral Hemorrhage Following Arteriosclerotic Granular Nephritis, Mistaken for Cerebral Embolism.*
5. Pels, I. R. *A Note on the Benedict Method of the Quantitative Estimations of Sugar in the Urine.*

1. The article contains a discussion of the newer methods of diagnosis of cardiac conditions. It contains polygraphic tracings to illustrate the different forms of arrhythmia, as "extra systole" of different types, "alternating pulse," "nodal arrhythmia," and "heart block." It goes rather superficially into the physiology and pathology of these conditions, with some general advice as to treatment.

3. The author recommends for doing the test for sugar in the urine a method which is very simple and accurate in his hands. He uses the solutions recommended by Benedict in his method, adding to each 10 ccm. of the copper and alkaline mixture about 25 ccm. of a 35% solution of potassio-sulpho-cyanate. The end result is very easy to read. [W. B. R.]

May 22, 1909.

1. *Meltzer, S. J. *The Neurogenic and Myogenic Theories and the Modern Classification and Interpretation of Cardiac Arrhythmias.*
2. Stowell, W. L. *Infant Mortality. Comparison of the Past and Present.*
3. Dessauer, F. *Instantaneous Radiography in Less than One Hundredth Second: A New Method of Radiography.*
4. Dawbarn, R. H. M. *Economy in Major Anesthesia; More Particularly as to Ethyl Chloride.*
5. Wood, P. A. *Smoked Torics — A Menace to Health.*

1. Meltzer's article contains a very interesting and full account of the development of the modern ideas about the action of the heart. He discusses at length the neurogenic and myogenic theories of cardiac control, and the physiologic and anatomic findings on which the two theories are based. He describes the different kinds of cardiac arrhythmias. His paper is recommended as a clear statement of the latest views on the subject of the heart's action. [W. B. R.]

May 29, 1909.

1. Janeway, E. G. *The Etiology of Pain.*
2. *Carter, W. W. *Hay Fever and Other Rhinological Causes of Asthma.*
3. Cutter, C. W. *Report of a Case of Myelogenous Leukemia.*

4. Crothers, T. D. *The Future of the Alcohol Problem.*
5. Boldt, H. J. *The Administration of Anesthesia.*

2. The author discusses the different conditions which may be confounded with true hay fever, as hyperesthetic rhinitis, spasmodic asthma, and insists on the importance of connection of nasal conditions which may have an etiologic bearing on the disease. Whereas in true hay fever the correction of the nasal conditions may be only palliative, in pseudo hay fever this may result in a cure. In true hay fever known palliative measures, if judiciously applied, will, in the majority of cases, carry the patient through the critical period in a state of comparative comfort.

The author believes that true hay fever and hay asthma can be cured only by correcting the basic nutritive fault that is responsible for the susceptibility to the pollen toxin, and this can be accomplished only by a complete reform in the personal hygiene of the patient before the affection has reached the stage of chronicity. [W. B. R.]

June 5, 1909.

1. Kiliani, O. *Alcohol Injections in Neuralgias, Especially Tic Douloureux.*
2. *Heckmann, J. *Etiology of Arthritis Deformans.*
3. Dukeman, W. H. *A Little Abdominal Surgery by the Family Physician; with Report of My First Fifty Cases and End Results.*
4. Harrower, H. R. *A Study of the Urinary Acidity and Its Relations.*
5. Robinson, A. A. *Adams-Stokes Syndrome (Heart Block).*
6. Squier, J. B. *The Present Status of Prostatectomy.*

2. The author analyzes a number of cases of monarticular and polyarticular arthritis deformans (proliferating arthritis) to show the frequency of syphilis in the etiology of these cases. He bases his diagnosis of syphilis not only on the history and physical signs, where obtainable, but also on the Wasserman reaction and Noguchi's tests. [W. B. R.]

New York Medical Journal.

June 12, 1909.

1. Wiley, H. W. *Diet as a Prophylactic and Therapeutic.*
2. Shoemaker, J. V. *Sodium, Lithium, Calcium and Magnesium and Their Action in the Treatment of Disease.*
3. Wright, B. L. *The Treatment of Tuberculosis by the Administration of Mercury.*
4. Croftan, A. C. *Notes on an Increased Urinary Calcium Excretion in Tuberculosis.*
5. Polak, J. O. *Acute Gastric Dilatation as a Post-Operative Complication.*
6. *Keown, J. A. *The Treatment of Pneumonia with Special Reference to the Use of Quinine.*
7. Erdmann, J. F. *Ureteral Calculi.*
8. Turck, R. C. *Hysterosalpingostomy.*
9. Mitchell, O. W. H. *Pancreatitis, Chronic and Acute, from Obstruction of the Duct by a Calculus at the Ampulla of Vater.*
10. Ogilvy, C. *Symptoms and Diagnosis of So-Called Chronic Rheumatism.*

6. Keown believes that the severity of an attack of pneumonia depends upon the amount of consolidation, because the larger the extent of solid lung the greater the number of germs and the absorption of toxins from the same. In a small number of cases he has used generous doses of quinine which theoretically should prevent or limit consolidation by its paralyzing effect on the white cells, thus preventing transudation. His results are not striking, but deserve the attention of other observers, which he requests. [L. D. C.]

The Journal of the American Medical Association.

June 19, 1909.

1. Gorgas, W. C. *The Conquest of the Tropics for the White Race. President's Address at the Sixth Annual Session of the American Medical Association.*
2. Pusey, W. A. *Teaching of Dermatology. Dermatology and the Pharmacopeia. Chairman's Address on Cutaneous Medicine and Surgery.*
3. *Bullock, E. C. *Twelve Years of Pulmonary Tuberculosis Treatment in the West.*
4. Pottenger, T. E. *Phagocytosis in Relation to Arneth's Classification of Neutrophiles.*
5. *Sill, E. M. *A Study of Malnutrition in the School Child.*
6. Jackson, E. *Scissors-Magnet Extraction of Iron from the Eyeball.*
7. *Hudson-Makuen, G. *The Faucial Tonsils and the Teeth.*
8. *Hanes, G. S. *Amebic Dysentery.*
9. Duane, A. *The Accomodation and Donder's Curve, and the Need of Revising Our Ideas Regarding Them. An Experimental Study.*

3. Bullock quotes Trudeau who says, "The more attention you give to the tuberculosis problem, the more it grows in size," and then he emphasizes the fact that we in this country are just realizing that a large per cent of our *so-called* "cures" have relapses and die. He settles the question of benefit by climate by comparing the results in well-conducted eastern sanatoria with those of more poorly conducted western sanatoria which excel because of their climatic advantages. The more advanced the case, the greater the need of climatic change. The high altitude raises the blood pressure, which is a desirable thing.

5. Sill, in making a study of 210 cases of malnutrition in school children, found that 175 drank either tea or coffee at least once a day, and about 25% had it three times a day. The houses in which they lived allowed on an average 600 cubic feet of air per capita. These children all stayed up one to four hours longer than they should at night. Baths were given rarely; 86% had dental caries; 90% had adenoids. He urges instruction of mothers in what foods are most nutritious as a remedy.

7. Hudson-Makuen describes in detail the close interrelation between diseased conditions of the tonsils and teeth, and states that we cannot cure mouth breathing and its resultant disastrous effects in all cases by merely removing tonsils and adenoids. When there are dental irregularities coincident, these too must be regulated. Tonsils cause dental deformity by pressure on the molars. Old degenerated tonsils should be removed though they are no longer active.

8. Hanes is confident that amebæ are indigenous to our own country, but are situated in a less favorable environment and hence less in number and vigor. In making a diagnosis he does not rely on the mere examination of stools, but scrapes the ulcers of the rectum with a curette, for in the ulcers the amebæ are most numerous. The microscope stage should be warm to make detection easy. Patients with anemia and emaciation are generally thought to have cancer or tuberculosis unless careful examination of stools or scrapings is made. In treatment he believes in a liberal rather than a restricted diet, that ipecacuanha has no equal by mouth, and gives undiluted coal oil as an injection in amounts up to one quart. Where the ulcers are at the cecum appendicostomy is advised. [E. H. R.]

Surgery, Gynecology and Obstetrics.

June, 1909.

1. Bishop, E. S. *Some Points in Connection with Gastric Surgery.*
2. *Reynolds, E., and Lovett, R. W. *The Influence of Corsets and High-Heeled Shoes on the Symptoms of Pelvic and Static Disorders.*
3. *Webster, J. C. *The Prevention of Adhesions in Abdominal Surgery.*
4. Byford, H. T. *The Significance of Peritoneal Adhesions following Operations.*
5. McArthur, L. L. *Local Anesthesia.*
6. Feiss, H. O. *The Radical Treatment of Deformity Following an Old Fracture of the Lower Epiphysis of the Tibia.*

SYMPOSIUM ON SURGERY OF THE THYROID GLAND.

7. *Wilson, L. B. *The Pathological Relationship of Exophthalmic and Simple Goiter.*
8. *Mayo, C. H. *The Operative Treatment of Hyperthyroidism.*
9. *Carrel, A. *Thyroid Gland and Vascular Surgery.*
10. *McKelvy, J. P. *The Thyroids and Parathyroids.*
11. *Williams, J. W. *Frequency, Etiology and Practical Significance of Contractions of the Pelvic Outlet.*

2. Reynolds and Lovett sum up their article on the relations of corsets and high-heeled shoes to pelvic and static disorders as follows: We find no evidence that a proper corset induces malposition of the normal body; on the contrary, we have found that it tended to induce a more normal position when abnormal position exists. We have found that high-heeled shoes work in much the same way as good corsets and tend to modify desirably the malposition induced by bad corsets. We are inclined to believe that the most frequent cause of static backache is to be found in a center of gravity too far forward, thus inducing excessive muscular effort in the lower back to maintain equilibrium, and the relief of such backache by proper corsets and occasionally by high-heeled shoes is explained by their influence on the position of the center of gravity.

3. Webster, discussing the prevention of adhesions in abdominal surgery, suggests that small tags of separated adhesions should be cauterized so as to form a black char. Other small areas may be covered with peritoneum or omental grafts.

7. Wilson's paper on simple and exophthalmic goiter is beautifully illustrated with most excellent photographs and photomicrographs of a very illustrative group of cases.

8. Mayo reviews the symptoms of hyperthyroidism and emphasizes the following. The most active condition of hyperthyroidism does not necessarily require the presence of a large tumor or goiter, as after the gland has doubled its size the greater increase usually consists of colloid. The essential feature of the condition is that the whole gland, or only a part, shows an overactivity from cell changes. The goiter may exist for a long time as a simple colloid before overactivity begins. Unilateral exophthalmic goiter is usually that variety caused by the stimulus of an encapsulated adenoma growing in the lobe of the thyroid which later causes pressure absorption, and in which all the symptoms occur except the proptosis. In patients in whom a thyroidectomy is not justifiable, the ligation of the superior thyroid arteries and veins on both sides often brings on a rapid cure. This is often most advisable as a preliminary procedure.

9. Carrel believes that we can greatly influence the secretion of the thyroid by diminishing or increasing its blood supply, but he believes this is going best to be done by transplantation of the thyroid rather than by exact diminution of the blood supply by ligation of vessels.

10. McKelvy publishes a very complete article on the thyroid and parathyroids. The substance of the latest views on parathyroids is as follows: They are inconstant in number and position; they vary from four to eight in number. Tetany results from their complete removal, either with or without the removal of the thyroid. There is little scientific knowledge of the real significance of the glands and their mode of functioning. They are presumably independent structures, but with the thyroid part of one physiologic unit having in common the same general relationship and interaction common to all the ductless glands. They have special control of body metabolism.

4. Williams, discussing contractions of the pelvic outlet, points out that tunnel-shaped pelves frequently give rise to more or less serious dystocia, are an important factor in the causation of deep perineal tears and occasionally convert what promise to be easy low forceps deliveries into most difficult and dangerous operations. Typical funnel pelves, in which the usual external measurements are normal, while the distance between the ischial tuberosities measures 8 cm. or less, were observed in 6.92% of 1,200 consecutive pregnant women. These cases of funnel pelves constitute 55.7% of all cases of pelvic deformity in white women. They are apparently due to the presence of six vertebræ in the sacrum, the so-called high assimilation which allows the lower portions of the innominate bones to approach one another. Most cases terminate labor favorably. [E. H. R.]

Deutsche Medizinische Wochenschrift. No. 20.
May 20, 1909.

1. Chvostek, F. *Diagnosis and Treatment of Tetany.* (Conclusion.)
2. *Alexander, W. *Bismuth Poisoning and a Non-Poisonous Substitute for Bismuth in Roentgen Photography.*
3 *Ehrmann, R., and Lederer, R. *The Condition of the Pancreas in Achylia and Anacidity of the Stomach.*
4. Schneidemühl, G. *Some of the Opinions in Regard to Flesh Food as a Cause of Sickness in Old and Recent Times.*
5. Rommeler. *Paratyphoid Bacilli in the Transport Ice of Sea Fish.*
6. Doebbelin. *An Incident in the Radical Operation of an Inguinal Hernia according to Kocher's Method.*
7. Herzenberg, R. *An Essay on True Adenoma of the Navel.*
8. Lehmann, R. *Some Observations on a Case of Unilateral Exophthalmos.*
9. Senator, M. *Treatment of Laryngeal Tuberculosis with Marmorek's Antitubercular Serum.*
10. Hartung, E. *Apparatus for Making More Easy the Cutting and the Making of Windows in Plaster Bandages.*

2. Alexander mentions the evil results that have occurred from the use of bismuth in x-ray work and in therapeutic doses. He considers the poison due to the bismuth and not solely to the reduction of the nitrates to nitrites. The carbonate of bismuth also acts as a poison at times. In place of this he offers a new substance called diaphanit, which is an insoluble salt of iron and which acts in a similar manner in regard to x-ray work and is non-poisonous.

3. Ehrmann and Lederer conclude a paper in regard to the relation between the gastric juice and the pancreatic juice, based on a human case and some animal work, with the following results:

With a lack or diminution of acidity in the stomach, the function of the pancreas may be even increased over the normal. Therefore, the stimulating effect on the pancreas secretion is not HCl. Some facts in regard to the pancreas can be obtained by the oil test meal, but not quantitative facts. [C. F., Jr.]

Münchener Medizinische Wochenschrift. No. 22.
June 1, 1909.

1. *Erb, W. *"Phrenocardia" as Described by Max Herz.*
2. Böhm, A. *An Immune Opsonin in Tuberculosis.* (To be concluded.)
3. *Fleischer. *Peripheral Brownish-Green Coloration of the Cornea as a Symptom of a Peculiar General Disease.*
4. Bayer, H. *Two Unusual Cases of Foreign Body in a Bronchus.*
5. Berger, H. *Use of Morning-Milk for Infants.*
6. Knoop, C. *Dystocia following Vaginal Fixation.*
7. Dölger, R. *New Methods of Testing the Function of the Ear.*
8. Sigwart, W. *The Prognostic Significance of Hemolysis of Streptococci.*
9. Kothe, R. *Method of Investigating the Neutrophilic Blood Picture.*
10. Kayser, H. *Ways in which Typhoid Spreads in a City.* (Concluded.)
11. Oppenheim, H., and Krause, F. *Contributions to Neurosurgery.* (Concluded.)
12. Reinach, and Grimm. *Activity of the "Princess Arnulf House for Infants," Munich, 1908.*

1. "Phrenocardia" as described by Herz, is a paroxysmal cardiac neurosis attributed by him to sexual causes. Although very variable in details, the condition is characterized by these cardinal symptoms, namely, pain in the region of the heart, changes in the respiration and palpitation. The writer reports a series of cases of this type drawn from his own office records. In the majority of these cases a definite relation had been already discovered between the sexual life and the attacks of phrenocardia, although the records were written before Herz called attention to the etiologic importance of this relation. Erb, therefore, is inclined to accept provisionally the views of Herz on this subject.

3. Fleischer reports together four cases, all showing the combination of a peculiar ring of brownish pigment on the cornea and a severe disease of the central nervous system. In every case a diagnosis had been made of multiple

sclerosis or pseudosclerosis. Grave doubt was thrown at autopsy on this diagnosis in two of the cases, but the pathology of the condition remains little known. The writer believes that the disease will turn out to be different from any now recognized. [G. C. S.]

Berliner Klinische Wochenschrift. No. 23.
June 7, 1909.

1. *Bassenge, L. *Deformities of the Diaphragm.*
2. Unger, E. *Renal Transplantations.*
3. Borodenko, T. *Experimental Investigations of the Alimentary Disturbances in Pregnancy.*
4. *Roth, M. *The Importance and Reliability of Chromocystoscopy.*
5. *Meyer, K. *The Antiproteolytic Action of Blood-Serum and its Relations to Proteid Metabolism.*
6. Stern, C. *The Value of a Serum Color Reaction for the Demonstration of Syphilis.*
7. Scheier, M. *The Physiology of Voice and Speech.*
8. Brandt, L. *Surgical and Prosthetic Concealment of Defects of the Face and Palate.*
9. Hirschfeld, H. *Contributions to the Knowledge of Facial Paralysis.*
10. *Eckstein, H. *A Peculiar Case of Achondroplasia.*
11. Schenk, P. *The Teaching about Alcohol.*

1. Discussing his report of seven cases of various diaphragmatic affections, Bassenge points out that a Roentgenoscopic examination, desirable in all diseases of the thoracic organs, becomes a diagnostic and therapeutic necessity when the ordinary methods of investigation do not reveal the cause of the alleged complaint. Diaphragmatic adhesions, as soon as they lie outside the region of the pleural sinus, can be demonstrated only by x-ray. Transillumination is especially necessary when the immediate disability has been preceded by a pulmonary or cardiac affection, or a trauma of the thorax.

4. Roth reports four cases illustrating possibilities of error in chromocystoscopy, and expresses his belief that the indigo-carmine method is reliable only when combined with ureteral catheterization.

5. Meyer reports the results of antitrypsin determination in 200 cases of different disease, and in 4 rabbits after various intervals of experimental starvation, and concludes that it is often of diagnostic value in carcinoma and in Basedow's disease. He believes that antitrypsin increase is to be conceived as a true antibody formation; that pancreatic secretion and leucocytic ferment probably play only a subordinate part as antigens, but that proteolytic cell-ferments are the provokers of antibody formation, since cell-destruction as such, with liberation of autolytic ferment, does not lead to antitrypsin increase; and that the latter is, therefore, to be referred to a primary increase of proteolytic cell-ferments, as cause for which must be assumed metabolic poisons.

10. Under the name of achondroplasia Eckstein reports a case of fetal chondrodystrophy, and discusses its differential diagnosis from rachitis, osteopsathyrosis, osteogenesis imperfecta, infantile myxedema, and hereditary syphilis. [R. M. G.]

Die Therapie der Gegenwart.
May, 1909.

1. *Rothmann, M. *The Treatment of Cerebral Palsies.*
2. Daus, S. *An Historical and Critical Study of Artificial Pneumothorax in Phthisis.*
3. Wilenko, G. G. *The Action of Glutoric Acid in Phloridzin Diabetes.*
4. Baginsky, A. *Nervousness in Children.*
5. Busse, W. *New Methods of Anesthetizing.*

1. Rothmann is optimistic about the future of the treatment of hemiplegia and other cerebral palsies. For therapeusis he divides them into three stages: (1) The early stage of flaccid paralysis; (2) the rebuilding of motor function; (3) permanent paralysis with spasticity and contractures. In the early stage absolute rest, especially of the head, is essential. The affected limbs must be held in an easy position to avoid pressure on nerve trunks. During the second stage, passive motion, massage, galvanism are indicated. To prevent contractures, fixation by splints or other means is valuable. [L. D. C.]

Annales de l'Institut Pasteur.
April 25, 1909.

1. *Cohen. *Septicemic Cerebrospinal Meningitis.*
2. Bertrand, G., and Rozenband, M. *Researches on the Paralyzing Action Exerted by Certain Acids on Peroxydiastase.*
3. Pozerski, E. *Contribution to the Physiologic Study of Papaine.* (Continuation and conclusion.)

1. Cohen mentions three cases of meningitis with an accompanying general septicemia and seropurulent exudate in the various serous cavities. He recovered from these cases an organism which resembles Pfeiffer's bacillus in morphology, but not otherwise. His work, which is elaborate, then goes on to show by experimentation the difference between this organism and Pfeiffer's. Upon injection into rabbits Pfeiffer's bacillus will cause death from a general toxemia, whereas this bacillus will call forth a general septicemia with exudate in the serous cavities. It is possible also to vaccinate animals against this bacillus so that their sera will have some protective power. The serum of animals vaccinated against Pfeiffer's bacillus has no protective power against these organisms. Thus he concludes that he has isolated a bacillus which causes a special form of meningitis septicemia. The point of entrance of this organism, he believes, is through the respiratory tract. [C. F., Jr.]

Bulletino delle Scienze Mediche.
March, 1909.

1. *Coronedi, G. *Relations between Thyroid and Kidneys.*
2. *Zamboni, G. *The Effects of X-Rays in Infantile Leukemia.*

1. Coronedi presents a careful comparative experimental study of the action of diuretics and of thyroid extract on the kidney of a thyroidectomized dog, from which he concludes that the internal glandular thyroparathyroid secretion acts as a physiologic and nutritive stimulus to the kidney, and that the internal and external renal secretion acts as a physiologic stimulus to the thyroid.

2. Zamboni reports a case of infantile leukemia treated by x-rays, with systematic blood examinations, and concludes:

(1) In a case of myelogenous leukemia of early infancy, Röntgen therapy did not have a favorable result, and the only beneficial change was a reduction of the white cells and the myelocytes.

(2) In lymphatic leukemia the results were constantly unfavorable, and the disease cannot be delayed in its progresssive and fatal evolution.

(3) In myelogenous leukemia of later infancy the effects have been better, on account of the lesser gravity and greater slowness of the course.

(4) The reduction of the white cells to normal figures, and the reduction of the pathologic elements of the blood, is to be attributed to the hemolytic action of the rays. The persistence of such conditions may be attributed to a medullary deficiency, caused by the rays themselves.

(5) The diminution of red cells and of hemoglobin is attributable to the direct hemolyzing action of the rays.

(6) In infancy, therefore, it is preferable to use irradiations of slight penetration, limiting them to the splenic region, with brief sessions and at long intervals.

(7) In the various forms of infantile leukemia, Röntgen therapy can hardly be, as in splenic anemia, a radical remedy, but only a palliative agent, suitable to relieve some symptoms. [R. M. G.]

Obituary.

LOUIS THORNTON WILSON, M.D.

Dr. Louis Thornton Wilson was born in Webster, Mass., Jan. 15, 1876, the son of Louis N. and Ann G. Wilson. His father was born in England, came to this country in 1871, but went back to England to study in 1884, so that Louis spent a part of his boyhood in that country. Coming back to America in 1888, the family settled in Worcester, Mass., and it was from the Classical High School of that city that Louis entered Harvard College. He graduated with the class of 1899, having entered the Harvard Medical School the previous year. After taking his medical degree in 1902, he spent a year as surgical house-officer at the Children's Hospital in Boston, and two years at the Boston City Hospital in a similar capacity. During the last four years he has been engaged in the practice of his profession in Boston, and a little more than a year ago he was chosen to the surgical staff of the Boston City Hospital as its youngest member. His death occurred just as he was beginning to assert himself in his profession and his ability and fitness for his work were only beginning to be recognized.

He had a clean-cut and definite perception of the goals he was ambitious to reach, which, with his industry and love of the work, would have carried him far. He loved his world and the people in it as well as his work, and his joy in life was beautiful to see. Man, woman, child, animal, all recognized in him a sympathetic friend, and his eagerness to respond to every call upon him and to heal anybody who asked for his aid or sympathy became a matter-of-course to those who worked with him. He would have become a wise, conservative and loyal adviser for many people. He died an unselfish, sweet-souled, gentle-minded man whose place in the hearts of those who knew him well will never be filled.

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Miscellany.

HARVARD SUMMER SCHOOL OF MEDICINE.

A series of public lectures on various subjects will be given at the Harvard Medical School, Tuesdays and Fridays during July, and Tuesdays in August, at 5 p.m., in the Administration Building, Room 201. The list of lectures and their subjects is given below.

These lecures are open free of charge to all members of the Summer School of Medicine, and to the medical profession. No tickets are required.

1. Friday, July 2. Recent Work in Experimental Nephritis, and its Relation to Clinical Medicine. By Henry A. Christian, M.D., Dean of the Faculty of Medicine; Hersey Professor of the Theory and Practice of Physic; Physician-in-Chief to the Carney Hospital.
2. Tuesday, July 6. The Borderland of Medicine and Surgery. By Maurice H. Richardson, M.D., Moseley Professor of Surgery; Visiting Surgeon, Massachusetts General Hospital.
3. Friday, July 9. Ten Years' Progress in the Field of Metabolism. By Otto Folin, Ph.D., Associate Professor of Biological Chemistry.
4. Tuesday, July 13. The Influence of Emotions on Digestion. By Walter B. Cannon, M.D., George Higginson Professor of Physiology.
5. Friday, July 16. The Relation between Infectious and Organic Diseases. By William T. Councilman, M.D., LL.D., Shattuck Professor of Pathological Anatomy; Visiting Pathologist to the Boston City Hospital, etc.
6. Tuesday, July 20. The Advantages and Disadvantages of Lying to Patients. By Richard C. Cabot, M.D., Assistant Professor of Clinical Medicine; Assistant Visiting Physician, Massachusetts General Hospital.
7. Friday, July 23. A Review of the Chief Diagnostic Reflexes, Their Paths and Significance. (Illustrated.) By Elmer E. Southard, M.D., Assistant Professor of Neuropathology; Assistant Physician and Pathologist to the Danvers Insane Hospital.
8. Tuesday, July 27. The Examination of the Feces in Clinical Work. By Henry F. Hewes, M.D., Instructor in the Theory and Practice of Physic; Visiting Physician to Out-Patients, Massachusetts General Hospital.
9. Friday, July 30. The Filling of the Heart. By William T. Porter, M.D., LL.D., Professor of Comparative Physiology.
10. Tuesday, Aug. 3. The Modern Treatment of Diabetes. By Elliott P. Joslin, M.D., Instructor in the Theory and Practice of Physic; Visiting Physician to Out-Patients, Boston City Hospital.
11. Tuesday, Aug. 10. The Diagnosis and Treatment of the Various Forms of Chronic Arthritis. By Edwin A. Locke, M.D., Instructor in Clinical Medicine; Physician-in-Chief to the Boston Consumptives' Hospital; Second Assistant Visiting Physician, Boston City Hospital.
12. Tuesday, Aug. 17. Infant Feeding. What the Pediatric Department of the Harvard Medical School Believes and Teaches. By John Lovett Morse, M.D., Assistant Professor of Pediatrics; Associate Visiting Physician to the Children's Hospital; Assistant Physician to the Infants' Hospital; Visiting Physician to the Floating Hospital.
13. Tuesday, Aug. 24. Modern Hydrotherapy. By Joseph H. Pratt, M.D., Instructor in the Theory and Practice of Physic; Visiting Physician to Out-Patients, Massachusetts General Hospital.
14. Tuesday, Aug. 31. The Surgery of the Stomach. By Fred B. Lund, M.D., Lecturer on Surgery; Junior Visiting Surgeon, Boston City Hospital.

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Correspondence.

PARIS LETTER.

Cancer Fulguration.

[*From Our Special Correspondent.*]

Paris, June 15, 1909.

Mr. Editor: The fulguration treatment of cancer[1] has had the honors of a full discussion this spring before the German Society of Surgery and the Paris Society of Surgery, and the statement can, I think, be made with perfect fairness that both of these learned bodies have accorded it an *enterrement de première classe*.

It was in the summer of 1907 that a Dr. de Keating-Hart, of Marseilles, first attracted serious attention to this method through the Academy of Medicine and Dr. S. Pozzi. He then moved to Paris and began operations on a large scale, and since that time the learned societies, medical congresses and political and professional press have been kept busy with the stir created about this wonderful method, the long-looked-for cure for cancer.

It is superfluous to remark that at the present time anything in the way of treatment by electricity, if properly presented, has a serious chance of attracting public attention for at least a period; and there is no exaggeration in saying that this fulguration method was brought before the eye of the public with no ordinary talents, — not only brought there, but held there firmly in place! However, it would seem that it has finally gone entirely bankrupt and that the field is now fairly clear for the next enterprising gentleman with a sure cure for cancer. For not only has the sparking cure (*étincelage*) failed to fulfill its promises, but stock in Doyen's serum, the radium treatment and even the x-ray, — which had aroused such serious hopes, — seems to be distinctly on the fall. Doyen's serum really never got beyond its author's hands; and as regards the other two, — if we except superficial and cutaneous lesions, — their action has given rise to questions beyond end.

Thus Tuffier, in a report before the Academy of Medicine on May 25, in which he gave the results of five years' experience with recent methods in the treatment of cancer, — the three just mentioned, x-ray, radium and sparking, and hot air at 300 to 400° C., — confesses to a feeling of discouragement. No one of them, he says, can have the slightest pretension of *curing* cancer; all that can be asked of them is to carry our action against the cancer cell a little farther than is possible with the knife alone.

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[1] For a recent bibliograpy on the question v. Presse Méd., 1909, No. 19, p. 162, by Fredet.

The x-ray and radium have a direct effect on the cancer cell, but the former cannot penetrate more than 2 mm. in depth, beyond which point the neoplasm continues to live and develop; while radium, though penetrating deeper (as far as 2 cm.), is slower in its action.

Fulguration, on the other hand (*Blitzbehandlung* is the German term, which, as will be seen below, seems not inappropriate), has a totally different action. It has no effect on the cancer cell, but stimulates connective tissue growth. The connective cells proliferate and literally appear to swamp or stifle the remaining tumor fragments, but its action is quite superficial, not more than 2 mm. in depth.

Thermotherapy, as described above, gives results that are practically the same as those of fulguration.

So much for Tuffier's recent report.

Keating-Hart's method is no doubt known to you in its main lines: After removing a tumor surgically to its extreme apparent limits the operative field is thoroughly sparked (under anesthetic, of course, as the treatment is very painful) with an alternating current of high frequency and high tension. The *immediate* aim of this method is to destroy cancerous particles that have escaped the surgeon's knife; while the *final* purpose is to give rise to a lasting reaction on the part of the surrounding tissues, resulting in hyperplasia of the connective elements.

This method has been applied on a large scale, now, both on the part of the Paris surgeons, under the direct stimulus of Keating-Hart, and in Germany as well, where Czerny, of Heidelberg, appears to be the man who has given it most attention. In view of the length of time that has elapsed since the method was launched, — nearly two years, — it is fair to assume that the results now published, and the opinions formed, are based on an adequate accumulation of experience.

The question this spring first came up before the French Association for the Study of Cancer, at its meetings in February and March; but before proceeding to give a synopsis of the opinions there expressed by the leading Paris surgeons, it will be well to mention the principal effects of the fulguration process on a large surface from which a cancerous tumor has just been removed. These are: Immediate cessation of surface hemorrhage; serous exudation a few hours after application, sometimes so profuse as to traverse the dressings; superficial mortification of the fulgurated area; subsequent vigorous granulating, with rapid filling of the breach created; and lastly, early and noticeable analgesic results.

At the meeting of the French Cancer Association the views expressed were at any rate not unfavorable to the method, though critical in many details. Lucas-Championnière, strange to say, thought that the sparking process prevented recurrence; but this view does not seem to be in accordance with the experience of the other men by any manner of means. Pozzi was of opinion that, as the method precludes all reunion by first intention, it is preferable to apply it only in cases where the surgeon is not sure of being well on the safe side of removing the cancerous growth in its entirety. This view was vigorously opposed by Quénu and Delbet, both of whom took the ground that the profuse lymphorrhea sometimes produced by the sparking, and which has been claimed to be very septic, in fact hypertoxic, is due to the "mauling" of the operative area by the fulgurator, and not to the method itself, and that this discharge can perfectly well be reached by a better technic. For their own part, they think that if the method has any merits it ought to be applied to all cases, early or advanced, and not be used only as a method of exception in cases of such extension that immediate union of surfaces is not desired. Faure considered that it was too early yet to emit a final opinion as to the utility of the method; but from what he had been able to see he was disposed to a favorable view. He had not observed the lymphorrhea mentioned, and inclined towards the opinion of Quénu and Delbet as to its causation. Segond reported 20 cases in which the method had been applied. He confirmed its remarkable cicatrizing power and believed that the lymphorrhea only occurs with obese patients. He reported two cases, one of a cancer high up in the rectum and the other of the throat, in which the patients died a few hours after treatment, the former in the midst of intense suffering. The death of the second patient he attributed to fulguration of the pneumogastric nerve. We shall see farther on what is to be thought on this point. In his most favorable group of cases, eight in number, the fine cicatrices given by the method were soon followed by recurrence and rapid death. He had been particularly struck with the analgesic properties of the method, but had seen nothing that could in any way be called a cure produced by this treatment.

Such, expressed in brief terms, were the opinions advanced at the French Cancer Congress. We next come to the Berlin reunion of German surgeons.

The general opinion of the members seems to have been that recent physical means proposed for the treatment of cancer (fulguration and radium) have not fulfilled their promises. Czerny's views on fulguration, based on 72 cases treated during the preceding fifteen months, were substantially as follows: The method is useful, as it enables certain tumors to be removed which otherwise it would not be advisable to touch, but in some cases it appears to accelerate the progress of the disease, and it does not prevent recurrence. The palliative results derived from it are unquestionable, but only temporary.

The German surgeons appear to have given the method a trial on an extensive scale. Abel, of Berlin, reported on 30 cases, in an unfavorable sense: temporary assistance, rapid cicatrization, but very early recurrence of the malignant neoplasm.

Cohn, Berlin, 100 cases with no real success; the only advantage he sees in the method is its cicatrizing action.

Hofmeister, Stuttgart, 50 patients; in bad cases, temporary relief; in good cases the method is useless, and in the intermediary ones recurrence takes place as rapidly as with any other treatment.

So that there is no question but that the result of German experience, which has been quite extensive, is clearly adverse to fulguration as a treatment or cure of cancer, though the advantages of some of its accessory effects are freely recognized.

We now come to the detailed discussion held before the Paris Society of Surgery during April and May.

Nélaton reported a cancer of the rectum curetted and fulgurated, which thereupon began to progress in a most extraordinary fashion, with extensive gland involvement, so that when he decided to intervene radically he had all the trouble in the world to remove the growth in its entirety.

Sébileau reported twelve instances of cancer of the mouth, larynx and pharynx, no one of which derived any benefit from the method. On the contrary, two grew immediately worse and succumbed rapidly to bronchopneumonia, — which cases are to be compared with those of Segond and two to be related at the end of this letter.

Guinard (30 cases) thinks that it is as yet impossible to form a definite opinion, and that a long period, ten years (!), will be required before we shall know whether or not the method prevents recurrence.

Rochard claims that it is quite possible to fulgurate a wound in an aseptic manner, and that when this is done the lymphorrhea does not occur.

Legueu remarked that all of his cases (with one exception) recurred in a brief period and died a few months after treatment. He thinks that the method does not at all deserve the enthusiasm it has awakened, and that while it modifies cancerous tissue, as do other agents, it has neither specific nor curative action. He reported one disastrous case resulting from fulguration: A young girl of twenty, who died in twenty-four hours from a species of acute, fulminating toxemia. The case was one of sarcoma of the forearm.

Marion's view, on the other hand, was inclined to be more favorable. He has had no untoward results from the treatment, and appeared to wish to hold his opinion in abeyance for further experience.

Ricard has fulgurated 36 cases during the past six months, and describes the results as "evidently unfavorable." He speaks of septic accidents of the highest gravity, carrying the patients off in a few days or hours, produced by the method. Out of twelve breast cases, three died in this manner! A cancer of the tongue treated in this way also gave rise to extreme anxiety, although the patient did not actually succumb to the septicemia. He asserts that the method has no specific effect on cancer tissue, and has no preventive action on recurrence.

Souligoux, with only limited experience, 6 cases, has noted very rapid recurrence.

Faure is still inclined to give the method every chance. He has never seen the lymphorrhea, and speaks again of the rapid cicatrization, which is a point on which every one seems agreed.

Schwartz is also inclined to the affirmative. It is true that he had three rapid disasters, but these he lays rather to the cachectic condition of the patients than to the treatment itself. The other 12 of his 15 cases recovered without incident and are at present without recurrence. He proposes to continue to employ the method.

This discussion is in all probability not yet closed, and some of the most eminent surgeons of Paris have still to express their opinion, but enough has certainly been said to show the general trend of thought in this particular.

Personally, I have never seen the method applied. But a friend of mine, surgeon, was assistant at two operations in which fulguration was used by the originator of the method himself. One was a cancer of the mouth; as soon as the sparks began to fly, the patient's pulse ran up to a very rapid figure, respiration became labored, and the tableau was more or less that of section of the pneumogastric nerve, the patient dying within twenty-four hours. My friend looks on this man as to all intents and purposes *electrocuted*. The other was a cancer of the breast, and so soon as the sparks were applied to the axilla and began to affect the large nerve trunks the same trouble of pulse and breathing occurred, though the woman finally recovered. My friend's opinion is that he would not consent to the application of fulguration to any patient with whom the responsibility lay at his door. It will be seen from all the foregoing cases that cancers of the neck have given quite a number of disasters when fulgurated.

"Spectator."

SEXUALITY IN ITS MEDICAL RELATIONS.

Boston, June 29, 1909.

Mr. Editor: In your issue of June 10, on page 763, there occurs a brief notice of a paper by Marcinowski, published in the *Berliner klinische Wochenschrift* of May 17, and entitled "The Question of Infantile Sexuality." The notice reads, "Marcinowski presents the subtle but not altogether convincing course of analysis by which he referred the financial compunctions of a neurasthenic merchant to a precocious infantile sexual rivalry with his father. There seems doubtful profit to either patient or physician in such unravelings of the skein of psychic life." Being interested in the topic, and believing that the line of investigation and treatment to which this article was a contribution is one of great importance; struck also by the unusual circumstance that an article thought unworthy of publication should be thought worthy of unfavorable comment where so few receive any notice, I looked up the reference and found the record of a patient substantially cured of a distressing malady. One part of the criticism thus falls to the ground, and it must be assumed that the reviewer's real motive was to express his disapproval of the method used to bring about this favorable result. It is against this attitude that I wish to offer protest.

It may not be known to the majority of your readers that the brief record here in question takes its place in a literature which though relatively recent in this form, i. e., as regards the "unraveling of the skein of psychic life," is already relatively extensive. It is not to be judged of, therefore, as if it stood alone. We all dislike the disagreeable and have hitherto been glad of any excuse to turn away with disgust from books on sexual perversions, feeling that they treated of the rare disorders of miscreants and degenerates. But, fortunately, knowledge outweighs prejudice and the time is fast coming when any and every serious contribution to this great and neglected subject will be welcomed.

It is well known that the sexual instinct, in general terms, is responsible for much of the best that we prize in civilization, but it is only of late years that intelligent efforts have been successfully made to fill the gap between that which we prize and that which with misplaced prudery we have allowed ourselves to abhor and to ignore. And the result has been that a vast number and an immense variety of neuroses and psychoses have been misinterpreted and the sufferers from them treated with placebos and the cold-shoulder, or given symptomatic remedies when in fact the cause of their sorrow, physical or mental, was the eternal, the fierce yet often needless conflict between natural instincts and an artificial social organization striving blindly and often cruelly for the mastery. Hence repression, suppression and failure to recognize that we all are virtually in one boat with those "degenerates." In their grosser sorrows and misdeeds our milder mischances and delinquencies and our patient's depressions and obsessions are often to be seen in a new and truer light. We have languidly noted that this or that physical disorder was possibly of "nervous origin," but now, possibly, the way has been opened for the successful treatment, through this very "unraveling of the skein of psychic life," of disorders that cause more unadulterated misery than cancer or tuberculosis or perhaps than both combined. We pass through childhood and adolescence as in grave danger from an ambushed foe and are fortunate if we escape with a few wounds, perhaps unrecognized and received we know not whence. I object to the common-place warning to physicians not to engage in the attempt to unmask this foe, because, forsooth, the task has its unpleasant features, and look rather for your able assistance in making clear to untrained colleagues the real significance of one of the most important medical enterprises of modern days. Criticism founded on real knowledge and understanding, but only criticism of this sort, is welcome.

Very truly yours,
James J. Putnam, M.D.

SPECIAL HOSPITALS.

Mount Sinai Hospital,
New York, June 15, 1909.

Mr. Editor: It is a pity that representative medical journals do not oftener devote themselves to the discussion of such fundamental problems of medical organization and medical administration as you discussed in your recent editorial on "Special Hospitals." Medical societies commonly neglect these subjects, and even the American Hospital Association, which is dedicated to the promotion of hospital efficiency and which has its attention centered entirely upon questions of hospital administration, has up to the present time devoted only a very small part of its discussions to the problems of medical, as distinguished from those of purely business, administration.

I feel most strongly that effort should be made to prevent the further establishment of independent special hospitals, but if such effort is to be successful it will be necessary to arouse among general practitioners a livelier interest in and appreciation of the work of specialists, and especially a readier willingness to share with the latter, hospital privileges which are enjoyed (not always unselfishly) by the general surgeon and the internist.

It is no exaggeration to say that some of the patients who are admitted to special hospitals, where there are no adequate facilities for mixed consultations, do not find themselves in a wholly safe environment; and the same thing is true of a proportion of the patients admitted to so-called "general" hospitals, which are incomplete and are not really "general" because they lack a regular staff of *attending* specialists and are not organized or equipped to do full justice to the various needs of patients who rely on them for relief. The science of medicine flourishes best, and clinical practice reaches the highest efficiency, as you very properly declared, only where all branches of medical investigation and thought are represented by active and progressive workers, and it should be the constant aim of everybody who has to do with the administration of a general hospital to promote the development of his institution along the comprehensive lines suggested in your timely editorial. It is lamentable that in this whole broad land there is not, to-day, one fully organized, adequately staffed and properly equipped general hospital; and it is still more to be regretted that most hospital men do not even realize what is lacking.

Very truly yours,
S. S. Goldwater, M.D., *Superintendent.*

RECORD OF MORTALITY

FOR THE WEEK ENDING SATURDAY, JUNE 19, 1909.

CITIES.	Reported deaths in each.	Deaths under five years.	CITIES.	Reported deaths in each.	Deaths under five years.
New York	—	—	Waltham	6	2
Chicago	529	131	Pittsfield	9	4
Philadelphia	392	105	Brookline	5	—
St. Louis	—	—	Gloucester	—	—
Baltimore	127	34	North Adams	7	3
Cleveland	—	—	Northampton	7	0
Buffalo	—	—	Chicopee	7	4
Pittsburg	—	—	Medford	6	—
Cincinnati	—	—	Beverly	4	—
Milwaukee	—	—	Leominster	5	—
Washington	—	—	Hyde Park	3	—
Providence	—	—	Melrose	5	2
Boston	188	43	Newburyport	2	—
Worcester	38	9	Revere	5	—
Fall River	38	16	Westfield	3	—
Cambridge	32	11	Woburn	4	0
Lowell	29	9	Peabody	—	—
New Bedford	19	7	Marlboro	4	1
Lynn	18	2	Attleboro	2	1
Springfield	16	5	Adams	3	0
Lawrence	21	11	Clinton	2	0
Somerville	20	4	Gardner	5	—
Brockton	16	3	Milford	6	3
Holyoke	21	10	Watertown	0	—
Malden	8	1	Plymouth	—	—
Chelsea	6	1	Southbridge	3	1
Newton	7	1	Weymouth	3	0
Salem	11	1	Framingham	—	—
Haverhill	12	2	Wakefield	—	—
Fitchburg	13	3	Webster	—	—
Everett	3	—	Arlington	2	—
Quincy	—	—	Greenfield	2	—
Taunton	13	2			

CHANGES IN THE MEDICAL CORPS U. S. NAVY FOR THE WEEK ENDING JUNE 26, 1909.

WILLIAMS, R. B., surgeon. Commissioned surgeon from Dec. 11, 1908.

KENNEDY, R. M., surgeon. Ordered to command the Naval Hospital, San Juan, P. R., sailing from New York, N. Y., about July 24.

JOHNSON, M. K., surgeon. Detached from the Naval Training Station, Narragansett Bay, R. I., July 10, and ordered to the "South Dakota."

VON WEDEKIND, L. L., surgeon. Detached from the "South Dakota," and ordered home to await orders.

GROVE, W. B., surgeon. Detached from the "Minnesota," and ordered to the Naval Training Station, Narragansett Bay, R. I.

ALFRED, A. R., surgeon. Detached from the "Wolverine," and ordered to the "Minnesota."

DUNN, H. A., passed assistant surgeon. Detached from the "Independence," ordered home and granted leave for two months.

WEBB, U. R., passed assistant surgeon. Detached from the Naval Hospital, San Juan, P. R., and ordered home to wait orders.

MUNGER, C. B., assistant surgeon. Ordered to the Naval Training Station, San Francisco, Cal.

ROBNETT, A. H., assistant surgeon. Ordered to duty at the Naval Hospital, Boston, Mass.

STEADMAN, W. G., assistant surgeon. Detached from the "Louisiana," and ordered to continue treatment at the Naval Hospital, Norfolk, Va.

REED, A. U., assistant surgeon. Ordered to Naval Recruiting Station, Chattanooga, Tenn.

COHN, I. F., assistant surgeon. Ordered to duty at the Naval Hospital, Philadelphia, Pa.

WOODS, E. L., assistant surgeon. Ordered to duty at the Naval Hospital, Annapolis, Md.

OLSON, G. M., assistant surgeon. Ordered to the Naval Recruiting Station, Minneapolis, Minn.

SHIPPEN, L. P., assistant surgeon. Detached from the Naval Recruiting Station, Minneapolis, Minn., and ordered to the Navy Yard, Mare Island, Cal.

GILTNER, H. A., assistant surgeon. Detached from the Naval Training Station, San Francisco, Cal., and ordered to the "Glacier."

EYTINGE, E. O. J., assistant surgeon. Ordered to the "Wolverine."

RIKER, C. A., assistant surgeon. Detached from the "Franklin" and ordered to the "Louisiana."

THOMAS, G. E., acting assistant surgeon. Detached from duty at the Naval Hospital, Norfolk, Va., and ordered to the "Franklin."

WHEELER, L. H., passed assistant surgeon. Detached from the "Hancock," and ordered to the "Marietta," sailing from New York, N. Y., about June 24.

BRISTER, J. M., passed assistant surgeon. Detached from the "Milwaukee," and ordered to the "Independence."

JENNESS, B. F., passed assistant surgeon. Detached from the "Glacier," and ordered to the "Milwaukee," and to additional duty at the Naval Hospital, Puget Sound, Wash.

DU BOSE, W. R., medical inspector. Detached from command of the Naval Hospital, Yokohama, Japan, and ordered to Bureau of Medicine and Surgery, Navy Department.

PRYOR, J. C., surgeon. Ordered to command the Naval Hospital, Yokohama, Japan.

MORRIS, L., surgeon. Detached from the Naval Station, Cavite, P. I., and granted leave until Sept. 1.

WHITE, E. C., passed assistant surgeon. Detached from the Naval Recruiting Station, Cleveland, Ohio, and ordered to temporary duty at the Naval Torpedo Station, Narragansett Bay, R. I.

GILL, J. E., passed assistant surgeon. Ordered to Naval Recruiting Station, Cleveland, O.

FRENCH, G. R. W., acting assistant surgeon. Appointed acting assistant surgeon from June 18, 1909.

WILSON, H. D., surgeon. Detached from the "Illinois," and ordered to continue other duties.

IRVINE, W. L., acting assistant surgeon. Ordered to duty at the Naval Hospital, Boston, Mass.

APPOINTMENTS.

OTTO K. O. FOLIN, Ph.D., has been appointed Hamilton Kuhn Professor of Biological Chemistry at the Harvard Medical School.

ELMER E. SOUTHARD, M.D., has been appointed Bullard Professor of Neuropathology at the Harvard Medical School.

MYLES STANDISH, M.D., has been appointed Williams Professor of Ophthalmology at the Harvard Medical School.

SOCIETY NOTICE.

MEDICAL ASSOCIATIONS OF THE PACIFIC NORTHWEST.— The first meeting of the Medical Associations of the Pacific Northwest — including those of British Columbia, Idaho, Oregon and Washington — will be held at Seattle, Wash., July 20, 21, 22, 23, 1909.

RECENT DEATHS.

DR. JOSEPH O'GRADY, of Brooklyn, N. Y., died on June 22, at the age of fifty-seven years. He was graduated from Bellevue Hospital Medical College, New York, in 1883, and for a number of years was in the service of the Department of Health.

DR. HENRY W. POST, of New York, a graduate of the College of Physicians and Surgeons in 1876, died on June 25, at the age of fifty-four years.

DR. RUEL STERNS GAGE, of Newark, N. J., died on June 27, in the sixty-sixth year of his age. He was graduated from the Long Island College Hospital in 1875, and from the Medical Department of the University of the City of New York in 1877.

DR. FRANKLIN L. MEYER, of Newark, N. J., died on June 26, at the age of fifty-five years. He was a native of Easton, Pa., and was graduated from Bellevue Hospital Medical College, New York, in 1886. At the time of his death he was attending surgeon to St. Barnabas' and the Newark City Hospitals.

The Shattuck Lecture.

THE WIDENING SPHERE OF MEDICINE.*

BY E. W. TAYLOR, M.D., BOSTON.

In accepting the honorable post of Shattuck lecturer before this Society it was with no idea that I could adequately comply with that part of the provisions of the bequest which stipulates that the incumbent should discuss historically or otherwise the climate of this commonwealth or the diseases of its inhabitants. The foundation wisely allows a broader outlook over the field of medicine than would be possible under these rather limited conditions, in that other subjects are permitted, " such as," in the words of the bequest, " the said Society or its government may select." This permits me to draw your attention to certain matters of significance in the present condition of medical practice and medical education, which perhaps should be of special interest in this State, which has long stood for progress in intellectual affairs.

My purpose, therefore, in what follows is to point out and attempt to estimate the significance of various well-defined tendencies in present-day medicine. In such a consideration the following facts demand our attention: First, the rapidly widening scope of medical theory and practice, with its new and unique opportunities; secondly, the apparent apathy on the part of men of promise and varied attainments to undertake medicine as a career; and finally, the possible explanation of and remedy for this seemingly anomalous state of affairs. These are all questions which should claim the earnest attention of those who have the welfare of the profession at heart and are viewing with interest and perhaps anxiety the curiously complex situation which is now presented alike to students, teachers and practitioners.

The beginning of a profession is difficult to define; it is commonly lost in myth and allegory, and becomes a definite factor in history only when a group of men so far impresses itself upon its contemporaries as to gain a definite hearing and prove the right of its ideas to continued existence. With few facts and much theory as a basis, such an infant profession must quickly assume a defensive attitude and be ready to meet the inevitable assaults of its detractors. The field is at first small, methods are naturally crude, empiricism prevails, a narrow point of view is encouraged if not cultivated. From such an origin the profession of medicine has grown to its present estate. Its vicissitudes have been many, and in its survival have descended the traits of its infancy and youth — its frequent narrowness of outlook, its strict adherence to an arbitrary ethical standard, its jealousy of outside influences and a skeptical attitude toward innovation of any sort. Though primarily concerned with other interests, the development of theology, for example, has been entirely similar. The crudities of the early years have given place slowly and grudgingly to the liberalizing tendency of recent investigations. If we are at times impatient of conservatism in medical matters, it should not be forgotten that the strength of medicine, as of theology, lies in this spirit of intolerance to new ideas until they have demonstrated their worth. What has been accomplished for theology by the application of critical methods to the problems of interpretation has been done for medicine by the scientific revival of the last century, with its insistence upon demonstration as opposed to speculation. If the man of science has been slow to recognize the reality of other than material facts, it has been because the time was not yet ripe for the application of such knowledge, and certainly not because the scientific method was wrong and the speculative method right.

This is perhaps a fitting time to analyze in some measure the conditions which have led up to the present perplexing phase of medical theory and practice, and, laying aside the somewhat complacent attitude of satisfaction at things accomplished, to see wherein the profession is failing to meet in fullest degree its opportunities and responsibilities.

It is altogether superfluous to repeat the story of the discoveries which have rendered possible the relative success of modern medical and surgical practice. Ether, antisepsis, bacteriological research and the triumphs of the scientific method in general have been the theme of too many addresses of this character to permit their further exploitation. These factors in progress are recognized, and no added word before a gathering of medical men could fail to be superfluous. If we look rather at medicine as it is, we are forthwith impressed with its widening field, with the fact that whereas medical practice a few years ago was narrow and set about with definite restrictions, it is now broad and acknowledges no limitation in its methods of alleviating human suffering, whether of the mind or the body. It now ministers to groups and classes as well as to individuals, or, in the popular parlance of the day, it has become preventive as well as curative in its ministrations.

In a recent notable address before the Aesculapian Club of Boston, former President C. W. Eliot, of Harvard University, drew forcible attention to his favorite theme of preventive medicine.[1] Out of his experience of forty years of close association with the problems connected with the teaching of medicine, he was able to say:

" I have seen an immense development of the natural forces and powers which can be applied in medical and surgical practice within the last fifty years, and the sight of the changes which have been has taught me that the changes to come will be still more prodigious. There is not a single subject now taught in any good medical school of the world which is taught in any considerable degree as it was fifty years ago, — not one."

And further on in the same address, after referring to the widening recognition of preventive medicine:

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* Read before The Massachusetts Medical Society, June 15, 1909.

[1] Eliot: The Coming Change in the Medical Profession, Boston Med. and Surg. Jour., 1909, clx, 184.

"Shall we not welcome the coming change? Is not the function of the medical profession regarded as preventive, higher, better, happier than the function of the medical and surgical profession regarded as curative? 'An ounce of prevention is worth a pound of cure' in every possible sense, for the individual and for human society, and, therefore, we may believe for the medical profession of the future. It follows that medical education should take this direction strongly and decidedly. In all our educational institutions we should seek the prevention of evil."

The evident deduction from this strong statement of the coming change in the medical profession is that the need of the individual physician will grow constantly less and that a comparison may be drawn between the physician who cures and the physician who prevents, or, as Mr. Eliot puts it in more general terms: the function of the profession as preventive may be regarded as higher, better, happier than its function as curative. This is a discouraging outlook for the men in the ranks, nor does there seem any adequate justification for so clearly defined a distinction as such a statement implies. It has often been said that the medical profession is the only one which consistently works to curtail its own means of livelihood by the prevention of disease, through the existence of which its members might otherwise profit. This has always been done ungrudgingly, and, if the signs are rightly read, will continue in increasing measure in the future, but are we justified in maintaining that such a function, unique as it is, has a moral quality which makes it higher or better than the painstaking care and possible cure of the individual. In our enthusiasm for the progress of medicine along the most comprehensive paths, it is unfortunate at the present time to lose sight of the vast work which lies before the well-trained physician in his dealings with the individual patient. This time-honored personal relation may by no means be given a subordinate place from the moral standpoint whatever the utilitarian aspects of the situation may be. Just here lies a danger in much of the discussion of the time. We are hearing so much on every hand of the prevention of disease, of the spectacular side of medicine, that there is decreasing incentive for men to undertake the humdrum life of mere practice. A feeling will inevitably develop, if, in fact, it is not already in existence, that to care for the individual is commonplace, that the devoted and often unrequited service of the practicing physician will not gain the plaudits of the world, that honors are few for the practitioner who patiently works at his individual problem, and many for him who deals with the prevention of disease in its broader aspects. There should be no misunderstanding on this point. The function of preventive medicine is everywhere acknowledged. No honor can be too great for such public benefactors as Reed, or Pasteur, or Flexner. The army of disinterested workers of which such men are representative must and surely will increase, and disease will just as surely be prevented to the lasting benefit of future generations; but however far-reaching their researches may be, our optimism cannot foresee the extermination of the conditions which make disease possible, and which will doubtless multiply in many unexpected ways with the coming years. Tuberculosis and cancer may conceivably disappear in the not distant future, but the problems of the individual are just as sure to increase with the development of urban life and the increasing complexities of so-called civilization. Is the profession or are the medical schools fulfilling their complete duty if in their eagerness to advance the general problems of medicine they neglect to provide for the individual in fullest measure? Is it not apparent that false emphasis is already being laid upon certain aspects of a medical career? Can we evade the fact that the best men of our graduating classes do not seek the posts where they are most needed? Are the country towns being properly provided with men of highest capacity? Are not many men, recent graduates, wasting their time in a vain attempt to add to the sum total of human knowledge, by applying themselves to elusive research? The medical failures of a great city are the more pitiable because they might have been an ornament to their profession had they chosen or been led to choose wisely their sphere of usefulness. The leaders of the profession are in great measure responsible for the situation, and in no way more than in even distantly disparaging the dignity of simple medical practice. The very finest human relationships are those between individuals; such relationships have from earliest times had their best exemplification in the attitude of the physician toward his patient. This, at least, is one of the heritages of the past which under no circumstances should be lost. There never has been a time when the opportunity of the practicing physician has been greater than now, and when there has been more need of the wise adviser in the purely confidential relation of man to man. There is a glaring fallacy in the idea that public lectures or popular treatises are adequate to meet individual needs. It is necessary in the present state of public opinion in medical matters that the dignity of the calling of the physician, as practitioner, be upheld, and by no means subordinated to any other function which medicine in its progress may assume.

In a recent volume entitled "An Alabama Student and Other Biographical Essays,"[2] Professor Osler has rescued from oblivion, "A Man," of whom, he says, "you have never heard, whose name is not written on the scroll of fame, but one who heard the call and forsook all and followed his ideal . . . "; and further on, in the essay on Dr. John Y. Bassett, who was the Alabama student, he says, "The saddest lament in Oliver Wendell Holmes's poems is for the voiceless,

> "'For those who never sing,
> But die with all their music in them.'

The extracts which I have read show Dr. Bassett to have been a man of more than ordinary gifts, but he was among the voiceless of the profession. Nowadays environment, the opportunity for work, the skirts of happy chance, carry men to the summit. To those restless spirits who have had ambition without opportunities, and ideals not realizable in the world in which they move, the story of his life may be a solace."

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[2] Osler: An Alabama Student and Other Biographical Essays. Oxford University Press, American branch. London: Henry Frowde, 1908.

Such a type of man as this Dr. Bassett, whom Osler found, is invaluable to the medical profession. By such men the bulk of the work of the world is done, and will continue to be done in medicine as in other callings, however rarely they find so sympathetic a biographer.

It is not to be assumed from the foregoing abstract considerations that the individual practitioner has not felt and been deeply influenced by the widening medical outlook. No one influence has been more powerful than the extraordinary development of specialism, which, in fact, has been at the very root of all progress. The significance of this development is, I am convinced, commonly misunderstood. The opinion is abroad that specialism tends to narrowness; there is in some quarters a vigorous, and at times acrimonious, feeling that medical practice is suffering thereby; that perspective is being lost; that the patient is the victim of the narrow vision of the physician who has devoted his attention to one subject. Whatever measure of truth such strictures may have, the more general practitioner should not fail to acknowledge his indebtedness to the work of the special students in the various departments of medicine. It is a platitude to say that progress in any branch of knowledge must come through specialization, and it is equally fatuous to argue that specialism is a misfortune which must somehow be controlled and opposed. Whatever its evils may be, it cannot be checked except by the checking of all progress. Far more profitable than such an attitude is an effort to appreciate the broad significance of this fundamental modern movement, and to inquire wherein new adjustments must be made to meet the manifestly changed conditions. The charge often made against specialism that it is a narrowing tendency is an incomplete statement of fact. Its real significance lies in its effort to solve problems. Its narrowness is, therefore, more than compensated by its depth. This tendency to go beneath the surface in the varied branches of knowledge constitutes the essential value of specialism, however applied. The whole conception of medicine has been deepened by this movement toward the exact investigation of definite subjects, and we are now seeing the result in the increasing rationality of our views of disease and its treatment. It requires no prophetic vision to foresee that the various branches of medicine are destined to reunite at a deeper level, and on a more rational and coherent basis. On the practical side there is no evidence whatever that an antagonism exists between those who term themselves " general practitioners " and those who term themselves " specialists." The general practitioner is dependent upon the knowledge which it is the work of the specialist to provide, and from the adequate co-operation of the two types of practitioners it is now true, as it always has been, and surely always will be, that the completest results for the alleviation of suffering will be secured. In the minds of many intelligent persons scientific medicine is opposed to practical medicine, as if the kind of work rather than the attitude toward the work were the important factor. It is one of the signs of progress that this distinction is growing weaker, and that it is rather the spirit in which an investigation is undertaken than the character of the investigation itself which determines its abstract scientific value. The practitioner in the most distant town should feel, as did Osler's Alabama student, that the dignity of his work depends wholly upon his attitude toward it, however grinding its drudgery may be. If such a practitioner cannot return to the exact ways of his forefathers, it is none the less possible for him to infuse into his practice the same enthusiasm and to maintain the same high ideals on a basis far more substantial and of far greater value to the community which he serves. His field may not be so broad, for specialism is sure in time to permeate medical practice everywhere, but it is futile to say that the need of men of wide training and receptive mind will become less necessary to disseminate the knowledge which the laboratories and the specialists are providing.

Specialism, furthermore, as a principle of education cannot be evaded. Deep knowledge of any one subject is an invaluable intellectual asset, but this surely necessitates rather than precludes an increasingly wide knowledge of many subjects. The tendency, therefore, of specialism in its practical aspects is undoubtedly a broadening one, in that it shows the deeper relationship of otherwise apparently uncorrelated fact, and permits of generalizations which are the basis of all fundamental knowledge. Take, for example, so commonplace an instance as tuberculosis. Progress was slow and treatment futile until the discovery of the tubercle bacillus made possible the deduction that tuberculosis was not merely a disease of the lungs, accompanied by wasting, but an affection which manifested itself in the body wherever the tubercle bacillus might appear. Again, the surgery of the central nervous system, which promises much for the future, has made progress only through highly specialized study of the nervous system and the organs of special sense; in other words, through a broad general understanding of the deep relationships of correlated functions and anatomical structures. The recent generalization of Cushing and Bordley relative to the significance of the color fields in the diagnosis of intracranial pressure, notably in tumor, is a specific example in point.

There can be no return to old and superficial methods. The deepening of special knowledge requires the conscientious application of its results, and this must ultimately be done by the rank and file of the profession — the workers in the active fields of general practice.

As a result of the varied activities and interests of the recent eventful years, the relations between the profession and the laity have been changed in a highly significant and far-reaching way. In the eyes of the laity the physician no longer stands on a pedestal of unreachable knowledge. The general skepticism of the time is demanding explanation of him, as of men in other walks of life, regarding his methods; his mere dictum no longer carries weight. His Latin prescriptions, if he still writes them, are doubtfully scrutinized; the patient more and more demands as his right to know what he is taking and why; he readily seeks other advice outside the regular profession if the expected benefit does not result from the treatment prescribed. The doctor of the present day shares the practice of medicine as never before with persons wholly without or with inadequate medical training. The public is frankly skeptical of many recognized medical methods, and demands an accounting. As a result of this challenge the medical profession stands at a parting of the ways. Will it proceed, fenced in by conventionality and the traditions of its past, or will it respond to the insistent demand of the times, and widen its sphere of activity? The answer has already been given, the alternative squarely faced, with the result that the profession has entered upon a new phase of practical development and usefulness, the extent of which may as yet be but dimly foreseen. This widening of the sphere of medicine is no less significant than the scientific awakening of the past half century, which alone has rendered possible the new activities upon which we are now entering. We are witnessing the application to general practice in the broadest sense of the special knowledge gained through years of laborious research.

It is profitable at this point to consider briefly in what manner these changes have become manifest, in order that we may the better see wherein the opportunities of the future lie and wherein we may be failing in our medical schools to prepare the rising generation of physicians for this broad work.

Perhaps the chief benefit to medicine of scientific activity has been the gradual removal of mystery. A natural consequence of increasing knowledge is the substitution of fact for speculation, and this tendency medicine has felt in exceptional degree. The ordinary man now demands reasons and not mere assertions for the physician's course of action. There is no longer anything sacred about the physician's calling in the sense that he has some mysterious power over natural processes. Explanation has largely taken the place of assertion, and accomplishes results where unsupported dogmatism signally fails. This natural consequence of the scientific revival is even now too often overlooked in our eagerness to reduce our work to a basis of exact fact. Science has established a naturalistic method, which demands a broad interpretation, unless a new and no less pernicious variety of dogmatism is to be substituted for the old. The profession is called upon as never before to look at all the facts, whether or not they fit into the category of those with which medicine has hitherto been chiefly concerned. This the public rightly requires of us, and it is eminently desirable that the demand should be met with dignity and with strict adherence to the principles of exact thinking upon which the future progress of the profession depends.

As a result of this changed attitude the public has become increasingly interested in medical affairs, as it has in religious and business and political affairs. With the growth of this public intelligence the aims and methods of the medical profession are being investigated and analyzed on every hand as never before. The profession cannot, even if it would, longer stand aloof from the problems which it must share in common with other classes in the community. Herein lies the essential expansion to which it is my desire to call special attention. In a recent article in the *Atlantic Monthly* on "Democracy and the Expert," Mr. Joseph Lee[3] gives vigorous expression to the opinion that a new era is dawning not only in the history of medicine, but also in the history of democracy, from the changing attitude of the expert toward the people. However extreme this statement may be, it is unquestionably true that to this demand the profession has of late generously, if not always wisely, responded through public lectures on the greatest variety of medical topics, through popular articles in magazines and the daily press, and through various attempted co-operations between physicians and others of most diverse training. Some of these attempts have been reasonable, calm and doubtless conducive to good; others have been ill-considered and detrimental to true progress. They have all demonstrated the acceptance of the new responsibility upon which the profession is entering with extraordinary enthusiasm. The entering wedge in this significant movement undoubtedly has been the public campaign against tuberculosis. It is easy to recall the doubts of the conservative regarding this method of public appeal, even in so widespread a menace as this. Such doubts have been completely allayed and the public has so far justified its capacity to deal with this disease that Professor Osler is recently reported to have said that tuberculosis is no longer a medical problem, but one for the people. A recent tuberculosis exhibition in New York had an attendance of 750,000, and this experience, if not duplicated, has been approached in many smaller cities throughout the country. It is, however, wholly unsafe to argue from tuberculosis to other diseases of widespread fatality, regarding which our knowledge is vague and insecure. Simple hygienic measures, which a most limited intelligence can understand, are efficient in controlling tuberculosis, but the situation is very different regarding cancer and Bright's disease and arteriosclerosis and a host of other affections concerning the fundamental treatment of which we ourselves are in deep ignorance. A theory has been advanced that a little knowledge is better than none at all, and that the time has come to share such knowledge, however fragmentary, with the public. On this basis, it is maintained we should discuss diseases of all sorts freely and openly with the idea that some persons may be benefited and a measure of prophylaxis thereby be secured. With this as a principle I entirely dissent. It wholly ignores the great fact, curiously neglected by the profession, that public suggestibility is a potent cause for the most distressing conditions and indirectly of disease. If we have a remedy which appeals to the popular mind, and which we know to be efficient, no exploitation can be too active. This is the situation regarding tuberculosis. If we have no remedy, we should hesitate long before raising false hopes and exciting vague fears. To alarm the people regarding the prevalence of cancer, to show its effect to a morbidly interested public, when we know nothing of its cause, is a questionable policy. I say this with no lack of conviction that early operation is the one established means of cure, a matter which each individual physician should unfailingly insist upon, but in the present state of our knowledge we are paying too dearly in anxiety and causeless worry to urge a public discussion of this great subject. Here is an instance where the responsibility of the individual physician is great and the present responsibility of the public lecturer small. Again, pneumonia is a highly fatal disease, but why discuss it in public when we know practically nothing of its prevention or cure? The situation is analogous to that of an engineer who has not yet solved the problem of the building of a certain bridge. The public is vitally concerned in the results of his work, but certainly not in the means of its solution, which is peculiarly the engineer's function, for which he has been trained and for which the public holds him responsible. The medical profession is in the same situation. It also has its practical problems to solve and the public is vitally interested in the results. Disease in itself is neither an interesting nor a profitable subject for contemplation. Popular interest begins when results become apparent, by which the welfare of the public is subserved. Until such results are forthcoming public interest avails nothing in the solution of the problem and mere public fear and curiosity are very potent possibilities of harm. Medical lectures have become exceedingly popular within a few years. They are largely attended by audiences of varied type. Such lectures have been given in New York, Baltimore and Boston, and they will and certainly should be continued, with increasing possibilities of usefulness. But to this end the topics should be chosen with care and constant reference to the real needs of the public; the result should be to remove misapprehension and allay unnecessary fear rather than to excite morbidity and exploit half-knowledge. A safe guide might be to inform the public only of those matters of which we have definite knowledge ourselves, and which are of manifest value in the general campaign against disease. Lectures which are thus discriminating must surely be a potent influence in the education of the public and constitute one of the broadest possibilities in the future expansion of medicine.

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[3] Lee: Democracy and the Expert. Atlantic Monthly, 1908, cii, 611.

Another form in which the profession has responded to popular interest is by books, of which Walton's "Why Worry?" is an admirable example, and by less elaborate magazine articles on the greatest diversity of medical topics.[4] The danger into which the lecturer is likely to fall is largely obviated by this method of presenting to the public medical facts in popular and useful form. They are apt to be written with circumspection and certainly constitute within limits a perfectly legitimate method of extending medical knowledge. It is a striking sign of the changed point of view that not many years ago any popular exposition of medicine by a physician was looked upon as a doubtful procedure, indicative of personal self-interest. This narrow state of mind is happily past, and we may well look for the development of a useful, if small, number of physicians who have the capacity and inclination to widen the scope of medicine by this means.

The co-operation of the public is evidently essential in the larger work now immediately before the profession, not only in actually assisting in the combat against disease, but also in furthering the work of research through endowment and other financial support. Events of recent years have demonstrated the fact that such co-operation already exists in large measure, and is likely to be even more generous in the future. The social consciousness in medical matters needs to be developed to the highest degree, and here again lies a function of the medical profession, the importance of which can hardly be over-rated.

Within the ranks of the profession itself the ways in which the field of medicine is widening are almost bewildering in their diversity and possibilities of usefulness. The development of what has been termed "social service" is one of the most significant. Under the leadership of Dr. R. C. Cabot, beginning some years ago at the Massachusetts General Hospital, and since adopted at a number of institutions in Boston, notably by Dr. W. R. Woodbury at the Boston Dispensary, and elsewhere, departments have been formed for the purpose of studying the underlying causes of disease and maladjustments, and the social problems connected therewith, through the agency of trained workers under medical direction. In this effort to meet the fullest demands of medical treatment, the problem is offered by the individual patient and from him extends in ways as yet but partially defined to the society of which he happens to form a part. It is difficult to prophesy the regions into which this new activity of the medical profession will lead, but it cannot be questioned that it is offering peculiar opportunities to persons of special capacity which are as yet but dimly realized. Hygiene and preventive medicine have also been slow of recognition; opportunities for the education of men for this field of work have hitherto been inadequate, as Mr. Eliot has recently pointed out, and yet such men are needed everywhere and in increasing numbers. The extension of modern medical methods into benighted regions and countries, the study of tropical disease, the work of the army and navy, the training of men for public service of most varied character, are all fields of endeavor which our medical schools have been far too slow in recognizing as an integral part of their legitimate province.

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[4] Recently the Boston *Evening Transcript*, under the caption "The Clinic," has published weekly a series of articles on diversified medical topics, edited with care and discretion.

In still more fundamental ways than these a new responsibility demanded by public opinion is forcing itself upon the attention of the medical profession. Some twenty years ago I remember hearing a distinguished medical teacher say that the moral welfare of a patient was no concern of the physician; that his dealings were alone with the welfare of the body. There may be some who are still of this opinion, but I take it that the more thoughtful members of the profession are recognizing that this is but a half-statement of the physician's duty. Perhaps the most fundamental lack in the medical profession at the present time is the failure to realize in a broad way that from the practical standpoint it is futile to hope that a chain of physical causation may be found for manifold ills of the mind. Ten years ago Dr. James J. Putnam,[5] in a striking lecture under this foundation with a no less happy title, "Not the Disease Only, but Also the Man," drew forcible attention to the rôle of the physician as an educator, and to the necessity of a comprehensive study of the mental side of the patient in the same spirit of exact inquiry demanded by the facts of the so-called physical world. If we could as a profession bring ourselves to appreciate that a fact is no less real because it happens to be immaterial we should forthwith have opened the door to a wide possibility of usefulness. There is no more interesting phenomenon than that apparently natural antagonism of the ordinary man to facts which transcend the testimony of his physical senses. Pain except as personally experienced has no such reality to him as the physical state which accompanies it. Grief or anxiety or apprehension are to the ordinary medical mind less worthy subjects of rigid examination and study than the manifold disorders of the body, however trivial they may be. The general physician has simply not concerned himself with that great field of investigation which lies between physical ailments on the one hand and the manifest disorders of the mind, which we speak of as the insanities, on the other. It is, however, increasingly apparent that in this region, the borderland between health and disease, lies the largest opportunity for the expansion of medical practice in the years to come. Recent experience has abundantly shown the wisdom of conservatism in the prosecution of research in this field. It must be remembered that nowhere in the diversified branches of medical practice must so many problems relating to the broader life of the individual in the family, in the community and in society at large be wisely met as in a consideration of the mental perturbations of sane individuals who seek medical advice and who form a large contingent of every physician's practice. One often hears the reproach expressed, both within and without the profession, that medicine has signally failed in this field of endeavor, and that irregular practitioners of varied sort have invaded this territory which rightly belongs to the medical profession. It should be remembered in this connection, as before implied, that the conservatism of medicine constitutes its highest claim to public recognition, and also that when the definite usefulness of a procedure is established it will always receive a cordial recognition. The fact that the approach to certain great problems has not been made from the mental side is because the special students of the subject have failed hitherto to impress their convictions upon the profession at large, and certainly not because the profession is unwilling to receive new light, if there be any. What knowledge we have in this field has come from the laborious work of medical investigation. In spite of the inevitable setback due to ill-considered public exploitation, the movement toward a recognition of the principle that mental maladies demand mental treatment has consistently gained in influence; in this there will be no backward step. Those of us who view with enthusiasm the outlook in this direction cannot but feel that here again lies an opportunity of which little avail has yet been made.

How are we meeting this rapidly developing responsibility? Are we sufficiently realizing that dependence upon vague generalities, comprised in such terms as encouragement, imagination, the personality of the physician and other inadequate expressions of similar character, are a detriment rather than a help toward the elucidation of the problems immediately before us? Are we giving our medical students in a systematic way the benefit of the knowledge, slight though it be, hitherto attained? Are we yet willing to admit that a knowledge of mental processes in the treatment of abnormal states of the mind and, secondarily, of the body, is an essential element in a broad therapeutic conception? These questions may with justice be answered in the negative. There is, however, no doubt that the study of the mental life in a spirit of exact inquiry has found a permanent and honorable place in the profession and among a few investigators. It is equally evident that the profession at large has as yet taken no active interest in this significant movement, and that its results have, therefore, not permeated medical practice to any appreciable extent. It is a hopeful sign that the profession is no longer antagonistic; that its attitude is increasingly receptive; that it is asking for information and demanding methods of applying the knowledge gained which, as in all other departments of research, it becomes the function of special students of the subject to supply. The responsibility of the medical schools in this field certainly cannot much longer be evaded or postponed.

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[5] Putnam: Not the Disease Only, but Also the Man. Shattuck Lecture, 1899. Boston Med. and Surg. Jour., 1899, cxli, 53.

In this connection it is a source of gratification that the ultimate medical science, Psychiatry, has finally received a recognition in this country long since accorded it in Europe. In no other department of medicine has prejudice been so evident both without and within the profession as in the study and care of the mentally diseased. The application of modern psychological methods to these subtlest of all human problems, the introduction of the pathological laboratory into the hospitals, and the conception of psychiatry as the most inclusive of the sciences connected with medicine, has opened the way to a field of research the limits of which may be but dimly foreseen. It is an astonishing fact that the prophets of medical accomplishment find small place in their dreams of the future for the prophylaxis of mental disorder. The extermination of the physical scourges of the human race, the infective fevers, tuberculosis, cancer, are the subjects, and very rightly, of eloquent statement from many sources, but may we doubt that when all these have yielded to the advance of knowledge there will still be left a vast work for men trained, as few have yet been, in the prevention of the greatest of all human menaces? Can we doubt that our work has but just begun in dealing in a comprehensive spirit with the underlying causes of mental vagary upon which must ultimately depend the sources not only of personal but of civic instability? We have recently witnessed a determined and successful attempt on the part of citizens and even of certain physicians to prevent the location of a hospital for the comprehensive study of mental disease in the immediate vicinity of the medical schools of this city, where manifestly it would be of greatest service. Deeply discouraging as such an attitude of prejudice may be, it is gratifying that the general plan is not likely to fail [6] and that Massachusetts is about to take its place as a pioneer in the adequate study and classification of mental disorders as it has in many other departments of wide public utility. In spite of the unusual difficulties placed in its way, it is not to be doubted that this branch of medicine is entering upon a period of active development which promises much for the future, nor can it be questioned that, under the leadership of such men as Meyer in Baltimore, Hoch in New York, Barrett in Michigan and Southard in Massachusetts, investigation leading to discovery will be forthcoming.

If the foregoing statement of facts be accepted, it is evident that medicine has entered upon an expansion impossible in any profession of less broad human interest. On the one hand, it has developed not one but many sciences in the interest of human welfare, and on the other, it is applying its results in continually widening fields. The public has come to demand of the medical profession not only that it solve the problem which the laboratory sets, but also that it fit men for service to the individual, to the state in the interests of public health, and to social service in its most varied aspects. Furthermore, the profession of the future must concern itself with the mental life of the individual and of the community as never before if it is to meet its fullest privileges and responsibilities. Whatever other interpretation may be put upon these facts, it will not be denied that the medical profession is now offering opportunities of usefulness as never before to men of the most varied attainments. And yet we still hear of the overcrowding of the profession, the hard and difficult way of the practitioner and the precariousness of a livelihood under existing conditions.

The anomalousness of the situation is the more apparent when over against the manifestly increasing opportunities in medicine the fact is faced that our better medical schools not only are not increasing their enrollment, but in not a few instances are actually losing students. Here is a definite cause for anxiety. The demand is greater than the supply, and certainly so unusual a state of affairs requires explanation. Where does the difficulty lie which makes such a condition possible, and where may a remedy be sought? The fault must lie, first, with the undergraduate training of prospective physicians, and, secondly, with the attitude of the undergraduates themselves. We have heard much of late years of the raising of standards. There has been extraordinary divergence of opinion as to the degree and kind of training a person should have before undertaking his medical course. Some of the schools, with questionable enthusiasm, have regarded that uncertain sign of scholarship, the A.B. degree, as a fitting badge of attainment. Others, of greater conservatism, have been less arbitrary, but still have demanded a standard of admission to medical study which in a different way has been hardly less open to criticism. It has been a somewhat universal feeling that the study of medicine demands a peculiar type of mind, that minds may be classified into medical or legal or theological varieties, that a man's destiny is predetermined by certain so-called natural mental qualities. We hear that the physician is a naturalist, that to be successful he must be apt in the natural sciences whatever his attainments in the broader fields of life may be. Our medical schools, now that they have begun to take any interest in the matter at all, have done everything possible to encourage this attitude. Realizing the doubtful validity of the A.B. degree as a badge of special scholarship, they have advised, if not prescribed, certain preliminary studies,—chemistry, biology, physics, French, German, — as a necessary preparation for medicine. Much effort has been spent in determining the amount and character of this preliminary study, with the result that the real problem at issue is further from solution than ever. In the altogether laudable and necessary attempt to raise the standard of scholarship, the mistake has been made that it has been proportionately narrowed. Whereas medicine in actual practice has been expanding in most varied directions, as has already been pointed out, the medical schools have been closing their doors to men of capacity on the arbitrary assumption that only certain men of definite mental types are fit for its study. Whatever drawbacks the bachelor's degree may have, it certainly indicates a possible wide diversity of interests, and as such is not exposed to the charge of narrowness, but the schools have advised, if not required, the holder of a bachelor's degree to present certain special evidences of fitness for medical study. In other words, even the degree is not wholly sufficient. Whatever compromise may be reached, and this does not concern us at this time, the fact is definite that the raising of the standard of admission to medical schools has resulted in its narrowing. Whatever may be said to the contrary, the character of medical preparation, whether before or in the medical school, has not kept pace with the extraordinary expansion in the possible work of the graduated physician. The result is natural and inevitable. Schools of low standard continue to flourish. Schools of high standard are not beginning to supply the real demand of the time for men trained and enthusiastic for pioneer work in the widening sphere of medicine. The beaten paths of practice still no doubt are overcrowded. The surgical and medical ranks are full; the average student of medicine follows the path of least resistance with alacrity, and often with disaster. Is it not a function of the medical school to see the importance of, to make attractive and to point the way to other paths, deserted, if not wholly untried? The present false emphasis placed on certain branches of medicine encouraged by the schools and naturally fostered in the students is certainly detrimental to the even development of medicine in the direction of public demand. The attitude of the student is almost inevitably that of his teachers. He is led to believe during his undergraduate days in an academic department or in the professional school that medicine is a circumscribed profession, much more so than law, for example, and that once entered upon it, the path is narrow which leads to success. As President A. Lawrence Lowell, of Harvard University, has recently said, nothing is done to interest the student while still in college in the diversified possibilities of his future professional work. He has heard much of surgery, which he presumably aspires particularly to practice; he knows little and has no means of hearing of the many public fields of usefulness into which he might enter through the portals of the medical school. In this respect medicine is still far from being a liberal profession and a recognized means of acquiring a broad general culture. The profession at large is rising to a clear recognition of its widening responsibilities in the broadest social and even political relationships. The medical schools are still bound by the traditions of medical education as it was thirty years ago.

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[6] Since this was written the Massachusetts Legislature has appropriated $600,000 for this Psychopathic Hospital, and Dr. Owen Copp has been appointed its superintendent.

However wide the disagreement may be with this statement of the present situation, the simple fact cannot be questioned that our higher standard medical schools, in spite of an equipment not dreamed of a few years ago, are not attracting sufficient students to meet the requirements of the medical demands which lie immediately beyond their doors.

In the feverish anxiety to train men adequately for certain well-defined and essential branches of medical work, the broader possibilities of medical education have been strangely overlooked. A readjustment is necessary, together with a clearer emphasis on the diversified needs of the people whom the profession serves.

In what direction may we look for such a readjustment, for a remedy, for the present anomalous situation? It certainly cannot be by a lowering of the standard acquired to the lasting benefit of medical education during the past twenty years; nor does it depend upon whether a bachelor's degree or some other form of attainment is required for entrance to the schools. The principle lies deeper in the clear recognition that any raising of standard hereafter must be accompanied by a coincident broadening of that standard. Under no circumstances should such an elevation of standard be associated with its narrowing, as has heretofore been a distinct tendency. Insistence has increasingly been laid upon the necessity, for example, of biology and chemistry as a preparation for medical study, but what of psychology, sociology and the great group of allied sciences which stand in the most intimate possible relation to the later work of the physician? Is it surprising that young men of special aptitude in other than the conventional fields turn away from medicine when they are confronted with such a reception as this? Can we hope to develop the type of medical men the world is demanding if we attempt to cast them all in one mold? Are not our medical schools bound to recognize the broader outlook and to admit to their degrees men of varied attainments and most diversified interests? This would entail no lowering of standard, but rather a liberal attempt to meet a legitimate demand at present not satisfied. Under no circumstances should men of unquestioned capacity be excluded from our medical schools merely because they may fail to conform to a preconceived and narrow standard. The pendulum has swung far in the direction of so-called scientific research with acknowledged results of the most wide-reaching value to the cause of medicine. The very success of such a movement is likely to develop intolerance, and the intolerance of the man of science is peculiarly difficult to meet. There is at times danger that we may lose sight of the utilitarian function of the medical school. Its service is ultimately practical, whatever the means to that end may be, and if the number of its students is to be maintained and increased, it must be so conducted as to meet the fullest requirements of the community for which it exists. In the pursuance of this object there are strong indications that the curious development of education which has rendered possible four years of freedom of choice in the academic course and four years of essentially prescribed study in the professional school will give place to a reversal or at least to a modification of these conditions in the years to come. It is not to be doubted that the wasteful method of demanding a detailed course in surgery, for example, from the prospective internist, or of obstetrics from the future bacteriologist, will give place to a more rational conception of the use of time. An elective system,[7] modified to meet the special demands of the situation, is an inevitable outcome of the present state of affairs if our medical schools are to be the centers of educational activity which their equipment justifies.

It must not be presumed that I am unmindful of the extraordinary progress which has been made in medical education during the recently past years, nor of the very great difficulties which the medical schools are facing through the changing aspects of medical practice. To preserve a due conservatism, and at the same time to meet the requirements of an exacting public demand, is a task of the utmost delicacy. In the attempted accomplishment of this task it is increasingly desirable that no false emphasis be laid upon any one branch of medicine and that the development of medical teaching keep pace with the expansion of medical research in its diversified branches. To this end it is necessary that the practice of medicine in its time-honored aspects be not subordinated to other more comprehensive interests; that investigation and the growing field of preventive medicine be given fullest scope; that the special branches both of practical and theoretical medicine be accorded an increasing degree of consideration at the hands of the medical schools and the hospitals; that the great social problems in which medicine is destined to play an important part be considered a worthy subject of undergraduate attention. The immediate need of the future is to emphasize the wide possibilities of a useful career in medicine in many new directions as well as in the old and stereotyped ways; to inspire interest and to encourage special aptitude toward accomplishment in the new and untried paths which are everywhere opening. To accomplish this ideal our medical schools must adopt a broad as well as a high standard and must clearly recognize the fact that in the future medicine will unquestionably offer careers of usefulness and honor to many men seemingly unfit, if judged by the present narrow requirements.

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It has been definitely decided to build a Pasteur Institute in Burma, and an excellent site has been selected to the east of Maymyo Cantonment on a ridge about 3650 feet above sea level. The main building of the institute and the bacteriological laboratory are to be centrally situated in a combined double-story bungalow. The vaccine department and pathological and parasitological laboratories are to be single-storied bungalows. The cost of the entire institute is estimated at Rs. 578,229. — *Lancet.*

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[7] At the Harvard Medical School the fourth year of study has been elective for several years.

Original Articles.

THE GOSPEL OF PEACE. A VACATION IN NORWAY.*

BY CECIL KENT AUSTIN, M.D., PARIS, FRANCE.

I SPENT the summer weeks last year in Norway, and my trip through that beautiful land opened my eyes widely to a fact which, although I had certainly realized it previously to a moderate degree, needed placing against some striking contrast to be brought out in full relief and magnitude.

People who have revisited Paris during the last few years know what a revolution in life has been wrought here by the advent to the streets of the machine-propelled vehicle. Taking as an example the main throroughfare of the city, the rue de Rivoli, Champs Elysées and avenue du Bois, formerly such a beautiful and favorite drive, this has now been utterly ruined by the change in the nature of the traffic, and has become a hideous nightmare of dust, petroleum smells, danger to life, and, above all, din. Visitors staying even on the top stories of the new hotel at the corner of the Etoile and Champs Elysées say that the noise and tremulation produced by the underground and by the motors, tooting, sparking, tire-bursting and gear-changing apparatus of the automobiles pouring up and down that grade is such that their only desire is to get away as quickly as possible and retire to quieter precincts.

If this is the case in such a very open space as that around the hotel mentioned, I need not say what the condition of affairs is in the more confined areas of narrow streets, where sound reverberates. Many parts of town have become quite uninhabitable residentially. I would not take an apartment on any of the central thoroughfares now if it were offered to me rent free: the Boulevards, Boulevard Haussmann, rue Lafayette, etc.; even in the quieter sections many parts in the vicinity of garages have been ruined by the noise. Friends of mine had to move recently, driven away from a house they liked by the noise of a neighboring garage. At night, again, in the quiet residential quarters the racket made by a single motor bringing people home from an entertainment is sufficient to wake the dead, not to speak of the sleeping.

This recent phase of life has, however, developed little by little, and we who live here have, in virtue of the well-known process, accustomed ourselves to it gradually; so that, while fully aware that we were living in surroundings not dissimilar to a boiler factory located in the center of a large and active freight yard, it required, as I said in the opening paragraph, such an experience as a sudden plunge into an atmosphere of an altogether opposite kind to bring us to a clear perception of the full horror of our present existence.

Well, this other extreme we found in Norway, which may fairly be termed not only the land of natural beauty, but the home of peace; and it is for the purpose of drawing attention to this point that I have written this article. I did not have the occasion to talk much with the physicians of the country during my trip, but I am not afraid to make a venture and state that nervous prostration does not play a very important part in their professional occupations. In what I desire to say about Norway I shall try to steer clear of hyperbole, because this was my first visit, and the reality of things that the traveler thinks he observes on a first visit does not in every case stand the control of later ones. Still, on this particular point I saw quite enough to be sure that I am not very far out of the right.

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* Travelers bound for Norway need not pass through England or the Continent, but can go there *directly* by the Scandinavian line. From Kristiania a day's railway puts the tourist in Bergen, the center of the great fjords of the west coast.

During our five weeks in Norway we met exactly one motor car outside of Kristiania, a harmless old coffee-pot in which some people living in the outskirts of Molde did their errands in town; in Kristiania itself we saw perhaps half a dozen in four days. This almost total absence of machine-driven vehicles makes, you will see, a pretty good foundation at the start for a quiet country. But, bless you, that is only one detail. When I say that Norway is the land of peace I hardly express the situation, for Norway is rather peace personified. This I shall try and explain.

The inhabitants, to begin with, are very reserved and serious people; this is not unusual among seafaring populations, and besides, life is not gay in such a rigorous climate as Norway, with its brief summer and long, depressing winter night. The people seem to speak in undertones even among themselves, and in daily intercourse it constantly occurs that you do not understand what they say to you the first time they speak. I was much struck with this quietness one day while watching the berthing of two steamers at Bergen. An English captain stood on his bridge shouting orders to bow and stern, where they were repeated in a loud voice by other officers to the men at those posts; a Norwegian captain, on the other hand, merely watched from the bridge, the officers at bow and stern giving the directions necessary in tones that could hardly be heard on the quay, the only sign of authority being a brief trill on a pea-whistle from the bridge to a tug to cast loose a hawser.

As they are in speech, so are they in all things. I never saw a Norwegian angry, to outward appearances, though I have no doubt that they have some internal manner of boiling over; they could not well do otherwise with such a remarkable polyglot crowd of tourists on their hands. Nor did I ever see one get excited or hurry. This has, naturally, certain disadvantages, since in times of stress it is almost impossible to make the machinery of life go any more rapidly than its accustomed speed.

Not only are there but few motor cars in the country, but from its natural conformation, which is extremely broken up and hilly, even the ordinary wheel traffic is reduced to a minimum. People go about in little one-horse stolkjaerres, which are very light, two-wheeled, uncovered buggies, drawn by sturdy little *café-au-lait* Nordfjord ponies that look like overgrown Newfoundland dogs and are about as intelligent, tame and spoiled. Where Jonas Lie ever found the material for his famous horse story I did not see, for a more apparently pampered lot of beasts I never met. They seem to follow their own sweet will entirely, are fat and beautifully kept, and wear the only really sensible, intelligently devised harness and collar I ever saw, padded with thick felt wherever it might rub.

They trot, walk, stop, drink, eat grass by the roadside and have a generally fine time all around. They wear no blinders and carry their heads slightly to the right so as to keep an eye astern, for special reasons. The small boy driver perched behind you has in Norway no whip, which does away entirely with all the hideous beating, snapping and cracking so dear to the heart of the French, Swiss and Italian driver; but at some period of the day's trip, when the pony's nonchalance has really become too outrageous, the boy jumps down and breaks off a branch from the roadside, from which he strips all but the end tuft of leaves. Then when he sees that the extraordinary ventriloquial sounds with which he has hitherto rebuked the pony's misbehavior fail to have any effect, he gently inclines this branch outwards at right angles to the axis of progression until the tuft of leaves catches the pony's eye. The pony, who has been expecting this, sees the menace and quickens his pace for a while in anticipation of impending calamities, which I never saw materialize. So true is this description of the casual manner in which these fascinating little quadrupeds take a day's work that they will come in from a twelve hours of more or less continuous progression up and down steep hills without having turned a hair of their coats, which furthermore do not show a rub anywhere. It goes without saying that these pampered steeds stop at the foot of every suspicion of a grade and look around, as though inviting all hands to disembark and walk.

It is perhaps not surprising that these ponies put on so many airs, for they are under the immediate supervision of no less a person than his Majesty the King. On the stable doors are posted bills of regulations, signed by Haakon, *Rex*, that would do credit to the solicitude of a mother giving directions to her nurserymaid about her precious firstborn. Everything is foreseen and provided for, forbidden and allowed: so many passengers, so many kilometers per diem, such speed uphill and downhill, such rests at such intervals, such feeding, such drinks, etc.; so that all a pony that has been imposed upon has to do is to take his small boy by the ear, walk him up to the regulations, and say, "There now, just read for yourself what the king says about it."

The posting fares on the highroads are governed by the gradient, — the steeper the hill, the higher the rate, — but really one has to smile at the workings of the mind of the Norse official when, on reaching a particularly sharp rise, where you know that the price per kilometer is increased in accordance, your eyes meet a sign reading, "All tourists must *walk* up this hill."

If the superficial view of the traveler can be trusted, I should say that Norway must be a pretty good country for dogs as well as for horses. No farm but has its dog, and as we passed along the country roads each family was out with its toy sickles, busy cutting the tufts of grass, while the household dog would be lazily stretched out on the old man's coat, with that idiotic look characteristic of a dog that is quite comfy and warm in the sun, and would seem to be saying, "Oh, I'm just here to keep an eye on things and see that my family gets on with the work all right."

Wherever we went on the little fjord steamers we always found a dog on each pier, — and only one, — very much interested, taken up with his own importance, acquainted with everybody, and entering thoroughly into the excitement of that, the great event of the day.

All of this is incidental to demonstrating that the Northman is quiet and that his roads are equally quiet both as regards motors, vehicles, whips and cries. Pursuing the same theme, it should be noted that the harnesses have no jangling bells, nor do the cows and goats wear bells either. Furthermore, there do not seem to be any churchbells in the country; at any rate I never heard one. Their churches are likewise peculiar in other respects. Wherever I happened to be on Sunday I made it a point to ask the hour at which service was held, as I was curious to attend one. I invariably received the reply that there was no service that Sunday, that they had their service the previous week and that the next service would be held in a fortnight. The plan seems to be for one parson to attend to a large number of villages, which get a service at irregular intervals when time and circulation facilities permit. They are certainly not a parson-ridden folk.

Again, in most countries you have the birds' matutinal hallelujah chorus; it is either the domestic fowls, the sparrows in the ivy on the wall opposite your window, a pair of wood-pigeons, or the sweet-voiced blackbird, — always the first to herald the earliest ray of light, — but some bird there is fairly sure to be, to disturb the bad sleeper at the break of dawn. I must say that I forgive the blackbird; I am not sure ever to have heard a nightingale, but I doubt whether his notes are lovelier than the smart little blackbird with the orange beak.

Yes, but somehow these birds do not seem to sing in Norway. We passed the night in all sorts of places that looked as though they ought to be full of birds, domestic and wild, yet never were we troubled in the least by their singing. I wonder whether they are not contained and serious beings like their masters and have not trained themselves to sing in undertones.

My very first impression of Norway was connected with a blackbird. We had gone to bed on shipboard well out at sea, but at 2.30 A.M. the cessation of all motion made me feel that we had made land. Hastening on deck I found that it was already broad daylight and that we were gliding up the Stavanger fjord, over a surface so still that its sheen was like silvery satin, while the distant mountains and clouds were already reddened with the sun — a stupendous sight. On landing for an hour or two I felt pretty badly "out of it," everything was so new and strange. The town was wrapped in the most profound silence, and the streets were absolutely empty save for an inordinate number of cats, but on the green grass in front of the cathedral I suddenly spied a blackbird killing a worm in his familiar business-like fashion. This at once put a different appearance on things, and I said to myself, "I am at home in this land; it is the same old planet after all."

Then, on all that great west coast, indented with those marvelous fjords, the loathsome railway can practically be said not to exist; circulation is insured by means of local steamers, which glide silently in and out among the reefs, islands and headlands.

The western coast of Norway is fringed with a well-nigh unbroken breakwater of rock that creates for steamers a free passage in still water between itself and the actual coast; it is only for brief stretches, at the mouth of fjords, or off capes, that this protecting barrier fails and that you may be exposed for short spells to rough water. It is this fact that makes traveling by these local steamers such an agreeable procedure; there is no motion; you can read, write, promenade or do anything you like, and there is always something of interest to see close at hand. It is intricate sailing, in and out of all those thousands and thousands of rocks, some of them just below the surface and marked only by floating spars, and in countless places the shore is so close to you that you could speak to people on land in ordinary tones. You see a great deal of Norwegian life in this way, and the more local steamers run into the most fascinating little nooks, called viks, hidden away altogether out of sight of passers-by. When you have seen these hide-and-seek corners you get an altogether new understanding of the word "viking."

The steamers creep stealthily up to the piers once a day and announce their arrival by a musical whistle that blows in a chord, not on a single note. How this is done I do not quite see; there is only one whistle, and yet it blows in a distinct chord. I have to make one admission: these boats each carry a bell, which is rung two or three times to announce their departure; this practice could be done away with to advantage.

So there you have a country whose dominant feature is silence, a silence that is universal and penetrating, and that strikes the traveler arriving from such uproar and bedlam as Paris as a revelation. The change falls as gratefully on the jarred and rasped nervous system as a soft spring shower on a garden after a long period of drought, or like anything else that it may please you to imagine that is soothing and delicious. You feel when you settle down in one of those beautiful little villages snugly tucked away in the recesses of a vik as though through some mysterious agency the struggles and worries of life had vanished altogether and you had reached a land of perfect peace. I can only compare the sensation to a souvenir of my youth. A book that made an enormous impression on me in my early days was Kingsley's "Water Babies," and I have never forgotten the description of how the poor little bullied soot-covered chimney sweep discarded his earthly shape on the bank of the clean, bright stream and became a beautiful water-baby. Well, that is much the way *I* felt in Norway.

After having thus eliminated most of the jarring sounds of ordinary life, all that remains to be heard in Norway is the grand and eternal harmony of natural forces: the wind, the waves, the rain, the neighboring stream, — all steady, continuous sounds, soothing to tired nerves. Just compare for yourself the effect on the nervous system of a rattling, exploding motor-car standing in front of the house with the repose and majesty of the wind blowing in on you from the sea.

When to all this you add the fact that the physical side of Norway is, without question, the most beautiful in Europe, that traveling is made as easy as possible for the stranger, that every one is allowed to do pretty much as he likes without the constant interference of officials and regulations, that that offspring of Beelzebub, the Swiss hotel head porter, is practically non-extant, and that such things as cheating and dishonesty are about unknown, — you will understand that this is a land worth investigating by the American traveling public.

The Norse combination of a high mountain climate at sea-level is not only very beautiful, but furnishes hygienic conditions that are extremely invigorating. Sea-level in western Norway corresponds in climate to an elevation of four or five thousand feet in Switzerland, possibly even more; you have only to rise about three thousand feet above the sea in Norway to attain the region of granite and everlasting snow that you will hardly find below ten thousand in Switzerland.

Traveling in Norway is very easy for the English-speaking peoples, as English is the foreign language of the country, the language which nearly every one speaks. It is excellently taught in all the public schools; besides, numbers of Northmen serve in the English merchant service, and quantities more have sought their fortunes in the great American West. It is amusing, and at the same time an original experience, to see French and German tourists obliged to use English to make themselves understood. It was even vouchsafed to me once or twice to be called on to act as an interpreter for Germans, in remote districts where English was not understood; and those who have traveled much and experienced the facility Germans have for foreign tongues will grasp the unusual character of such an event.

The hotels throughout the country (outside of those in the three large towns) are fairly good, clean and moderate in price. Meals are excellent, though lacking possibly in variety for persons requiring a French cuisine. Rooms are comfortable when once you get used to the extraordinary way in which Norse chambermaids put a bed together; blue curtains are supplied for all windows, as the nights are so light that the sleep of many people is disturbed thereby. The wash all smells strongly of antique fish, and this requires some getting used to; it is probably due to the local soap being made from fish-oil instead of fat. The servants are obliging and very patient under the requirements of people of so many different nationalities. On leaving hotels it is difficult to find any one to tip; this is a change from the European custom of being held up at the exit by a small army of insolent and importunate domestics. The porter is apt to be an uncombed fledgling with a gilt cap, whose only preoccupation is to get all the bags on board (for no one has a trunk up there), and whom you have to hunt for to fee.

Not the least important among the elements of rest in this land is the blissful sensation you gradually acquire that nobody is trying to "do" you. The people are kindly and seem pleased to see you. Nearly everything has a fixed price, which every one knows; consequently life runs very smoothly. They do not even take advantage of the one-night traveler, the mere passer-through; he is charged at very much the same rates as persons staying for longer periods. Traveling in France, Switzerland and Italy, where you feel that some one is digging a pitfall for your every step, is an existence of perpetual irritation. One peculiar feature of the boat travel is the reduction in rates for families; thus a lone male pays one full fare, but a man and wife only one and a half fares. This is a distinct safeguard to the national morals.

I cannot hope in these necessarily brief paragraphs to convey any idea of the peculiar charm of Norway; the atmosphere and unique coloring of the mountainous fjords will not travel, and descriptive powers are but feeble means with which to approach such a subject. You must go and rest your shattered nerves for a few weeks on those coasting steamers yourselves and acquire the experience at first hand.

These steamers all carry small raised decks abaft, fitted with cane easy chairs; there I used to lie by the hour, never tiring of the ever-changing panorama, "the countless laughing of the ocean's waters," the flights of ducks, and our constant companions, the gulls. Every steamer is followed from morning to evening by its contingent of gulls, which live on what the stewards throw overboard, no particle escaping their unerring eye. These gulls were our continual joy. Silently winging their way through the air, the beautiful, snow-white creatures stood boldly out against the deep blue sky just above our heads on the little decks. They were so near to us that we could distinguish every feather, follow every movement, and even hear the impact of their wings on the air. This is their life the summer through, following the little steamers in and out of these entrancing fjords; I fancy they must have regular beats and be told off to certain boats, they seem so perfectly at home. I used to say to myself, as I watched their graceful motions, "This is a job I should like myself, — at any rate, in fine weather."

Of all this trip in Norway, three scenes stand out in my memory more prominently than others.

One is a hurried visit we paid to a little place off the track of tourists, in order to see one of those extraordinary ancient structures called a stavkirke. We there had an all too brief experience of real Norse life, the life they lead among themselves uninfluenced by tourists, and were much interested in the local color. The district comprised 3,400 souls and had built itself a large, new jail, the finest building in the neighborhood. But it seems that times had been bad, from the jailer's viewpoint, as he had not had a client since the opening of the establishment; now, in view of the fact that the one physician for all this region had no hospital, and plenty of sick and infirm, the question was then being agitated whether it would not be more profitable for the community at large to remove the bars from the jail windows and transform the building into a county hospital. These Norwegians were lovely to us, and we almost wept when we had to move on.

The second was our first view of a late sunset in northern latitudes. We were up on the hurricane deck after dinner one perfect evening, and noticed that the sun was still high in the heavens, although the hour was nearly nine. I remarked that the sun seemed to be growing dissipated, according to our ideas, and that I would time its hour of going to bed. The sea inside the reef-guard was without a ripple, as smooth as a mirror; the channel was very narrow just there, and we were constantly passing bits of life, — sailing vessels anchored for the night, fishermen getting their dinner, other steamers, cottages, lighthouses, — the whole scene lighted up by the evening glow, a curious mixture of full sunlight with a tinge of twilight. Above us, against the dark heavens, glided the spotless gulls, fanning their even path toward slumber and a resting place on some reef. Finally, at sharp ten, the sun's disk touched the water and in a few minutes disappeared, leaving everything in a glory of reds, crimsons and pinks. It was a gorgeous sight. We did not go far enough north to see the actual midnight sun.

The third was at the end of our trip, out on the stormy North Sea, hundreds of miles from land, on our way back to Holland. The evening was dark, the weather blustering, and the sea choppy and broken up, — about as cheerless an outlook as one could witness. A few large sea gulls had followed us during the day, circling about in our wake, but had gradually all vanished but one. As I watched this bird in the gloom I saw him leave the ship, take a few aimless turns in the air and finally come gently down on the surface of the waves, putting out his feet and raising his wings straight up in the way gulls do, taking the water in such an imperceptible manner that your only way of knowing they are really there is to see them fold their wings. He looked about him, apparently pleased with the spot he had chosen, appearing and disappearing as the waves passed under him, and then set to arranging his feathers with his beak, rustling his back and generally making his evening toilet, — until it finally dawned on me that he was actually settling down for the night on this tempestuous ocean, going to "turn in," as it were.

I addressed the following parting to him: "Well, old man, every one to his liking, of course, and if that sleeping place suits your fancy, why *I* naturally have nothing to say. It would not be exactly my choice, but still, even to me it would offer several advantages. The telephone at any rate will not go off in your ear in the dead of night to have some idiotic question put to you by a *malade imaginaire*, and your sleep will not be broken time and again by a fiendish motor coming crashing down the street bringing people home at hours when respectable citizens are trying to get a little rest. So, although you seem placed in what I should call a remarkably hectic entourage, you will be sure of at least a moderate amount of that priceless possession, *peace*, and thereupon I wish you a very cordial adieu."

THE PHARMACOPEIA: WHAT IT IS AND WHAT IT IS NOT.

BY SOLOMON SOLIS COHEN, M.D., PHILADELPHIA.

In anticipation of the assembling of the Pharmacopeial Convention of 1910, discussion concerning the Pharmacopeia is rapidly focussing upon certain large questions. To one of these the present discussion is directed, namely, What should the Pharmacopeia include, and what should it exclude, among medicinal agents?

To determine this point it is first necessary to ascertain the use to which the Pharmacopeia is put. This is to be taken up practically, from the viewpoint of experience, and with reference especially to the present day. Neither the history of the past nor theories as to what ought to be should be allowed to obscure the view.

Looked at in this way, it soon becomes evident that whatever the Pharmacopeia is, there are certain things which it is not.

In the first place, it is *not* a work on therapeutics. Its function is neither to explain the action nor to define the uses of remedies; neither to affirm nor to deny the opinions and conclusions of pharmacologists and clinicians upon these points; neither to recommend nor to deprecate the use of any agent or any preparation which physicians may require at the hands of pharmacists.

With these negative points firmly in mind, the positive points become clearer. The Pharmacopeia *is* a book of processes and standards, giving directions for the making of certain medicines; and giving, in addition, for all drugs, descriptions and tests by which they may be recognized and their identity, their purity, their quality and their strength be determined. It is this and nothing more. Neither is it, or should it be, anything less. Moreover, it has become by acts of Congress and of state legislatures a statutory and judicial standard, to transgress whose provisions is to incur a penalty, and by which courts are to be governed in both civil and criminal causes.

Evidently, then, its scope must be comprehensive. There is no reason, scientific or administrative, why there should be a legal standard for quassia, let us say, and none for cascarilla; for kousso and not for kamala. Personally, I make little use of any of these, but there are many physicians who do use one or the other, or all, frequently. Nor is there any reason why pomegranate should be included and pelletierine be excluded, or *vice versa.* The latter is costly and the former is cheap; but while that influences their use, it does not affect the necessity for a standard. There is no scientific ground for admitting hydrogen dioxide and potassium permanganate, but excluding sodium and calcium peroxides and perborates. And so throughout the whole list. The infrequency with which, by reason of their geographical location and the character of their practice professionally or economically certain physicians may resort to one or another agent of the materia medica gives no reason why other physicians differently circumstanced or having a different outlook upon the necessities of treatment should forego the use of remedies in which they have confidence; or why the patients of such physicians should be deprived of the benefit of professional and legal standards for the medicines which their attendants may prescribe.

It follows, therefore, that the Pharmacopeia should formally exclude nothing which the physician is apt to call upon the druggist to furnish to his patient. It may be that certain drugs or classes of preparations which a thorough investigation, including all sections of the country and the files of manufacturing as well as of dispensing pharmacists, may show to have an insignificant use, can be relegated to a secondary place; but standards should be prescribed and these should remain the legal requirements until altered. They might, perhaps, be allowed to go without revision for a longer period than other remedies; this is a point, however, upon which at present I have no defined opinion.

But while basic drugs — using the term pharmaceutically and not chemically — and simple preparations should not be excluded so long as any physician is likely to prescribe them, the case is different as to mixtures. Such composites as paregoric, compound tincture of benzoin, compound tincture of cardamon, etc., and one or two classics, such as Dover's powder and Basham's mixture, ought to be retained. But as to routine mixtures in general, their place is elsewhere. Therapeutically they are not to be commended, but as the demand for them exists, a book of standards is necessary. This is found in the National Formulary, which thus supplements the Pharmacopeia in a field which the latter is not called upon to enter. Something needs to be said about the National Formulary and its relation to physicians, but this is not the place.

The question as to what new drugs, especially among the synthetic, the Pharmacopeia should include presents greater difficulties of detail, but the principle is the same. For whatever physicians prescribe, legal standards are necessary. This at once rules out all drugs, old or new, concerning whose manufacture or composition there exists the slightest secrecy; for it is evident that there cannot be a public standard for secret manipulations, or quality or identity tests for that which has no fixed quality and no scientific identity. It would include, however, patented products and processes, and this raises a new difficulty. If a product is patented and the right to manufacture is retained under private control, it is obvious that improvement is thereby excluded; and the Pharmacopeia, in fixing a standard prescribed by patent, is restricted to what may be inferior methods of production and inferior qualities of products. If the name of an article is copyrighted or trademarked, that name, being private property, can have no public standard. There are certain cases in which such names, having entered into literature, and being of common use, have lost their quality of individual property. In such cases it would be perfectly proper to admit them into the Pharmacopeia; and if, by seizing on other private names, it is possible to destroy their monopolistic character, the Pharmacopeia ought to do it in every possible instance, in order to put an effectual discouragement upon this method of nomenclature. The preferable procedure, however, both in the case of patented products and copyrighted or trade-marked names (pending such alteration in the laws of the United States as will prevent such patenting and trade-marking, while still leaving to inventors the option of patenting processes), is the following:

The Pharmacopeial Convention should direct the Committee of Revision to appoint a special committee upon international nomenclature, which should co-operate with similar committees, to be appointed by the proper authorities, legal or scientific, of other countries. The steps necessary to procure the appointment of such foreign committees should be taken. The International Committee should be a permanent body, whose function would be to examine the present list of synthetic chemicals used in pharmacy and to assign to each an appropriate name, as nearly as possible expressive of its chemical constitution, with some significant abbreviation thereof for common use; or, when this is impracticable, some arbitrary name without therapeutic significance should be given. It might be derived from a personal name, as was, for example, quinine, by way of cinchona.

The committee should inform the manufacurers of pharmaceuticals that it is prepared to have them submit to it their new products with suggestions for naming, and that it will assign to such products appropriate titles, upon condition that no attempt is made to monopolize them. If new products are introduced without previous submission to the Committee on Nomenclature, and these remedies become of sufficient importance in practical medicine, the committee should proceed in the same manner as with those already in existence, that is, to assign names for scientific purposes. The names approved by this committee should be introduced into all Pharmacopeias as official titles; and it follows that authors, editors and prescribers in all countries should be asked to use only the official names. It is quite evident that manufacturers would soon find it to be to their interest as well as to the interest of medicine and pharmacy to co-operate with the committee. An important step would then be taken toward facilitating that revision of the law which seems necessary before an entirely satisfactory status can be established for this class of agents. Should general international co-operation be impracticable, there might be cooperation with one or two nations. Should this also fail, the American committee should proceed with the work as a part of the revision of the United States Pharmacopeia.

Under the considerations regarding exclusion and inclusion here suggested, the United States Pharmacopeia would become a better, because a more comprehensive, book of standards. It would not attempt to become what it ought not to be — a minatory work. While important to teachers and workers in pharmacology and therapeutics, it is not, and cannot be, a book for the practicing physician. It is a guide for the pharmacist only, but such a guide as the physician has directed the pharmacist to prepare. This is the true function of the two professions. The physician is to inform the pharmacist as to what it is necessary that the Pharmacopeia should contain. The pharmacist is to revise his processes, descriptions, tests, standards, etc., in accordance with these directions, and to add such other matter as may be necessary from the pharmaceutical viewpoint. The two together are then to consider the work from their respective points of view, with regard to its comprehensiveness, its accuracy and its practicability. For the physician's use, the standards of the Pharmacopeia, in so far as they properly interest him, are transferred to works on materia medica, and especially to the dispensatories, where, as in medical periodicals and society discussions, they are properly the subject of comment, explanation and criticism. Pharmaceutical textbooks, journals and societies perform a similar service upon their side. The issuance of annual or biennial supplements incorporating any useful results of such suggestions and criticisms will minimize the drawbacks of delay and facilitate the complete decennial revision. In this way the profession of pharmacy and the profession of medicine can cooperate, and the Pharmacopeia can be made to serve the highest possible usefulness.

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THE degree of LL.D. has been conferred by the University of North Carolina on Dr. R. H. Whitehead, the new dean of the medical department of the University of Virginia. — *Science.*

New Instrument.

SPECIAL HEATER FOR HOT-AIR STERILIZING.

BY ROBERT AMORY, M.D., BOSTON.

THIS instrument, designed for sterilizing dentist's or surgeon's instruments, consists of an electric heater which is controlled by a switch, and a copper box or oven, the cover of which is lined with asbestos to check radiation. It is adapted to use the street current of 110 volts ordinarily supplied by electric light companies and connects by an extension electric corded wire with any socket for an electric light.

The heat is radiated from a drum-shaped piece of solid copper, around and beneath which is the heating coil. On top there are four holes, two chisel-shaped and two cone-shaped, designed to char and sterilize the wooden sticks which surgeons use to clean their nails before operating, as it has been shown that these sticks usually remain full of living bacteria in spite of soaking in formaline, etc.

Below the drum is a shield, and below this a handle controlling three switches by which different degrees of heat may be obtained, namely, 175 watts, 80 watts and 40 watts, marked full, medium and low heat respectively.

The copper boxes, or ovens, are made in three sizes with open circle cut in the bottom and circular tube surrounding the drum of the electric heater to allow the heat waves to pass freely into the copper oven. The asbestos-lined cover has a place for a thermometer, but electric heating is so uniform and constant that after a little use of the machine the thermometer will not be much consulted.

It has been found by a large number of experimental tests that the box and its contents will, in twenty minutes, be heated to between 270° and 325° F., under the full pressure, or 175 watts; prolonged use of this current slowly raises the temperature to 400° or even 450, but at these high temperatures instruments, dressings and rubber gloves may be injured; therefore, after twenty minutes the handle should be turned to medium or low heat, when a gradual fall of temperature occurs, as is shown in the charts. If the box is comparatively empty it heats and cools more quickly than if it is packed full of instruments or dressings.

The following five-minute temperature charts were made under varying conditions; sometimes the thermometer bulb was placed in a mass of a quarter of a pound of absorbent cotton. The variations of temperature are seen to be fairly constant.

One should not injure what he sterilizes. It was found that a rubber glove softens and disintegrates at 345° F., and it seems probable that a little more heat may change the temper of some fine steel instruments. A test was, therefore, made with the finest dental broaches (an instrument used for piercing the nerve channel in teeth which has a highly-tempered steel wire as fine as a hair) and also with the hair-spring of a watch obtained from the Waltham Watch Company. These showed no heat injury after prolonged heating at a temperature of 300° F., but one of the dental broaches was injured when the temperature was a little over 350°. It is probable that the edge of a small knife will withstand the same temperature. A dentist's mouth mirror of silvered glass was uninjured after twenty-five minutes at 230° F. By giving a little attention from time to time to the switch the temperature can be controlled within very narrow limits.

Prof. Samuel C. Prescott, of the Massachusetts Institute of Technology, made, at the writer's instigation, a number of tests with this heater to determine how much heat was needed and for how long a time it should be employed to sterilize polished steel instruments completely. He also investigated the bacteriological contents of the sticks of pine and orange wood used in manicuring. His following letter gives results obtained by him in this investigation.

The deduction seems justifiable that a hot-air temperature of 250° to 300° continuously applied for at least forty minutes will effectively destroy known spores of bacteria, and a much shorter time is needed to destroy the bacteria themselves provided no spores are present. Instruments sterilized forty minutes at this temperature should be absolutely free from organic life.

THE BOSTON BIO-CHEMICAL LABORATORY,
739 BOYLSTON STREET.
BOSTON, March 21, 1909.

DR. ROBERT AMORY,
279 BEACON STREET, BOSTON:

Dear Sir, — I beg to present the following results of the bacteriological examination of the pine sticks submitted to me on Friday, March 19.

These have been submitted to examination as described in our conversation yesterday, and to-day I have made an approximate quantitative determination.

		Plate Culture.	Approx. No.
No. 1.	Untreated, unshaped stick,	Sterile	Less than 10
No. 2.	Freshly prepared stick,	Sterile	Less than 10
No. 3.	Three weeks old,	3 colonies	30 bacteria
No. 4.	Used under dirty nails,	4,200 colonies	42,000 bacteria

Examination of broth cultures showed presence of a staphylococcus in Sample No. 3. In No. 4 a great variety of forms are present, but the predominating one is a chromogenic coccus. I have not worked out its identity.

Very truly yours,
SAMUEL C. PRESCOTT.

THE BOSTON BIO-CHEMICAL LABORATORY,
739 BOYLSTON STREET.
BOSTON, March 29, 1909.

REPORT OF EXPERIMENTS ON STERILIZATION OF INSTRUMENTS BY APPARATUS OF DR. ROBERT AMORY.

Test No. 1. Orange-wood stick received from manicurist. Had been used several times and "sterilized" by formalin solution.

Tested by culture: abundant growth obtained, indicating that sterilization had not been complete.

Same stick after treatment in the electric sterilizer for less than one minute gave no growth in culture. Absolutely sterile. A similar stick was found sterile by laboratory test in Harvard Medical College Bacteriological Laboratory.

Test No. 2. A new orange-wood stick which had not been used, but had been handled, was cultured, with result that some growth resulted in the culture medium.

Sterilized by electric sterilizer less than thirty seconds, and again cultured, gave no growth. Absolutely sterile.

Test No. 3. Dentist's tool. Had been disinfected in usual way after use by dentist. Cultures taken in broth and in agar. Of these the agar showed some growth. The broth was apparently sterile after forty-two hours.

Heated in electric oven to temperature of about 260° F. for twenty minutes and again cultured. No growth resulted in either broth or agar.

Test No. 4. A similar instrument, sterilized by electric oven and kept in sterile glass tube, was treated exactly the same as in Test No. 3. None of the cultures gave growth either before or after the sterilization at 260° F.

Previously sterilized control sticks gave no growth under any conditions.

SAMUEL C. PRESCOTT.

It is far different, however, with the time required for destruction of resistive spores in culture as shown by his report; the sterility of these cultures requires continuous heating to a temperature of 275° to 300° F. according to the second report of Professor Prescott as follows:

THE BOSTON BIO-CHEMICAL LABORATORY,
739 BOYLSTON STREET.
BOSTON, April 17, 1909.

DR. ROBERT AMORY,
279 BEACON STREET, BOSTON:

Dear Sir, — At your request I have carried out, during the past four weeks, tests to determine the efficiency of a small electric sterilizing oven suitable for surgeons, dentists or others who may desire to sterilize instruments of small size in an effective and convenient manner. The apparatus is constructed in such a way that certain implements may be sterilized quickly by the instantaneous application of heat electrically generated, or a small oven may be attached, in which case the heat is applied for a longer time.

The first series of tests carried out was made to determine the efficiency of this apparatus as compared with the methods of sterilization practiced by some dentists, manicurists, etc., viz., the use of a solution of formaldehyde.

Presumably clean implements, that is, those which had been "sterilized" by the method above named, were examined as to their actual sterility by making cultures from them in various suitable culture media, such as broth, agar, gelatin, etc.

In this test it was found that the instruments and implements were not actually sterile, but contained on their surfaces varying numbers of bacteria. It was found that by the use of the electric sterilizer in which wooden implements were inserted in a specially made slot and there subjected to a heat sufficient to produce a slight charring or browning of the wood that sterilization could be effectively brought about in a very few seconds.

With metal instruments it was also found that sterilization was complete in a very short time, the temperature applied being about 265°–270° F.

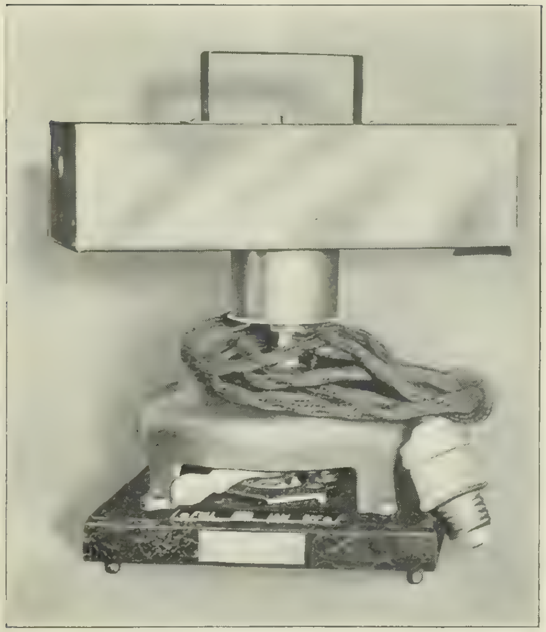
A second test was made with some instruments obtained from a dentist. These were found to contain a few bacteria. After the cultures to determine this point had been made, the instruments were heated in the electric oven for thirty seconds at a temperature of 250°–260° F. and cultures again made. These gave entirely negative results, showing that sterility can be secured at this temperature within thirty seconds.

In order to test this point further the instruments were heavily infected with pure cultures of pyogenic bacteria (Ps. pyocyanea), and the exact time required to produce sterilization was determined by repeated experiment, control cultures being made in each case.

The results of these experiments are shown in the following table:

Organism used.	Temperature, Degrees.	Heated 10 sec.	Heated 15 sec.	Heated 30 sec.
Ps. pyocyanea,	265	Growth	Growth	Killed
Mixed culture,	290	Growth	Growth	Killed

In this case it was evident that no spores of the bacteria were present, but vegetative cells only. As the thermal death point of most vegetative cells lies between 150° and



Electric Heater and Oven.

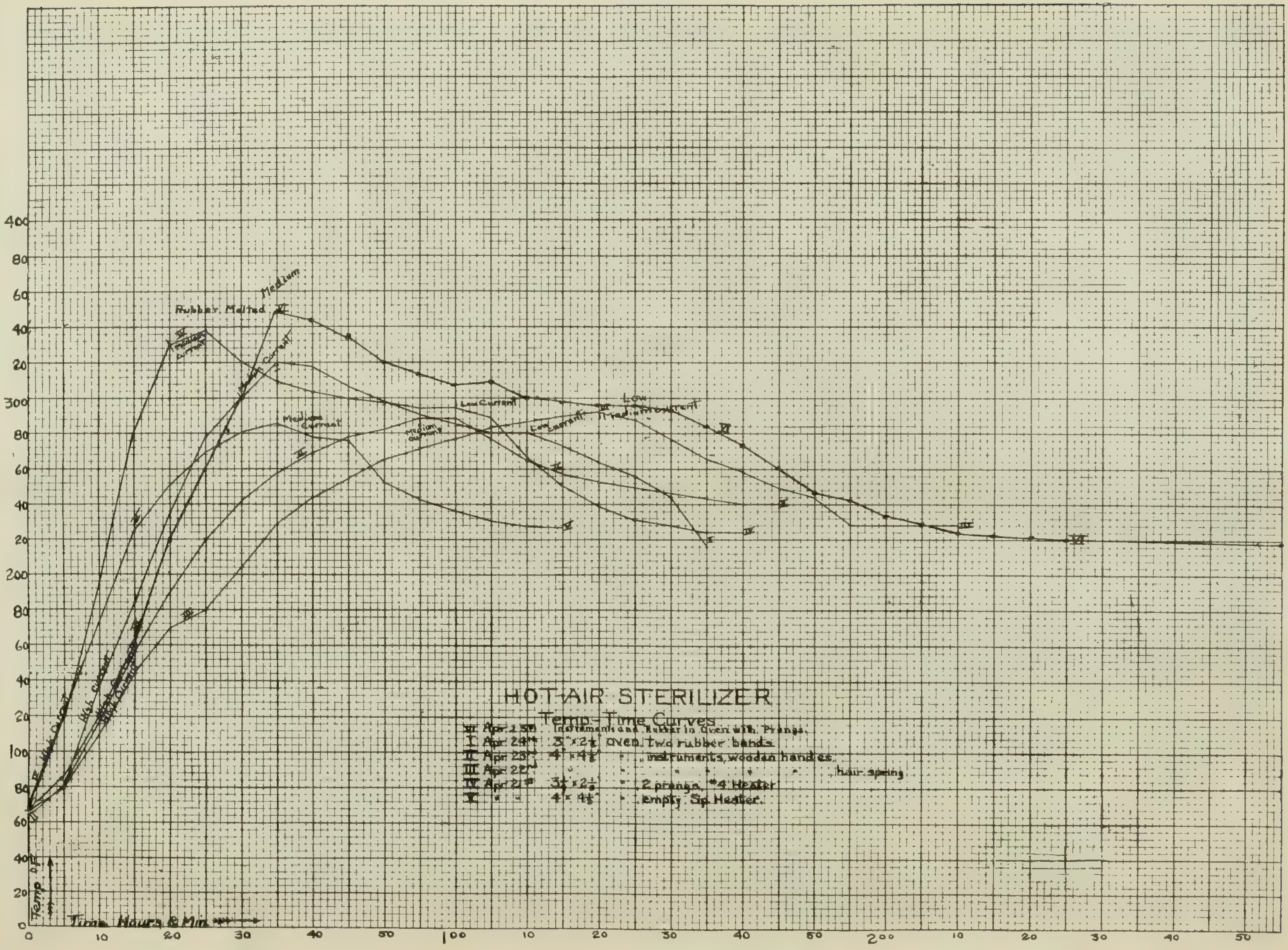


CHART I. Curves Nos. I, II, III, IV, V, VI.

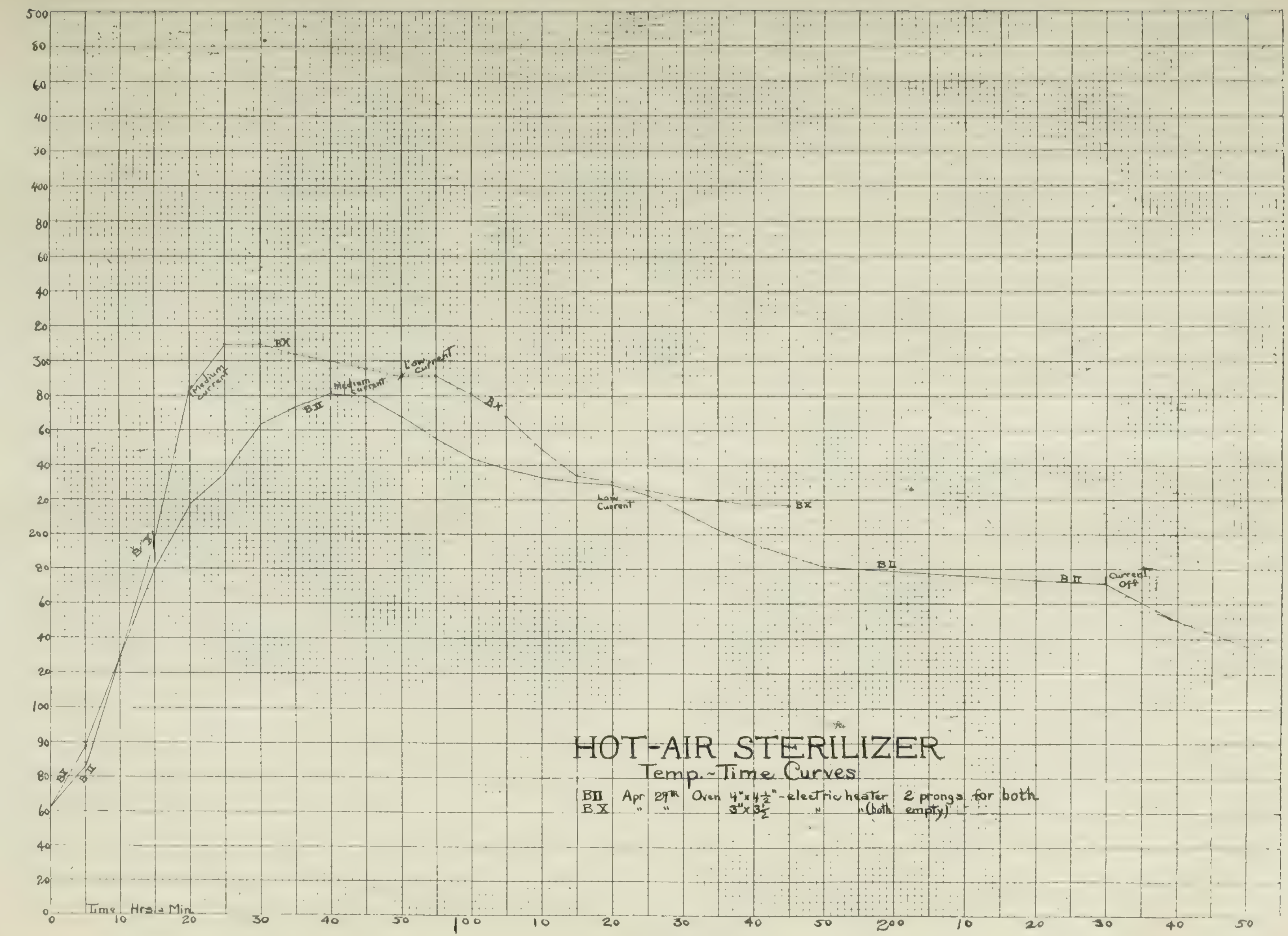


Chart II. Curves Nos. BII, BX.

180° F., it is evident theoretically that the treatment to which the instruments were subjected ought to have produced the result actually found.

Since, however, the spores are of far greater resistance, any method of sterilization to be really effective must be based on the action upon the spore rather than the vegetative cells. A careful series of experiments was, therefore, carried out to determine the length of time necessary to kill spores of the most resistant organisms at our disposal.

For this experimental work I have made use of steel and nickeled dentists' instruments. These were heavily inoculated with spores, dried in the air and then subjected to the sterilizing oven. Here, as before, I have made control tests for comparison.

The results are shown below:

Test No.	Time of Heating.	Temperature.	Result on Making Culture.	Control.
1	30 sec.	285–287° (F.)	Growth	Growth
2	45 sec.	285–287°	Growth	Growth
3	60 sec.	282.5°	Growth	Growth
4	90 sec.	287°	Growth	Growth
5	3 min.	275°	Growth	Growth
6 (Five tests)	5 min.	270°	Growth	Growth
7 (Two tests)	8 min.	272°	Growth	Growth
8	7 min.	250–275°	Growth	Growth
9	10 min.	275–350°	Growth	Growth
10	10 min.	287–291°	Growth	Growth
11	20 min.	291–303°	Slight growth	Growth
12	30 min.	300–310°	Slight growth	Growth
13	40 min.	305–300°	No growth	Growth
14	45 min.	305–312°	No growth	Growth

It is, therefore, evident that even the most resistant spores can be killed in the dry state in the electric oven by exposure to a temperature of 275° to 300° F. for a period of time not less than forty minutes.

The accuracy of this latter result has been confirmed by further experimentation.

In all my experiments I have used the oven and heater by attaching to an ordinary electric light socket. This convenient method of producing heat is clean, involves no gas ovens, is relatively inexpensive, and in all ways satisfactory for the purposes of those who would find this type of apparatus practicable.

Experiments to determine the length of time necessary to secure sterilization of sticks, such as manicurists' sticks, when inserted in the slots or holes in the heater, have shown that a charring temperature is almost instantly obtained and that the complete sterilization of the heated area will take place within ten seconds. As wood is not a good conductor of heat, however, it must be borne in mind that the heated surface alone will be sterilized in this way, and not the neighboring portions of the stick.

On the whole, the heater and oven may be regarded as a very effective means of bringing about sterilization of small metal instruments or of manicure sticks, depressors, probes, cotton, etc., as the heat can be regulated easily, and the apparatus does not require constant watching.

Very truly yours,

Samuel C. Prescott.

Reference to the following printed illustration of the electric heater gives a fairly good idea of the special heater; this model is about six or seven inches high, with a drum evolving heat which is two and a half inches in diameter; the circular solid copper drum is concealed by the tube attached to the bottom of the oven; the cover is shown on the outside of the copper oven. Below the drum is shown the coil of corded covered wire and plug for attachment to an ordinary electric socket; this corded wire lies on top of the shield, which protects the switching apparatus for the required 3° of heat.

The accompanying charts showing the action of the variations of heat in the enclosed ovens requires but little explanation.

Chart A shows the results of six experiments:

Curve No. 6 shows the variation of temperature inside the oven which contains metal surgical instruments, observations taken every five minutes.

Curve No. 1 shows variations of temperature in oven 10 inches x 3½ inches x 3 inches; instruments, two rubber bands.

Curve No. 2: Oven, 10 inches x 4 inches x 4½ inches; instruments, wooden handles.

Curve No. 3: Oven, 10 inches x 4 inches x 4½ inches; instruments, wooden handles, hair spring.

Curve No. 4: Oven, 10 inches x 3½ inches x 2½ inches.

Curve No. 5: Oven, 10 inches x 4 inches x 4½ inches.

Chart B shows the results of two experiments with empty ovens:

Curve B, 2: Oven, 10 inches x 4 inches x 4½ inches.

Curve B, 10: Oven, 10 inches x 3 inches x 3½ inches.

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Medical Progress.

REPORT ON DERMATOLOGY.

BY JOHN T. BOWEN, M.D., AND H. P. TOWLE, M.D.

1. Cutaneous Symptoms of Sleeping Sickness.
2. Coal Tar in Dermatology.
3. The Ultramicroscope in the Diagnosis of Syphilis.
4. Napkin Region Eruptions in Infants.
5. Verruga Peruviana.

CUTANEOUS SYMPTOMS OF SLEEPING SICKNESS.[1]

For a long time it was believed that sleeping sickness attacked negroes alone, and that Europeans were not affected, but of late years it has been established that the white race is not immune to this disease. During the last three years the writer was able to study twenty cases in the white race.

As is well known, this disease is a serious one, characterized by nervous attacks, and almost always ending in death unless proper and active therapeutic measures are taken. Between the first appearance of the disease and the beginning of these nervous phenomena there is a long period of not less than several months, and sometimes several years. During this period the diagnosis is often difficult, the somnolence being in reality the first conclusive sign.

Among the very early symptoms, cutaneous manifestations hold an important place, having a considerable diagnostic value.

It is well known that this disease is propagated by the bite of certain insects which contain trypanosomes. In some cases an inflammatory reaction is produced after the bite of the insect at the point where the trypanosome has penetrated.

Some hours after the bite, redness and swelling, accompanied generally by a sensation of burning or tension, are seen at one or several points upon the skin. The following day a small tumor appears, not unlike a blind boil, which has its seat at the site of the bite. Most frequently this appearance is benign, and it disappears in a few days, leaving only a pigmented spot. In some cases, however, the inflammation is very pronounced.

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[1] Darré: Ann. de Dermat. et de Syph. December, 1908.

It is believed that these inflammatory nodules represent a reaction of defense on the part of the organism against the parasites, since they are not present in the great majority of cases, and no trypanosomes are found in them. They have been, however, of extreme importance in clearing up certain points in the pathology.

During the course of the disease, two types of eruption have been observed: a vesico-papular, an eruption accompanied by pruritus; and erythemata of an urticarial type, not accompanied by itching. These two varieties may occur together. The papulo-vesicular variety appears to be secondary to the pruritus, which is oftentimes excessive.

The polymorphous erythemata are the eruptions which have the greatest diagnostic value in this disease. These eruptions were described some time ago, and are mentioned by almost all writers. They occur very frequently, although they are not constant. This erythema may be observed at any period of the disease, although it is not very common in the late stages.

These erythemata vary in appearance, usually appearing in plaques, or as a circinate erythema. The circinate erythema is more common, and is so described by Manson. It is situated chiefly on the trunk and especially back, and is constituted by light red, sharply-rounded rings, larger or smaller in size, sometimes only segments of rings being observed.

In the majority of cases the two types of eruption are present at the same time in a given case, and sometimes the plaques are transformed into rings. These appearances are sometimes short-lived and recur, but more often they are constant, lasting weeks and months, varying in intensity from day to day. In one case observed by Manson the eruption continued during the whole course of the disease, which terminated in death at the end of two years. Medication, which has the effect of causing the disappearance of the trypanosomes, has a remarkable influence upon this eruption also. It disappears, leaving no trace upon the skin.

As to the pathology of these eruptions, trypanosomes are found with extreme frequency in the blood of the superficial layers of the skin at the point of the appearance of these lesions, whence the conclusion is reached that the erythemata are due to the inflammatory reaction caused by the appearance of the trypanosomes, or by the toxin secreted by them.

Anatomically an examination of a bit of skin excised from one of these lesions showed edema, congestion and an infiltration about the vessels of lymphocytes and mononuclear leucocytes.

It is admitted that, taken alone, these erythemata are not characteristic in appearance, but taken in connection with other symptoms of sleeping sickness they are very suggestive. Sometimes they may permit a diagnosis to be made when the disease would not have been suspected from other signs.

COAL TAR IN DERMATOLOGY.[2]

It is admitted at the outset that coal tar is not a new remedy in the treatment of skin diseases. It has often before been employed by dermatologists, and it has also had considerable popular usage. Coal tar is very different from the vegetable tars in its composition, and has quite a different odor. It is one of the so-called reducing agents, resembling somewhat in its actions pyrogallic acid, and has, like the latter, keratoplastic qualities. It has an action both on the surface, in diminishing the thickened horny layer, increasing the vitality of the rete cells, constricting the lymphatic channels in the epidermis, acting as an astringent on the papillary vessels, as well as acting upon inflammatory infiltrations and suppressing the pruritus by its influence on the terminal nerves. When used in concentrated form, and upon denuded skin, it may cause hyperemia and inflammatory action.

In 1906, Dind, of Lausanne, published the results of his clinical studies of coal tar used in its pure state. Beginning with the more chronic inflammations, he found that the remedy could be applied without irritation to acutely inflamed surfaces.

The good results that were obtained by Dind with this remedy are confirmed by the studies of Brocq. Having ascertained that the composition of coal tar is very variable, coal tar derived from the manufacture of illuminating gas, which has but a very feeble caustic action, was chosen. Washing in distilled water was the means employed for removing the caustic properties.

When pure coal tar is applied to an infected cutaneous surface, that is to say, a skin upon which there are virulent micrococci capable of producing a folliculitis, its action is not favorable, and it seems sometimes to hasten the development of cutaneous infections.

In certain affections, especially when applied to a case of pruritus without visible cutaneous lesions, it seems to produce erythema and an increase of the morbid conditions.

In certain cases of moist eczema, however, pure coal tar has a truly remarkable drying effect, although it has seemed that if the application was made daily on an eczematous surface it often caused irritation and pain.

With regard to the mode of application, the crusts are first removed by moist applications or pastes, the pustules are opened and the surface cleaned before the coal tar is applied. It is spread over the surface in a thick layer and allowed to dry before powdering with talcum and covering with linen.

If the skin is not greatly inflamed, and if the exudation is not considerable, it is well not to change the dressing for two days, and if at the end of this time the appearance is satisfactory, and the patient has no burning or itching, the part may be powdered until all vestige of tar has disappeared, which usually happens between the fourth and the sixth day. Another application of tar may then be made.

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[2] Brocq: Ann. de Dermat. et de Syph. 1909.

If, however, the skin is acutely inflamed, and if there is an abundant exudation and the patient has much burning and itching, it has been found advisable to dress the part with a simple zinc paste one or two times after the application of tar.

Brocq first tried pure coal tar in rebellious vesicular eczema, especially in the chronic exudative form that occurs on the lower legs in people of poor venous circulation. Very remarkable results were obtained in eczemas of this variety. If the patient can be kept in bed with the leg extended and lifted, from three to five applications will produce healing. It is remarkable to observe the effect produced by these applications upon an inflamed, oozing eczema in removing the congestion and retarding the exudation.

It was found occasionally that severe burning and stinging was produced some hours after these applications, so much so that the patient complained that it was impossible to bear it. This is, however, of short duration, and it is found that the application can be borne.

Besides this direct topical action, the preparation seems to act as a protective; and doubtless also, in a mechanical way, in producing a certain effect of constriction and compression upon the inflamed parts. It certainly diminishes the congestive edema. It does not, however, act as a simple varnish. It was found that a purified coal tar was not so effective an agent. The conclusion was reached that it was the impurities which gave the coal tar the properties of a paste, it being known that greater proportions of drugs may be incorporated in pastes without causing inflammations than in simple ointments.

This application was found to have a remarkable effect also upon papulo-vesicular and other subacute forms of eczema. In the artificial eruptions it did not appear to be of great value. In seborrheic eczema, the results of this treatment are somewhat variable. The exudation is rapidly diminished as well as the inflammation and congestion of the skin, but it does not always cause the eruption to disappear wholly.

Psoriasis is not greatly benefited by this drug except in cases where the lesions have become inflamed.

In conclusion, it is emphasized that one of the chief effects of coal tar is to suppress, or at least to mitigate, itching. It is of value in simple pruritus, but not to any such extent as in a pruritic eczema. It is not claimed for this method that recurrences are made less frequent. In fact, the question is raised whether it is not possible that the suppression of the exudation may cause more rapid and obstinate recurrences. It is pointed out that this treatment with pure coal tar is an excellent application for use in hospitals in cases of rebellious eczema, and that it has an especial merit in its absolute cheapness.

In the same number of the same journal, we find an article by Dr. Jambon, of Lyons, who has also studied this question. After describing the composition of coal tar, its methods of application and its mode of application, he related fifty cases of various forms of eczema in which he employed this application during the year 1908. His conclusions from these cases are that coal tar should not be used in eczemas that are beginning but are not moist, whereas the acute eczemas which are freely exuding are most favorable instances, and, as a rule, are healed in a few days. Also dry pruritic and squamous eczemas are rapid and favorable instances. Infected eczemas should be previously disinfected by moist dressings, or by applications of methylene blue. Varicose, very pruritic and moist eczemas bear this application quite well. In the case of hyperkeratosic eczemas of the palms and feet, the action of the coal tar is absolutely nil until the thickened, horny layer has been removed by other applications such as salicylic acid. Acute, moist eczemas of the scalp are very favorably affected by the application of coal tar.

In a large majority of the cases where this treatment is used, it is asserted that a cure may be produced in from five to seven applications.

(To be continued.)

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Reports of Societies.

RHODE ISLAND MEDICAL SOCIETY.

The ninety-eighth annual meeting of the Rhode Island Medical Society was held in Providence, R. I., on Tuesday, June 1, 1909.

The President, Dr. Frank B. Fuller, of Pawtucket, R. I., presided.

At the business meeting the following physicians were elected officers for the ensuing year: President, Dr. Eugene Kingman, of Providence; First Vice-President, Dr. Augustin A. Mann, of Central Falls; Second Vice-President, Dr. Frederick T. Rogers, of Providence; Treasurer, Dr. George S. Mathews, of Providence; Secretary, Dr. Stephen A. Welch, of Providence; Committee of Arrangements, Drs. F. E. Burdick, A. A. Barrows and J. B. Ferguson; Committee on the Library, Drs. G. D. Hersey, G. L. Collins, F. L. Day, G. S. Mathews and H. G. Partridge; Committee on Publications, Drs. G. D. Hersey, C. M. Godding and G. T. Swarts; Committee on Necrology, Drs. D. Churchill, E. E. Pierce and C. G. Hilliard; Curator, Dr. W. J. McCaw; Committee on Legislation, State and American Medical Association, Drs. G. T. Swarts, W. F. Gleason, W. L. Munro, E. Kingman and S. A. Welch; Auditor for two years, Dr. W. H. Buffum; Delegate to the House of Delegates of the American Medical Association for 1910 and 1911, Dr. John Champlin, of Westerly; Building Committee, Drs. J. W. Mitchell, R. F. Noyes, F. H. Peckham, F. T. Rogers and J. M. Peters; and Committee on Education of the American Medical Association for three years, Dr. C. V. Chapin.

The annual report of the secretary showed that the Society numbered 392 members. Of these, 353 were active Fellows, 28 non-resident and 11 honorary.

The Committee on the Library, through Dr. Hersey, chairman, reported that 319 bound volumes, 288 reprints and 312 pamphlets had been received.

The Committee on Legislation, through Dr. Swarts, chairman, reported that during the year the Optometry Bill had become a law; the bill regulating the practice of osteopathy had failed; the fee of the medical examiners for a view had been increased from four to five dollars, and a law had been passed requiring physicians to report all cases of tuberculosis to the State Board of Health, beginning July 1, 1909.

Dr. Swarts also said that since the visit of the committee of the American Medical Association to the medical schools of the country, and their rating of them, no applicant to practice medicine in this state had been or would be examined unless he came from a school having a rating of 70% or more.

On invitation of Dr. John M. Peters, the Crawford Allen Ward of the Rhode Island Hospital, situated at Quidnessett near East Greenwich, was selected as the place of the September meeting.

The trustees of the Chase-Wiggin Fund reported that for the year ending May 1, 1910, a prize of $50 is offered for the best popular essay on the subject of "Tobacco and its Evil Effects on Those who Habitually Use It."

The trustees of the Fiske Fund reported that the prize of $200 offered for the best essay on the subject, "The Mode of Infection and the Duration of the Infectious Period in Scarlet Fever," had been awarded to Dr. Charles V. Chapin, of Providence, R. I.

For 1910 a prize of $200 is offered for the best essay on the subject, "The Classification and Treatment of the Diseases Commonly Known as Rheumatism."

Rev. Samuel H. Webb was unanimously elected an Honorary Member.

Dr. Florence H. Abbot, of Worcester, and Dr. Garry Hough, of New Bedford, were introduced as delegates from the Massachusetts Medical Society.

THE TREATMENT OF TUBERCULOSIS.

Dr. James L. Wheaton, Jr., Pawtucket, R. I.: Many so-called modern ideas of the treatment of tuberculosis were practiced by the ancient Greeks, such as elevated places of residence and open-air life. Isocrates and Aristotle recognized contagiousness. The laws of the Talmud, five hundred years before Christ, forbade the eating of tuberculous meat. During the dark ages we hear little of tuberculosis because the barbarians who overwhelmed civilization were open-air dwellers and tuberculosis did not flourish among them. The search for a specific treatment has been long and has progressed only to the extent that tuberculin is recognized as an adjunct for diagnosis. Most methods of treatment have helped but little, such methods as inoculation, hydrotherapy, inhalations, electricity or surgery. Climate helps but needs great care in selection. Sanitaria are of benefit, but also need to be used with judgment. Inasmuch as most cases remain at home, special clinics and district nursing are of great service. On the whole, we may assert that we have done little but cover the smoke while the fire rages underneath. We see that we need to study allied problems. As it is largely a disease of the poor, we must look at it from the poor man's position. Why may we not have committees of public-spirited men who will consider what laws should be enacted; what supervision of schools, what regulations of employments and over shops and tenements, and what educational methods regarding tuberculosis shall be employed? Bring all methods into play in the spirit of cordial co-operation.

THE WORKING OF THE MEDICAL PRACTICE ACT IN RHODE ISLAND THE LAST FOURTEEN YEARS.

Dr. Gardner T. Swarts, Providence, R. I.: The act regulating medicine in Rhode Island went into effect July 16, 1895. Previous to that time considerable work had been done by the Rhode Island Medical Society and others, but without success.

The law started with a time-limit provision for those who had practiced five years, with the result that many are still practicing to-day who were best excluded. It was thought that this class would soon die out, but the contrary has been the experience. Among those who received certificates because they presented diplomas there are constantly appearing men with like evil tendencies, especially abortionists. We may state in this connection that only one conviction has been secured in Rhode Island of an abortionist, and here the defendant confessed. After seven years' trial the practice act was amended to require an examination of every applicant. The poorer students were found to come to Rhode Island and Massachusetts where requirements were not so arduous as in many states. In 1908 more was required, and since then the number of applicants has diminished and qualifications have improved. After the visit of the committee of the American Medical Association to the various medical schools, and their rating of them, a requirement has been that the applicant must come from a school rated as over 70%. Certain sects and special lines of practice are always asking for special legislation and the optometrists have succeeded. [A recital of the cases of violation of the law which came to trial followed.]

Midwives do harm as cases prove. Peripatetic clinics prey upon the public, but are gone before evidence can be secured or used.

A photograph of applicants to practice is required, as substitution was practiced. Residents just over the state line invade Rhode Island for a few hours. Advertisers need constant attention. Few changes have been made in the law, but rather its provisions have been tested by time. The law has been administered not in spectacular ways, but used as a deterrent to unlawful practices. While the executive officer of the Board may have chafed in not having more perfect law and also under the sometimes seemingly singular interpretation of the laws by a higher court, yet the people of the state and the profession should with the Board feel comforted to know that the working of the medical practice act has held improper practice of medicine within the safety line.

PRESIDENT'S ANNUAL ADDRESS,

"MEDICAL PROGRESS DURING THE LAST THIRTY YEARS."

Dr. Frank B. Fuller, Pawtucket, R. I.: The great change is the beginning of the establishment of scientific bases for many medical procedures and the hope that many more will follow. As a practicing physician the one discovery that has impressed me is the work of Behring, Roue and others concerning diphtheria. Tuberculosis has been successfully attacked. The way of looking at it has changed for the better. Many new methods of treatment have sprung up. The mortality of rabies has greatly lessened. Tetanus has been aborted with timely injections. Epidemic cerebrospinal meningitis has been reduced in mortality three-fourths. In the South the discovery of the hookworm disease and its cure through the investigations of Dr. Stiles is of widespread importance.

Preventive medicine has made wonderful progress in the destruction of carriers as mosquitoes, rats, flies and pests. Surgery has had a wonderful development. We are in advance in the possession of govermental and endowed institutions for scientific study. Special lines have become necessary with special laboratories. Compulsory scientific treatment will follow compulsory notification. Society already cares for the sick and unfortunate, old age pensions are proposed.

Regulation of water and food supplies, of dwellings, work shops and many other things is in progress. Diagnosis is more certain, more quickly made and satisfactory treatment applied. In the future, teachers of specialties will be more and more needed and perhaps paid regular salaries.

At the anniversary dinner, Dr. Edmund D. Chesebro presided. Ex-Governor George H. Utter spoke upon

DOCTORS AND OTHER DOCTORS.

Governor Utter said the average man had not that fear of the medical man profession that he once had. The time had come when medical men should inaugurate a movement to bring about the appointment by court of three men to act as medical experts, not for the defense or for the prosecution, but for the state. Doctors are studying men more and medicine less.

The Christian Science movement will ultimately collapse. You medical people are the builders of the Temple of God. The apostle goes one step further and says condemnation comes to him who mutilates the temple.

THE NATURAL HISTORY OF A MEDICAL MAN.

Rev. A. A. Berle, D.D., of Boston, Mass.: The mystery of the medical profession is just beginning. Experience with 200,000 people who yearly cross the threshold of my church and contact with humanity makes me believe that the mystery had not begun to be penetrated. The Christian Science movement is one of the gravest of menances, undermining the soundness of thought of this generation. The next generation will reap the harvest. You members of the medical profession ought to speak out against it. Do not be deterred by the cry that you are speaking for your pocket's sake.

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CONNECTICUT STATE MEDICAL SOCIETY.

One Hundred and Seventeenth Annual Meeting, Hartford, May 26–27, 1909.

(Concluded from No. 1, p. 27.)

PRESIDENT'S ADDRESS, "THE SMALL GENERAL HOSPITAL."

Dr. Seldom B. Overlock, of Pomfret, reviewed those details of construction and management in which the small general hospital differs from the larger sort found in great cities. Care should be taken to construct it in such a way that sounds and the odor of anesthetics will not be conveyed from the operating room to the wards and private rooms. The physicians of the neighborhood should be loyal to the hospital, sending to it not only their poorer, but their wealthier patients.

ECTOPIC GESTATION.

Dr. Phineas H. Ingalls, of Hartford, discussed the diagnosis of cases of ectopic gestation and the time of operation. He thought it was an error to interfere when the patient is pulseless and in a condition of profound shock. By relieving the patient from profound shock before operating he found that he had obtained more satisfactory results than when he had pursued the other method of procedure. In conclusion he stated that the cases are not rare, and that many of them go on to tubal abortion and recover without attention. The diagnosis is often difficult. When the diagnosis can be made, one should operate before rupture; but when rupture has once occurred, one should allow the patient to rally and then operate.

Dr. Otto G. Ramsay, of New Haven, said that in a fairly large proportion of instances the diagnosis was extremely difficult, and remarked that all who had operated for extra-uterine pregnancy had been struck by the fact that there was no active hemorrhage. If one could make the differential diagnosis between tubal abortion and tubal rupture there would be no reason why one should not wait in cases of tubal rupture for recovery from shock, but in the former class of cases one cannot operate too soon.

Dr. Hotchkiss, of New Haven, remarked that the question of diagnosis is the one important thing in connection with extra-uterine pregnancy.

Dr. J. B. Boucher, of Hartford, questioned whether a case of primary abdominal pregnancy had ever occurred, and said that abdominal pregnancy is usually a result of a connection between the tube and the ovary. He also thought that it would be better to let nature take her chance than to try to relieve the trouble by surgical means, and asked why one should be more successful in operating for shock in tubal pregnancy than in operating for shock resulting from any other condition. He stated that ectopic pregnancy occurred in 1% of all cases of pregnancy, and in 7% of all laparatomies. In every case called miscarriage the fetal structure should be seen, and one should make an examination to see that no tubal pregnancy exists.

Dr. Ingalls, closing, stated that he allowed his patients to rally just sufficiently to be able to stand the operation, as he realized the liability of the occurrence of fresh hemorrhage or of speedy infection of the contents left behind. These should be taken out as quickly as possible with safety to the patient.

THE IMPORTANCE OF MORE THOROUGH SURGICAL DIAGNOSIS AND THE AID AFFORDED BY VARIOUS DIFFERENTIAL TESTS.

Dr. Harris F. Brownlee, of Danbury, said that one of the greatest evils in surgery to-day is that of faulty diagnosis. Errors are frequently unavoidable, owing to the real difficulties of the case, but often occur from lack of care in taking the history and making the examination. The blood count is of assistance if interpreted as indicating an inflammatory process and not an established condition. He mentioned various other tests, and said that all should know their value and be able to interpret their meaning.

Dr. Ernest A. Wells, of Hartford, said that every man must decide for himself the value of any new test. He spoke of the importance of keeping records of cases, and said that the diagnostician was known by the records that he kept. He did not think that a short cut to surgical diagnosis would ever be found. The very word "diagnosis" means to know clear through, from beginning to end; to look at the case in every aspect. In this sense the diagnosis would include also the prognosis.

Dr. John B. Boucher, of Hartford, said that the first point in arriving at a correct diagnosis was to obtain a careful history, extending back weeks, months or years. In 95% of the cases of appendicitis careful history-taking will reveal a previous chill or rigor. A history of temperature, slight in the beginning, is always present. The differential blood count will be an important aid in the diagnosis. If the percentage of polynuclears is below 80 it is safe to wait; if not, one should operate at once. He also considered the x-ray a valuable aid in diagnosis if handled by a man of experience.

Dr. Leonard Bacon, of New Haven, in connection with the hydrochloric acid test for cancer of the stomach, mentioned some work by one of his colleagues in regard to hydrochloric acid in the stomach in cases of malignant disease of intra-abdominal organs not connected with the stomach. He also spoke of the importance of discovering some test that shall differentiate those diabetic cases in which it is safe to operate from those that had better be left alone, and said that a reasonable guide to the imminence of diabetic coma would be an estimation of the total ammonia in the urine. He spoke of a method of estimating this which is not too elaborate for ordinary laboratory use.

Dr. L. L. Gompertz, of New Haven, did not consider blood in the stomach contents to be of much importance in cancer of the stomach, especially in cancer of the pylorus. He called attention to the fact that Dr. Brownlee had not mentioned a microscopic examination of the contents of the fasting stomach.

Dr. H. F. Stoll, of Hartford, referred to the use of tuberculin as being of a good deal of use in certain conditions. Although this reaction is much greater in surgical conditions than in tuberculosis of the lung, the test is not much used by surgeons; but the skin reaction of tuberculin has placed this test within the reach of every one. If, after the skin test, the subcutaneous test is given, a local reaction will be obtained in the glands of the neck. Children who have had tuberculosis of the spine diagnosed, when the condition was simply scoliosis, would have been saved a course of treatment for the wrong condition had the tuberculin test been employed.

Dr. J. J. Boucher, of Hartford, said that while laboratory tests for cancer of the pylorus are helpful, they are not positive. The diagnosis is based on the motility of the stomach and not on the finding of lactic or hydrochloric acid.

Dr. Geo. C. Bailey, of Hartford, referred to a supposed case of typhoid fever in which the history and the symptoms strongly suggested that disease. There was a high leucocyte count and a high temperature, with a positive Widal reaction. Finally, in using a syringe for hemorrhoids, a rupture of a rectovaginal fistula was produced. The typhoid disappeared, and the temperature returned to normal within forty-eight hours.

Dr. Brownlee, closing, agreed with Dr. Boucher that a careful history, a thorough examination, and good common-sense deductions constitute the true basis of surgical diagnosis.

HEREDITY AND CRIME, WITH SUGGESTIONS AS TO THE REMEDY.

Dr. William H. Carnault, of New Haven, said that in breeding domestic animals, their owners try to find fitting mates for them, but that natural selection is observed nearly as strictly in man by the marriage of persons of like tastes, other marriages being the exception. He mentioned many names famous in all departments of learning as instances of this, among others the Edwards family, descendants of Jonathan Edwards, as being especially familiar to New Englanders. He showed, by reference to Gelton's investigations, that there is a fairly well-marked hereditary influence, causing different members of families to adopt the same profession as their forefathers. He also gave authorities for considering moral qualities inheritable, and stated that while one can easily find instances of families in which high moral qualities have been inherited for generations, it is very difficult to get genealogical records of criminals. An exception to this is the Jukes family of criminals and imbeciles, the members of which have been studied for generations. Dr. Carnalt then went on to show the relation of pauperism to crime, and defined the criminal type. He demonstrated that pauperism, imbecility, idiocy and epilepsy are all inherited and associated diseases, and argued that crime belongs to the same class. "Moral idiots" and "moral imbeciles" are classes well recognized by superintendents of institutions for the feeble-minded and insane. As these qualities are inheritable, he regards it as the duty of the state to prevent the propagation of such types, and advocated the "sterilization of the unfit" in both criminals and imbeciles.

Dr. Albert Garvin, of Wethersfield, said that he supposed that Dr. Carnalt meant to leave the impression that criminals produce criminals. He did not believe that 3% of the inmates of state prisons have been produced in this way. He approved of sterilization in the cases of persons committed to prison for the third time; also in those of the feeble-minded and epileptic of both sexes. Unless, he said, there is some way found to absolutely stop the breed of the criminals and feeble-minded, it will be very difficult to find means to take care of this numerous class of the population.

Dr. George H. Knight, of Lakeville, said that with the increase in civilization and humanity people are now doing everything they can to preserve the unfit. There are no longer the great epidemics that formerly carried thousands of them away, with the result that unless something is soon done to stop their rate of increase, we shall no longer be able to take care of them. Some law that can be enforced must be placed on the statute-books preventing the marriage of the unfit. He considered it a question whether even the law suggested by Dr. Carnalt would not be a proper one.

Dr. Charles C. Beach said that all living organisms, whether plants or animals, are acted upon by two forces, heredity and environment. If a child of vicious parents is placed in a proper environment, this may be sufficient to overcome the hereditary tendency. Many children, however, grow up in an environment as vicious as their heredity, with the result that the two forces working together are almost sure to make them criminals. He approved of the operation of vasectomy for criminals, and considered it preferable to executing them.

Dr. W. L. Higgins, of South Coventry, expressed the opinion that sterilization is not a question for medical or legal jurisprudence, as one of the most sacred rights of man is the power to beget offspring. If it is wrong to commit abortion or to prevent conception, who shall say it is not eternally wrong to perform vasectomy? He considered it a weighty responsibility to decide. If any operation were performed upon the male, he preferred castration to vasectomy.

Dr. James M. Keniston, of Middletown, said that the people were "coming to an intelligent comprehension of the criminal and the delinquent." They will demand a sure remedy. Shall not we, as a body, endorse either Dr. Carnalt's method or one equally humane and sure, if such a substitute can be found?

Dr. Frederick T. Simpson, of Hartford, spoke of the effect of sterilization upon epileptic boys, and stated that Dr. Flood had done this in twenty-six cases in Massachusetts. The improvement in disposition was notable in every instance, and in quite a proportion of the cases the epilepsy was cured.

Dr. Carnalt, closing, said that the selection of the operation could be left to the proper judicial committee.

A STUDY OF THE EFFECT OF REMOVING LARGE PORTIONS OF THE SMALL INTESTINES.

Dr. Joseph M. Flint, of New Haven, referred to three investigations already published on this subject, with results that differ radically both as to the percentage of the small intestine that may be removed safely and with reference to the effect of resection on the organism. A reworking of the problem had justified him in reaching the following conclusions:

1. As much as 75% of the total length of the small intestine may be removed without fatal results, and the animals may gradually recover.
2. The animals suffer from a severe diarrhea, loss of weight, ravenous appetite and thirst. Even after recovery, they remain extremely sensitive to unfavorable conditions of diet and living.
3. Metabolic studies on such animals show that there is a marked increase in the elimination of nitrogenous, fatty and carbohydrate elements of the food. There is also an increase in intestinal putrefaction, as shown by the amount of indican in the urine.
4. The compensatory process consists in a hypertrophy of the remaining portion of the small intestine, as well as a hyperplasia. There is no regeneration of the villi or crypts. There is apparently no adaptation on the part of either the stomach or the colon to take over the function of the small intestine.
5. Human cases behave, in general, like those in animals, showing similar metabolic disturbances. No regeneration or hypertrophy has ever been reported in a human case.
6. Resection of the human intestine is never an operation of choice. The surgical rule is a resection of the minimum amount that the pathological conditions allow. It is wise to give the patients a rich and easily assimilated diet, relatively poor in fat and relatively rich in carbohydrates.

Dr. Yandell Henderson, of New Haven, confined his remarks to the subject of functional compensation, and stated that it is not easy for one portion of the intestines to take over the function of another part. He thought that it was ultimately a chemical adjustment, but primarily a mechanical one, in the action of the ileocecal valve. We should apply our knowledge of the action of the pylorus to the ileocecal valve, about which less is known, and we can probably get some light upon the subject.

Dr. Lafayette B. Mendel, of New Haven, referred to two facts that physiologists have accepted for a long time, but which the clinicians have not accepted so readily. The first is that the stomach is not an organ of absorption, but a preparatory organ; and the second, that various parts of the intestines have special functions. The function of the small intestine cannot be replaced by either the stomach or the large intestine.

Dr. Richard F. Rand, of New Haven, recommended the rectal feeding of patients with dextrose-solution, and said that the fact that saline and dextrose solutions are absorbed from the intestines is acknowledged by physiologists.

SOME PRACTICAL POINTS IN THE ADMINISTRATION OF ANESTHESIA.

Dr. Richard F. Rand, of New Haven, related some practical points that he had found of use in giving anesthetics. After an experience with the drop method in nearly three hundred cases, he preferred it to the cone or Bennett inhaler, the two methods that he had previously employed. In speaking of the choice of anesthetics, he said that in surgery of the brain chloroform is to be preferred, but that ether is better in cases of nephritis or diabetes. At night, the use of ether is accompanied with less danger than that of chloroform.

Dr. Orin R. Witter, of Hartford, said that the patient should be prepared for the taking of an anesthetic mentally as well as physically. Care should be taken to reassure the patient, and to give him a mental suggestion that he is going to sleep and that everything will be well.

Dr. Samuel G. Gilbert, of New Haven, who had been elected president for the ensuing year, made a few well-chosen remarks.

Dr. Overlock, the retiring president, then declared the meeting adjourned.

The following officers were elected for the ensuing year:

President, Dr. Samuel D. Gilbert, of New Haven. Vice-Presidents, Dr. Theodore R. Parker, of Willimantic, and Dr. William J. Tracey, of Norwalk. Secretary, Dr. Walter R. Stiner, of Hartford. Treasurer, Dr. Joseph H. Townsend, of New Haven. Delegates to the American Medical Association, Dr. D. Chester Brown, of Danbury, and Everett J. McKnight, of Hartford. New Haven was selected as the next place of meeting.

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Book Reviews.

The Influence of Alcohol and Other Drugs on Fatigue. The Croonian Lectures, 1906. By W. H. R. Rivers, M.D., F.R.C.P. Pp. 136. London: Edward Arnold. 1908.

To any one desiring a concise and critical account of methods of studying neuro-muscular fatigue, the present volume renders important service. The defects of earlier methods in not eliminating interest, sensory stimulation and suggestion are very clearly defined, and the author's endeavor to avoid the repetition of these errors is carefully described.

By means of extraordinarily cautious methods, the effects of caffeine and alcohol on muscular and mental fatigue were determined and are here fully expounded. Less complete observations on the influences of cocaine, strychnine and tobacco are briefly noted, and other studies on the influences of formates, orchitic extract and muscle extract are mentioned.

The chief value of the book lies in its bearing on methods of studying drug action in the human being. The absolute necessity of conducting such studies with adequate control, to eliminate the effects of interest, sensory stimulation and suggestion, is strongly emphasized.

Applied Physiology, a Handbook for Students of Medicine. By Robert Hutchison, M.D., F.R.C.P. Pp. 298. New York and London: Longmans, Green & Company. 1908.

The growing tendency to look upon disease as disturbed function as much as disturbed structure receives recognition in this small volume, which makes a connecting link between normal physiology and the abnormal physiology met by the medical student in his clinical experience. The applied physiology of metabolism, body heat (fever), blood and the hemopoietic organs, the heart and circulation, respiration, digestion and excretion, is in each instance treated with a fresh interest due to the practical emphasis which the author lays on the facts and methods he discusses. The book manifests a wide acquaintance with physiological and clinical literature, and may be warmly commended as an aid in applying scientific knowledge to medical practice.

Elementary Practical Treatise on Diseases of the Pharynx and Larynx. By E. J. Moure, Surgeon in charge of the Nose, Ear and Throat

Department of the Faculty of Medicine, Bordeaux. Translated and adapted by J. Malcolm Farquharson, M.B., F.R.C.P. (Edin.). With 210 illustrations. New York: Rebman Company. 1909.

This is a book of 400 pages, of which 250 are devoted to the larynx. It is by a distinguished foreigner, and is in some respects different from any existing or possible American elementary treatise on the same subjects. The author's description of etiology, pathology and treatment sometimes differs from that to which we are accustomed, as does also the relative importance which he assigns to the different diseases. A few examples may be used as illustrations. The pathological conditions of the pharynx begin with a page each on Erythematous Angina and Erythema Polymorphia, which we should classify as pharyngitis, and then four pages on Pemphigus of the Pharynx, of which the first or acute variety gets well in a few days. Acute ulcerative lacunar tonsillitis, which to judge from the description and illustrations must be a rare disease in this country, receives more attention than simple acute tonsillitis. He opens a peritonsillar abscess by the galvano-cautery and rather prefers a hot wire for the removal of tonsils. He mentions neither the anatomy nor the operation of tonsillectomy.

The lingual tonsil is fully and well considered, as is also faucial tuberculosis and retropharyngeal abscess. Of the diseases of the larynx, the sections on the disturbances of the nerves are thorough and well done, and tuberculosis and cancer are fairly so, while the subject of papilloma, which we should consider of much importance, receives very little mention, and the treatment is confused with that of other tumors.

As a whole the book is valuable as giving a point of view somewhat different from that to which we are accustomed. For diseases of the pharynx it could not well be used as the only textbook for an American student or practitioner, because of the frequent difference in nomenclature and in the methods of treatment from those commonly used here, and perhaps especially from the lack of discussion on the tonsil, which in this country now occupies the center of the field in pharyngeal pathology and surgery. For diseases of the larynx it would make a satisfactory and in many ways an excellent book of reference.

A Textbook of Human Physiology Theoretical and Practical. By George V. N. Dearborn, A.M., Ph.D., M.D. Five hundred and fifty pages, 300 engravings, 9 plates. Philadelphia and New York: Lea and Febiger. 1908.

The virtues claimed for this volume are the emphasizing of " the mechanism of sense-organs, nerves and muscles as the basis of the individual's efficiency," and the recognition of " the more and more insistent demands of the mental process." The treatment of the sensory-motor mechanisms is not, however, more specific and detailed than it is in many of the common textbooks of physiology; indeed, some of the most important recent work on the physiology of neuro-muscular co-ordination is not mentioned. The " demands of the mental process " are met by a chapter dealing with the " functions of the mind," a chapter which summarizes the statements of the psychologists regarding sensations, emotions, acts of will and the degrees of knowing. The relations of body and mind are touched on, and memory, sleep, illusions and delusions are briefly treated.

The book manifests a tendency to fix in diagrammatic form things that are still uncertain or too complex to be made clear by diagrams. The reader is not illuminated by a picture of steep and undermined banks, rocky and uneven at the bottom, holding a turbulent fluid in which arrows are pointing in all directions, entitled " cross section of the stream of consciousness." And the illustration of " the protoplasmic particle " (p. 27) is not only not instructive, but is positively misleading as to the nature of the relations of constituents of the living substance. Similar criticism may properly be offered concerning the " diagram of cell-metabolism " which constitutes the frontispiece.

The text is seriously marred by innumerable small errors. " Myer " for " Meyer," the remark that " the *thud* made by the bolus dropping into the stomach can be often heard," the ascription of the discovery of the activation of trypsinogen by entero-kinase to Bayliss and Starling, the statement that the vagus innervates the large intestine, the repeated designation of the contents of the colon as " chyle," the entire neglect of the proof that the parathyroids have special functions of vital importance (they are noted merely as present to serve as substitutes in case the thyroids are diseased), the mention of nervous chemism as a considerable source of body heat, the claim that auricular diastole is " one of the constant causes of the circulation," the reference to the ampulla of a fish as an example of a " pleasure end-organ," — these are merely examples of errors to be found extensively throughout the volume.

Some of the original graphic records published in the volume show lamentably poor technic, and are likely to mislead students as to the quality of work which is worthy of preservation. Although the book is ostensibly devoted to human physiology, a good deal of space is given to the special physiology of a lizard (*anolis*) and a small crustacean (*daphnia*). A number of figures illustrating special structures in fishes and birds receive very little or no reference in the text.

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American Teachers for a Japanese University. — Letters received in New York by friends of Dr. Naka Gawa, of the class of 1900 of the College of Physicians and Surgeons, give intimation that representatives will shortly be sent to the United States to invite several distinguished American physicians and surgeons to join the teaching staff of the University of Tokio. Nearly all the students of that institution understand English, and the university purposes securing the services of some of the most competent and eminent teachers from the United States in certain special fields, if this can be accomplished. — *N. Y. Med. Jour.*

THE BOSTON
Medical and Surgical Journal.

THURSDAY, JULY 8, 1909

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SUGGESTED CHANGES IN MEDICAL EDUCATION.

In his recent address at the graduation exercises of the Yale Medical School, Dr. Howell, Dean of the Johns Hopkins School, suggested three possibly desirable changes in medical education: first, the requirement of a year's hospital service at the close of the course; second, the requirement that clinical teachers shall be also well trained in the laboratory sciences; third, the provision of better "facilities for research in the practical branches of medicine." He also recommended that professors of clinical subjects be paid larger salaries and be expected to give a correspondingly greater amount of time to their duties of teaching and investigating.

There is nothing startlingly new in any of these suggestions. Of course it is desirable that teachers of medicine should be as widely trained as possible and should be adequately paid. Most schools, however, have less lack of facilities for research than of men with the genius for valuable accomplishment in doing it. The multiplication of laboratories does not necessarily mean real progress in medicine; it may even tend to the development of a breed of scientists whose discoveries, though doubtless matters of fact, have little pertinence to science or life. Indeed, it might well be suggested, in reply, that laboratory teachers be also humanized by thorough training and practice in the clinical branches of medicine.

The requirements of a year's hospital service, however, as part of the work for a degree in medicine, is an obvious and unquestioned desideratum. Unfortunately certain difficulties lie in the way of its general establishment. If a hospital service is required, opportunity for it must be provided, and this can be done only by schools which control the visiting and resident appointments of a hospital. Such control can exist only in hospitals, endowment and trusteeship of which are in the hands of the school, and such hospitals are as yet few. Their number is not likely to increase fast, for there is liable to be a prejudice in the minds both of donors and of those persons in the community who are to constitute the hospital clinic, against an ostensibly charitable medical institution controlled by those whose primary interest might be suspected to be the promotion of education rather than the care of the sick. Those who have faith in the integrity of the profession know this prejudice to be unjustifiable, but there seems reason to believe that time may be required to eradicate it. Indeed the proposition involves the old problem of coördination between hospital and medical school, between the teaching and the beneficent practice of medicine. It is a problem which in this community has hitherto been solved by the concessions of institutions and the tact of individuals. It is impossible to determine otherwise than by experiment how it can best be solved in the future to the mutual advantage of medical charity and medical education.

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THE BOSTON FLOATING HOSPITAL.

The fifteenth annual report of the Boston Floating Hospital summarizing the work of the season of 1908 appears opportunely at the opening of the work of this year. This charity of recognized usefulness and public utility is dependent for its support largely upon the contributions of public-spirited persons, and the report is, therefore, particularly useful as a further stimulus to interest and encouragement of generosity. The work last year was the most successful in the history of the institution, due, in the first place, to the natural growth of such a charity, and in the second to the new hospital boat, admirably adapted to the somewhat exacting needs of the patients. Permanent patients to the number of one hundred and thirty were treated, and by the addition of certain new beds the number of day patients was increased to one hundred and twenty-five. In the brief statement made by Dr. J. L. Morse, chairman of the visiting staff, attention is drawn to the fact that small advantage was taken of the opportunities for scientific research afforded by the hospital. This was in great measure due to the fact that funds were not available for the prosecution of this work. It is announced that this year, through the generosity of two individuals, original investigations will be begun concerning the cause, recognition and treatment of diarrheal diseases of infancy. In the words of the report, "With this work going on, the hospital will at last be fulfilling all the functions of a modern hospital, which include not only the care of the sick and the training of nurses and physicians, but also the study of disease and original investigations into its causation and treatment." Much of the report is taken up with statistics and a long list of the contributors for the fiscal year of 1908. The report is illustrated with various appropriate pictures of the boat and its work. Under these circumstances it seems unnecessary to introduce the commonplace picture of the physician and sick child, which has small interest even from the sentimental standpoint.

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HOT WEATHER MORTALITY.

The recent period of hot weather caused a notable increase in the death-rate throughout the country. In New York City during the week of the hot wave there was "an increase of nearly two hundred deaths over the figures for the corresponding period last year." Of these, about five deaths a day were due to sunstroke, the remainder being reported largely under the head of heart disease.

It would seem that hot weather in itself ought not to cause such mortality. Its burden falls chiefly on those least able to bear it, — on infants, on the debilitated, on patients with chronic cardiac disease, on those whose occupation prevents them from properly protecting themselves against the heat. It operates psychically as well as physically; it increases irritability, makes all work more difficult, all pain harder to bear. One great trouble is that Americans do not know how to take hot weather. They insist on continuing to eat and work as usual, and they pay the penalty. When we learn to abate our activity during the middle of the day, as all southern races do, to dress sensibly, and to avoid worry, we shall be as healthy and happy in hot weather as in cold.

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PROFESSIONAL SECRECY IN VENEREAL DISEASE.

The American Institute of Homeopathy, according to the daily press, at its recent meeting in Detroit "adopted an amendment to its code of ethics releasing physicians from professional secrecy regarding private affairs of patients or their families when such secrecy or silence results in the injury or infection of innocent persons." This action, which presumably relates to a doctor's duty in the presence of syphilis or gonorrhea, is apparently another attempt to solve by legislation a problem which can be worked out only by the slow development of professional and public opinion. Medical ethics, so-called, like ethics of any other brand, is always a fertile field for disagreement; and questions of truth-telling and concealment by physicians have within a few years been warmly discussed, though not settled. Such discussion is valuable in that it leads to the expression of all points of view, but there is doubt as to the present wisdom or profitableness of formulating any official dogma on the subject.

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MEDICAL NOTES.

Plague in Amoy. — Official reports state that bubonic plague has broken out in Amoy, with the result that there were 177 deaths during the two weeks ending June 29.

Deaths from July Fourth Celebration. — According to preliminary statistics published by the Chicago *Record Herald*, the result of the celebration of July Fourth, extending over three days, has been the death of 46 persons and the injury, more or less serious, of 1575. As reported on July 6, the deaths due to tetanus had already numbered 18.

Amendment to Interstate Quarantine Regulations. — An amendment has been made to the interstate quarantine regulations by the addition of the following paragraph: "Lepers may be accepted for transportation under proper supervision when en route to a seaport for deportation; also for transportation to a designated place for care and treatment, with the necessary consent of the proper health authorities, provided proper sanitary precautions are enforced with regard to the leper en route to destination."

Civil Service Examinations. — The United States Civil Service Commission announces an examination on July 14, 1909, to secure eligibles from which to make certification to fill a vacancy in the position of pathologist (male), $2000 per annum, Freedmen's Hospital, Washington, D. C., and vacancies requiring similar qualifications as they may occur in that hospital, and also an examination on July 21, 1909, to secure eligibles from which to make certification to fill vacancies as they may occur in the position of physician, at $150 per month, in the Panama Canal Service.

POST-MORTEM PAY. — An important decision has been reached in the case of a Chicago physician in relation to post-mortem payment of fees. The Circuit Court originally awarded the physician $100,000 against the estate of a patient who died at the age of eighty-four, after having been under the plaintiff's medical care for about five years. The Appellate Court has reversed the decision, the opinion maintaining that a contract providing for payment at the death of the patient was contrary to public policy and, therefore, void, and that it offered a premium to the physician to accelerate death. The court was, however, sufficiently gracious to add that no such suspicion could be entertained in this particular case.

BOSTON AND NEW ENGLAND.

ACUTE INFECTIOUS DISEASES IN BOSTON. — For the week ending at noon, July 6, 1909, there were reported to the Board of Health of Boston the following cases of acute infectious diseases: Diphtheria 28, scarlatina 15, typhoid fever 5, measles 65, smallpox 0, tuberculosis 51.

The death-rate of the reported deaths for the week ending July 6, 1909, was 12.40.

BOSTON MORTALITY STATISTICS. — The total number of deaths reported to the Board of Health for the week ending Saturday noon, July 3, 1909, was 170, against 196 the corresponding week of last year, showing a decrease of 26 deaths and making the death-rate for the week 14.23. Of this number 100 were males and 70 were females; 168 were white and 2 colored; 90 were born in the United States, 79 in foreign countries and 1 unknown; 32 were of American parentage, 112 of foreign parentage and 26 unknown. The number of cases and deaths from infectious diseases reported this week is as follows: Diphtheria, 24 cases and 3 deaths; scarlatina, 17 cases and 1 death; typhoid fever, 6 cases and 0 death; measles, 91 cases and 1 death; tuberculosis, 69 cases and 16 deaths; smallpox, 0 cases and 0 deaths. The deaths from pneumonia were 11, whooping cough 0, heart disease 15, bronchitis 0 and marasmus 0. There were 25 deaths from violent causes. The number of children who died under one year was 21; the number under five years 41. The number of persons who died over sixty years of age was 35. The deaths in public institutions were 76.

Cerebro-spinal meningitis, 1 death.

Of the above the following were non-residents: Consumption, 4 cases and 4 deaths; typhoid fever, 1 case.

Deducting deaths of non-residents, the total is 160. The corrected death-rate is then 12.64.

DR. WILLIAM L. RICHARDSON, OVERSEER. — At the last election to the Board of Overseers of Harvard University, Dr. William L. Richardson, formerly dean of the Medical School, was chosen an overseer.

GIFT TO THE HARVARD DENTAL SCHOOL. — At the dinner of the Harvard Dental Alumni Association recently held in Boston, announcement was made that an endowment fund of $10,000 had been given to the Dental School by the relatives of Joseph W. Smith, a member of the class of 1901, who was drowned. A considerable sum was also raised by this class as a memorial to their classmate.

HARVARD MEDICAL ALUMNI ASSOCIATION. — At the recent annual meeting of the Harvard Alumni Association, Dr. J. Collins Warren, of Boston, was elected president. Other officers are as follows: Vice-Presidents, Dr. R. C. Cabot, of Boston; Dr. J. M. T. Finney, of Baltimore; Dr. George W. Gay, of Boston; Dr. T. F. Harrington, of Boston; Dr. C. F. Hoover, of Cleveland; Dr. H. Lilienthal, of New York; Dr. H. C. Moffitt, of San Francisco; Dr. E. H. Stevens, of Cambridge; Major General Leonard Wood, U. S. A.; Dr. Alfred Worcester, of Waltham. Secretary, Dr. David Cheever, of Boston. Treasurer, Dr. W. H. Prescott, of Boston. Councillor for unexpired term, Dr. J. W. Bartol, of Boston. Councillors for the terms of 1909–1913, Dr. F. B. Lund, of Boston; Dr. J. M. Peters, of Providence; Dr. S. B. Woodward, of Worcester. Former President Eliot of Harvard and Dean Henry A. Christian of the Medical School were elected honorary members.

NEW YORK.

APPROPRIATION FOR PLAYGROUNDS. — At its meeting on June 22, the Board of Aldermen voted special revenue bonds to the amount of $155,000 for appropriations for additional playgrounds and for experimental trade schools under the direction of the Board of Education.

BEQUESTS. — Among the charitable bequests in the will of the late Mrs. Maria C. Tayler, widow of William H. Tayler, of New York, are $25,000 to the University and Bellevue Hospital Medical College, to be known as the William H. Tayler memorial medical endowment fund; $7,500 to the New York Home for Incurables, to endow a free bed in memory of her father, William Watson; and $5,000 to the New York Orthopedic Dispensary and Hospital.

Current Literature.

MEDICAL RECORD.

JUNE 12, 1909.

1. FISHBERG, M. *The Inadequacy of the Sanatorium Treatment of Tuberculosis.*
2. *HECHT, D. O. *The Treatment of Syphilis and Parasyphilis of the Nervous System.*
3. GOELET, A. H. *Concealed Appendix.*
4. O'HANLON, P. F. *Some Coroners' Cases.*
5. ANDERSON, J. F., AND GOLDBERGER, J. *Report of a Case of Hydrophobia.*

2. The author brings out in his paper the pathology of the lesions of the nervous system as a result of syphilis, and goes at length into a discussion of the rational treatment of the syphilitic and parasyphilitic affections. He epitomizes the subject as follows: (1) Syphilis and parasyphilis of the nervous system continue to stand in direct and indirect causal relation to primary syphilis, although their nosologic position is very likely to undergo revision, as the discovery of the spirocheta pallida, and the serum diagnosis of to-day, stand the test of time and further development; (2) the therapeutic position, it is hoped, will also share this signal advance, but in the expectant interval it is well to insist that neither a routine nor a haphazard administration of antispecifics is commendable; (3) treatment to be intelligent must meet the requirements of each case with due regard for the many collateral, chiefly supportive, measures; (4) antispecifics, when indicated in these conditions, mean mercury and iodides; (5) in the vast majority of cases occurring in neurologic practice, mercury by inunction is the method of choice; (6) the Fraenkel exercise treatment for the ataxia of tabes loses none of its efficiency if a departure is taken from the original complex plan to a simpler one. [W. B. R.]

NEW YORK MEDICAL JOURNAL.

JUNE 19, 1909.

1. PIFFARD, H. G. *Some Problems Connected with Tuberculosis.*
2. *ROSENBERGER, R. C. *Further Studies on the Presence of the Tubercle Bacillus in the Circulating Blood.*
3. HUDSON-MAKUEN, G. *Some Indications for the Removal of the Faucial Tonsil and Suggestions as to its Technic.*
4. SWEENY, G. B. *Human and Bovine Tubercle Bacilli.*
5. PORCHER, W. P. *An Expeditious Method for the Submucous Resection of the Triangular Cartilage of the Nose.*
6. WEIL, H. *Irrigation Treatment of Puerperal Sepsis.*
7. BERRY, J. M. *Some Practical Lessons from the Study of Two Hundred Cases of Weakened Feet.*
8. CORNWALL, E. E. *A Case of Malignant Endocarditis Without Fever.*

2. As a result of his studies, Rosenberger believes that tubercle bacilli can be demonstrated in the blood in every case where there is an active tuberculous process; also, that they are present in the blood of many apparently healthy persons, ready to produce tuberculosis as soon as lowered resistance from any cause gives them a chance. He also believes that the bacilli are transmitted from mother to child through the placenta. [L. D. C.]

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION.

JUNE 26, 1909.

1. KEEN, W. W. *Educational Ideals in Medicine.*
2. HUBBELL, A. A. *Ophthalmologic Qualifications which should be Demanded of the General Practitioner and of the Specialist Respectively.*
3. WILM, E. C. *A Pragmatic View of Christian Science.*
4. *GRANDY, C. R. *Whooping Cough from the Point of View of the Public Health.*
5. NILES, G. M. *Some Thoughts Concerning Sleep and Digestion.*
6. DUNTON, W. R. *The Responsibility of the Physician in Cases which are a Menace to the Public Safety.*

4. Grandy declares we must educate the physician and the public up to the fact that whooping cough is not the harmless disease so often supposed. It nearly always causes more deaths in the registration area than measles or scarlet fever, and in 1907 caused sixty-five times as many deaths as smallpox. One reason for the high death-rate is the general impression that it is a comparatively mild disease which all children must have, and that the sooner it is over the better for all concerned. For this state of affairs the medical profession is primarily to blame, for we have not sufficiently warned our patients of the danger, especially to the very young. When we consider that over 95% of the deaths from whooping cough occur before the fifth year, and that consequently we could save almost all the children who die of it if we could merely keep them away from direct infection till they are beyond that age, we can appreciate how criminal our present carelessness is. Forchheimer says that "in few diseases can so much be done by prophylaxis; in few is so little done." We can reduce the mortality to a relatively unimportant figure by merely protecting the children under five years of age from direct exposure. The first step is to teach people that for the young, whooping cough is one of the most fatal of diseases. All large cities should have whooping-cough hospitals. Nothing is more important than early diagnosis and early warning by the doctor. [E. H. R.]

THE AMERICAN JOURNAL OF THE MEDICAL SCIENCES.

JUNE, 1909.

1. *COLEMAN, W. *Short Duration Typhoid Fever.*
2. *WORSTER, W. P. *Heart Failure in Infectious Diseases: Its Prevention and Successful Management.*
3. *HEWLETT, A. W., AND CLARK, W. R. P. *The Symptoms of Descending Thoracic Aneurysm.*
4. *MACCARTY, W. C. *The Reversion Theory and Classification of Goiter.*
5. *NATHAN, P. W. *The Nature, Diagnosis and Treatment of Metabolic Osteo-arthritis, So-called Rheumatoid Arthritis, Arthritis Deformans, etc.*
6. *BRILL, N. E., MANDELBAUM, F. S., AND LIBMAN, E. *Primary Splenomegaly of the Gaucher Type.*
7. GARBAT, A. L. *Primary Carcinoma of the Lungs.*
8. *HART, T. S. *The Detection of B-Oxybutyric Acid in the Urine.*
9. *CLARKE, T. W. *The Effect of Certain So-called Milk Modifiers on the Gastric Digestion of Infants.*
10. *JACKSON, G. T. *Boils: A Note on Their Treatment.*

1. Coleman shows that since the use of exact methods in the diagnosis of typhoid fever, the Widal serum reaction and cultures from stools and from blood, cases are recognized to be typhoid fever which would not formerly have been considered so. This is particularly true of mild cases of short duration which were formerly classed as "fibricular" and the like. Of 229 cases of typhoid at the Bellevue Hospital in 1904–7, 24 were of this type. In 9 of these the diagnosis was proved by blood culture, in 11 by the serum reaction, and in the remaining 4 it rested upon clinical evidence. He urges that such cases should be treated as typhoid until proved to be due to other causes.

2. Worster urges a more general use of hydrotherapy in infectious diseases to stimulate the tone of the peripheral vessels and heart and to strengthen their vasomotor control.

3. Hewlett and Clark call attention to the difficulty of diagnosis of aneurysm of the descending thoracic aorta and report in detail 6 cases. In 5 of these the chief symptom was pain. In the remaining case there were no symptoms or signs suggesting aneurysm, the pulsating body being discovered accidentally in the course of an x-ray examination. In the first 5 cases the pain was severe and resistant to medication. In 1 case it was referred to the center of the back, but in the remaining 4 it was limited to the left side of the chest of neuralgic type and associated with tender spots or cutaneous hyperalgesia. Physical signs were almost entirely absent, except for the evidence of the x-ray.

4. MacCarty suggests the hypothesis that in Graves' disease the nature of the disorder may be a reversion to an earlier type of thyroid function of a possible ancestral or

embryonic form. He compares the thyroid with the true secreting glands of the body and their pathologic activity to that sometimes observed in supernumerary breasts during pregnancy. In the second portion of the paper is given the classification of goiters previously published as follows: 1. Cystic. 2. Hypertrophic parenchymatous. 3. Papillary cystic. 4. Hypertrophic fetal. 5. Fetal adenoma. Hyperthyroidism always occurs in the second and third types, and may occur in the last type.

5. Nathan's article is a long discussion of that type of chronic joint disease which he calls metabolic osteoarthritis, described by Goldthwait as atrophic arthritis. This disease seems to be a clinical entity, and although its cause is wholly unknown, it seems probable that it is not an infectious, but rather a trophic, disorder. It is always polyarticular and symmetrical, of insidious onset and gradually progressive course. Early symptoms are muscular atrophy and a feeling of stiffness in the joints; later appear pain of variable intensity, joint swelling, often nodular, then joint deformity. Severe cases lead to complete helplessness. The condition is to be distinguished from recurrent infectious arthritis by its gradual onset, and from senile osteo-arthritis (hypertrophic arthritis of Goldthwait) by the type of deformity. Radiograms of these several conditions are all characteristic. In the disease here described, these show, as do the pathologic specimens examined by Nathan, marked rarefication of bones confined to the regions close to the joints, with atrophy of joint tissues, without exostoses or ankylosis. The treatment is unsatisfactory, but is not without effect. Nathan advises rest in bed until acute symptoms have subsided, then cautiously passive motion is begun, then active motion until the patient can be got on his feet. Massage is not advised. The kifolac treatment is not endorsed. Nathan recommends the use of thymus extract, two and three 5-grain tablets three or four times a day. Marked deformities are corrected by tenotomy and apparatus.

6. Brill, Mandelbaum and Libman report in detail the pathologic findings in the sister of a case with the same disease which they reported in 1905. This disease of primary splenomegaly is a condition starting in early life, often affecting several members of a family and running a chronic course. It is characterized by great enlargement of the spleen, later also of the liver, without jaundice or ascites; by pigmentation of surfaces exposed to light; and by the absence of characteristic findings in the blood. Histologically are found in the liver, spleen, lymph-glands and bone marrow large cells with a peculiar hyaline protoplasm similar to, but differing from, amyloid. The disease differs from lymphosarcoma, with which it has been thought to be related, in the absence of characteristics of malignancy. It is also improbable that it bears any relation to tuberculosis.

8. Hart reports a simple method for the detection of B-oxybutyric acid in the urine, by the removal of acetone and diacetic acid by heat, followed by oxidation of B-oxybutyric acid to acetone by means of hydrogen peroxide. He performs the test as follows: To 20 ccm. of suspected urine are added 20 ccm. of water and a few drops of acetic acid; this is boiled down to 10 ccm. volume, after which water is added up to 20 ccm. Of this, 10 ccm. are put in each of two test tubes. To one is added 1 ccm. of hydrogen peroxide, and this tube is warmed gently for one minute, then cooled. Then to each tube is added ½ ccm. of glacial acetic acid and a few drops of freshly-prepared solution of sodium nitroprussiate; this in each tube is overlaid with 2 ccm. concentrated ammonium hydroxide. If B-oxybutyric acid is present the tube to which the peroxide has been added will show a purplish-red contact ring; if it is absent, the two tubes will appear the same. This test will detect B-oxybutyric acid as low as 0.3%.

9. Clarke has studied the stomach contents of infants after the ingestion of a variety of substances. While some of his results are not conclusive, others deserve attention. Lime water was found to increase instead of diminish the gastric acidity. Sodium citrate, although it diminishes the size of the curd in milk mixtures, seemed to diminish the digestive power of the stomach by diminishing the hydrochloric acid. From these theoretic grounds he argues that where the acidity is low, either small doses of alkalies or of hydrochloric acid are indicated, and that where the acidity is excessive, sodium citrate may be tried.

10. Jackson emphasizes the danger of spreading the infectious agent in boils by failing to protect the surrounding skin against the pus. He treats boils by boring into the softened point with a sharpened stick wound with cotton and dipped in 95% carbolic acid. The boil should not be squeezed. The surrounding skin should be washed with an antiseptic solution and kept covered with a 10% salicylic acid ointment for a week. He does not dispute the value of vaccines in obstinate cases, but regards them as generally unnecessary. [F. W. P.]

Deutsche Medizinische Wochenschrift. No. 21.

May 27, 1909.

1. Heubner, O. *The Differential Diagnosis of the Acute Exanthemata.*
2. *Fleischmann, P., and Wjasmensky, H. *The Intravenous Injection of Strophanthin, with Employment of the Crystalline Form of Thom.*
3. Gudzent, F. *The Influence of Radium on the Uric Acid Salts.* (Preliminary communication.)
4. Rothschild, D. *Mixed Tuberculin. (Polygenous Bacillary Emulsion.)*
5. Kleine. *Further Scientific Observations on the Development of Trypanosomes in the Fly.*
6. *Renner, O. *Transitory Hemiplegia in Migraine.*
7. Hoeflmayr. *Gynoval, a New Preparation.*
8. Granier. *Typical Fractures of the Carpal Bones.*
9. Brandenberg, F. *A Case of Chyluria with Glycosuria.*
10. Jacoby, M. *The Influence of Uterine Myoma on Childbirth.*
11. Schmincke and Stoeber. *Criticism of the Schürmann Color Reaction in Syphilis.*
12. Mieronsky, E. *The Schürmann Method for Diagnosing Syphilis by Means of a Color Reaction.*

2. Fleischmann and Wjasmensky cite some cases in which the intravenous injection of strophanthin has worked well. In some of these cases of disturbed circulation from various causes digitalis preparations by the usual methods have been used without success. They employ an absolutely pure crystalline strophanthin prepared by Merck, and consider that the purity of the drug is essential. Another important factor in the use of this drug is the dosage. For general use ½ mgm. of the crystalline drug is the proper dose. These authors observed practically no ill effects from its use.

6. Renner mentions three cases in which a transitory hemiplegia appeared in accompaniment of other typical migraine symptoms. This hemiplegia cleared up at the same time as the migraine. Though by no means conclusive, this adds another support to the alleged vaso-motor origin of migraine. This condition is looked upon as a sudden contraction of the vessels with localized anemia of certain cerebral areas. [C. F., Jr.]

Münchener Medizinische Wochenschrift. No. 23.

June 8, 1909.

1. Schwartze, H. *Three Lectures on Otology. — III.*
2. Jacobi, E. *The Effect on Syphilis of Suspending the Police Inspection of Prostitutes in Freiburg.* (Preliminary communication.)
3. Merkel, H. *The Recognition of Primary Tuberculosis of the Naso-Pharynx.*
4. Baermann, G. *Croupous Inflammations of the Intestine.*
5. v. Domarns. *A Contribution to the Question of Myelogenous Pseudo-leukemia.*
6. Forssell, G. *Röntgenology of Endogenous Prostatic Concretions.*
7. Kappis, A. *Torsion of the Small Intestine following Purulent Appendicitis and Appendectomy.*
8. Kaspar, K. *Hypertrophic Stenosis of the Pylorus in Infancy.*
9. Linhart, A. *New Forceps for Extracting the Molar Teeth of the Lower Jaw.*
10. Mathes. *Painless Perineorrhaphy.*
11. Yaege, K. *Iron as a Substitute for Bismuth in Röntgenology.*
12. Richter, G. *A New Apparatus for Alternating Current.*

13. KOPP. *The Significance of the Wassermann Reaction for the Diagnosis of Syphilis in Practice.*
14. BÖHME, A. *Immune Opsonin of Tuberculosis.* (Conclusion.)

[G. C. S.]

BERLINER KLINISCHE WOCHENSCHRIFT. NO. 24.

JUNE 14, 1909.

1. BOAS, I. *Nausea.*
2. *LEWISOHN, L. *The Connection between Gastric and Gynecologic Affections.*
3. GRANDAUER, K. *Gastric Ulcer and the Digestive Flow of Gastric Juice.*
4. *HALBERSTAEDTER, L., AND V. PROWAZEK, S. *The Etiology of Trachoma.*
5. LEVY, R. *Fractures of the Astragalus.*
6. BAUERMEISTER, W. *A Case of Fulminating Myelogenous Leukemia.*
7. SELIGMANN, E., AND BLUME, G. *The Lues Reaction in the Cadaver.*
8. *DAVIDSOHN, H., AND FRIEDEMANN, U. *Researches on Salt-Fever in Normal and Anaphylactic Rabbits.* (Preliminary communication.)
9. DE DOMINICIS, A. *New and Improved Method for the Demonstration of Spermatozoa.*
10. GOLDMANN, F. *Criticism of Zeehandelaar's Method of Determining Sugar in the Urine with the Glucosimeter.*
11. *RUNGE, E. *Umbilical Affections of the Newborn.*

2. From an exhaustive clinical and literary study of the physiologic and pathologic relations subsisting between the stomach and the female reproductive organs, Lewisohn reaches the following conclusions:

(*a*) Examination of the gastric contents during menstruation, pregnancy, or the puerperium does not give a clear picture of the secretory function of the stomach.

(*b*) Only in a relatively small number of the women who complain of simultaneous trouble in the stomach and in the pelvis do the pathologic processes in the genital system stand in causal connection with the gastric disease.

(*c*) There is no uniformity in the results of examinations of gastric contents in women with pelvic disease; some investigators find hyperacidity, some normal secretion, some hypoacidity.

(*d*) Gastric disturbances may be associated with the most widely different disease processes of the genital tract.

(*e*) Special nervous disease of the stomach is preceded by an alteration of the entire nervous system, which may be first evidenced by the genital affection.

Therapeutically, therefore, he warns against trying to cure all diseases in women by treating the pelvic organs, and justly condemns gynecologic polypragmatism.

4. For the purpose of controverting the alleged discovery by Greeff of the infecting agent in trachoma, the writers renew and extend their previous report of investigations relative to the etiology of this disease made in Java in 1906. At that time they observed characteristic inclusions in the conjunctival epithelial cells, both of human patients with trachoma and of orang-outangs artificially infected. These inclusions, which were of a generally bipunctate agglomerate form, showed a cyclic variation of morphology and are believed by the authors to be the protozoan etiologic agent of trachoma, though this probability can be converted into certainty only by cultivation of the organisms, in which they have not yet succeeded.

8. It has recently been shown by Finkelstein and his collaborators that doses of salt and sugar given to sucklings with their milk can produce a purely alimentary, nonbacterial fever. Infants whose metabolism has been seriously upset by repeated alimentary disturbances and infections are particularly susceptible, especially to sugar In their present paper Davidsohn and Friedemann give preliminary account of their experiments, showing that a similar aseptic fever may be produced in normal rabbits by subcutaneous or intravenous injection of 0.6% to 2% salt solution, of glucose, of blood serum or of Ringer's solution. In all cases the toxic effect of salt was about twice as great with subcutaneous as with intravenous injection, seeming to indicate that its action on the heart center does not occur immediately on its entrance into the blood-stream, but only after metabolic change in the tissues. The action of NaCl could not be neutralized by the addition of Ca. Rabbits, in whom anaphylaxis had been produced by intravenous injection of 2 ccm. of cow serum per kilogram of body weight showed a greatly heightened susceptibility to both intravenous and subcutaneous salt injections, a phenomenon which the authors pertinently suggest to be analogous to the hyper-susceptibility of infants with metabolic disturbance.

11. One of the least satisfactory points of modern obstetric technic is the care of the cord. Runge describes the methods employed in his clinic at Berlin, but adds little to our knowledge. He relies chiefly on dry sterile dressing, and does not use antiseptic powders till after the separation of the cord. He also describes the infections and rarer congenital anomalies of the umbilicus and their treatment.

[R. M. G.]

ARCHIV FUR KLINISCHE CHIRURGIE. BD. 89. HEFT. 2.

8. *AXHAUSEN, G. *The Occurrence of Partial Sequestration of Transplanted Bone Tissue.*
9. ROSENBACH, F. *Surgery of the Pancreas.*
10. SERTOLI, A. *Ultimate Results of Radical Operation in Herniæ.*
11. PULLMANN, W. *A Retroperitoneal Tumor, Most Probably Oöphorogenous.*
12. *ZAHRADNICKY. *The Results of Spinal Anesthesia, Especially in Laparotomies.*
13. *MINTZ, W. *Umbilical Adenoma.*
14. *GANGITANO, F. *Peri-Appendicular, Pseudo-Neoplastic Inflammatory Tumors.*
15. APPEL, K. *Atypical Laceration of the Extensor Mechanism of the Knee.*
16. TYRMAN, J. *A Contribution to the Knowledge of Broncho-Biliary Fistula.*
17. MORI, M. *A Contribution to the Technic of Intestinal Resection in the Treatment of Artificial Anus.*
18. EKEHORN, G. *A Simple but Rational Operative Method of Treatment of Prolapse of the Rectum in Children.*
19. OSCHMANN, A. *A New Method for the Approximation of Gastro-Enterostomies, Intestinal and Other Anastomoses.*
20. BERGEMANN, W. *The Development of the Tuberosity of the Tibia and its Typical Disease in Adolescence.*
21. *FELTEN. *Total Acquired Retroperitoneal Hernia of Treitz.*

8. Axhausen presents some new histologic researches on bone transplantation in man, and concludes that even in the absence of infection there is more or less necrosis of the transplanted tissue, which may result in partial sequestration of the necrotic portion.

12. Zahradnicky tabulates and discusses the results of 1650 cases in which spinal anesthesia was induced, by various agents, for surgical operations, mainly laparotomies. As a result of his experience he is convinced that this method is preferable to general narcosis because it has no ill effect on heart and lungs, and recommends it for greater and more extensive use. He considers novocain preferable to all other agents, though stovain has less effect on the kidneys. With 0.17 gr. of novocain he is able to produce complete anesthesia in 96.1% of all cases, partial in 2.3%. In 3.9%, therefore, a general narcotic must also be given.

13. Mintz reports three cases of adenoma of the umbilicus, and collects others from the literature. Histogenetically he refers these tumors to remains of the omphalomesenteric duct.

14. From literary and clinical study, Gangitano is convinced that, as in other parts of the abdominal cavity, so about the appendix there may develop simple inflammatory pseudo-tumors which may easily be mistaken for tuberculosis, cancer or actinomycosis. The course of these growths is slow and their appearance characteristic. He believes that such tumors are in all probability of microbic origin, and that traumata may possibly favor their formation.

21. Felten reports a case of complete retroperitoneal hernia, a rare condition first described by Trietz in 1857. He collects from the literature nine other similar cases, and describes the condition as a clinical entity, which may be diagnosed by the following principal points of symptomatology:

(1) Intermittent ileus, with localization of pain in the region of the duodeno-jejunal flexure.

(2) Tympanitic tumor, of size varying with the passage of feces, in the left side of the abdomen, with a tense, elastic, almost cystic consistency, producing a spherical belly with depression in the region of the colon.

(3) The tumor can always be differentiated from the female pelvic genital organs. [R. M. G.]

Revue de Médecine.

January, 1909.

1. *Fiessinger, N., and Abrami, P. *Stippled Erythrocytes.*
2. Sabourin, C. *Sero-Fibrinous Interlobar Effusions in the Tuberculous.* (To be continued.)
3. Starkiewicz, W. *The Pathogenesis of Congenital Acholuric Jaundice.*

1. From an elaborate study of the conditions under which stippling or granulation of the red blood corpuscles occurs, the authors conclude that it is characteristic of

(*a*) Grave anemias, particularly pernicious anemias and intense secondary anemias, though there is not always a direct relation between the quantity of the abnormal elements and the severity of the anemia;

(*b*) Certain general intoxications, particularly saturnism;

(*c*) Hemolytic or hematogenous jaundice, as distinguished from hepatic icterus, in which stippling does not occur.

The histogenesis of stippled erythrocytes is still matter of discussion. [R. M. G.]

February, 1909.

1. Gougerot, H. *Experimental Production of Tuberculous Cirrhoses of the Liver.*
2. Sabourin, C. *Sero-Fibrinous Interlobar Effusions in the Tuberculous.* (Conclusion.)
3. Bousquet, L., and Roger, H. *Contribution to the Therapeutic Study of the Colloidal Metals.* (To be continued.)

March, 1909.

1. Mignot, R. *Notes on the Physical Development of General Paralytics.*
2. Laignel-Lavastine. *Psychic Disturbances in the Hypophysary Syndromes.*
3. Lortat-Jacob, L., and Vitry, G. *Local Adiposity following Experimental Lesions of the Sciatic Nerve.*
4. *Savy, P. *Hemiplegia from Cerebral Arteritis in Hereditary Syphilitics.*
5. Laignel-Lavastine. *Psychic Disturbances in Male Genital Syndromes.*

4. From a literary and clinical study of hemiplegia in hereditary syphilitics, Savy concludes that it is one of the distinctive cerebral manifestations of the disease, associated generally with other pathologic nervous phenomena, more or less masked by them, and expressed by complex anatomic lesions. He believes that there exists also, principally during early infancy, a variety of hemiplegia supervening suddenly in hereditary syphilitics, presenting a complete clinical picture, and disappearing under the influence of specific treatment in a few weeks or months. Sometimes there persists a little definite paresis and atrophy. Other cases evolve towards spasmodic infantile hemiplegia. These are absolutely comparable to the syphilitic hemiplegias of the adult, often transitory, and due likewise to specific cerebral arteritis with ischemia and sometimes subsequent softening in the region of the obliterated artery. Granted the indubitable existence of these hemiplegias of sudden onset in hereditary syphilitics, there is reason to suspect the specific nature of sudden infantile hemiplegias, even in the absence of any associated syphilitic manifestation. [R. M. G.]

Revue de Chirurgie.

June, 1909.

1. *Forgue, É., and Massabuau, G. *Tuberculous Elephantiasis.*
2. *Reclus, P., and Schwartz, A. *Exostoses of the Calcaneum.*
3. Quénu, E., and Küss, G. *Study on Dislocations of the Metatarsus.* (To be continued.)
4. Cotte, G. *Surgical Treatment of Cancer of the Biliary Passages.*
5. Delore, X., and Thévenet, C. *Intestinal Resections in Strangulated Hernia.*
6. Mocquot, P. *Reanimation of the Heart.* (Conclusion.)

1. In connection with the report of a case of tuberculous elephantiasis of the vulva, with admirable plates and histologic photomicrographs, the authors discuss tuberculosis as a cause of elephantiasis in general, most commonly due to filariasis or to mechanical interference with lymphatic circulation from trauma or after operative removal of lymph nodes. Tuberculous elephantiasis may develop either as the result of infiltration from lupus or other cutaneous lesions, or from tuberculosis of various organs, especially those of the genito-urinary system. Illustrative cases are collected from the literature, and there is an ample bibliography.

2. In discussing the pathogenesis of exostoses of the calcaneum, the writers apparently fail to note the possibility emphasized by Pfitzner, Dwight and others, that they may sometimes represent fused embryonic survivals of certain supernumerary bones of the tarsus, such as the os sustentaculi and calcaneum secondarium. [R. M. G.]

Bulletino delle Scienze Mediche.

April, 1909.

1. *Salaghi, S. *Experiments Performed with the Sphygmodynamometer.*
2. Bianchi, P. *Report of House Cases in the Vigorso Sanatorium.*

1. Salaghi presents in tabular form a series of 96 observations made on 84 patients with a sphygmodynamometer of his own device (described in *Il Policlinico*, 1909, No. 3). The cases are grouped as follows: (1) Young soldiers in normal health, as a standard of comparison; (2) soldiers with functional cardiac disturbances; (3) febrile diseases: typhoid, pleurisy, pneumonia, malaria, gonorrhea; (4) cases with hypertension; (5) organic diseases of the heart and aorta; (6) cases from all groups, with the arm at different levels; (7) cases from all groups under influence of various emotions.

A series of seemingly valuable data is accumulated, but the author considers the number of observations as yet too few to warrant categorical deductions. [R. M. G.]

May, 1909.

1. Bosellini, P. L. *Pseudoxanthoma Elasticum.*
2. *Bennati, F. *Influence of Myotoxic Sera on the Automatic Curve of Muscular Fatigue.*
3. Lunghetti, B. *The First Stages of Development of the Müllerian Duct in Birds.*
4. *Brunacci, B. *The Question of Ptyalinogenesis.* (Preliminary note.)
5. *Brunacci, B. *The Action of Electrolytes on the Salivary Ferment.* (Preliminary note.)
6. *Brunacci, B. *The Action of Electrolytes on the Substratum of Fermentation.* (Preliminary note.)

2. After a historical sketch of the discovery and general nature of cytotoxins, and a more minute account of the manner in which Patricelli in 1904 prepared and endeavored to employ therapeutically in guinea-pigs a myotoxic serum derived from rabbits, Bennati describes his own experiments, in which he injected into the peritoneal cavity of guinea-pigs an emulsion of frogs' muscles. The serum of these guinea-pigs was then injected in varying quantities and at different intervals into frogs and the effect on muscular contractions noted, and graphic records taken by means of Novi's apparatus. In general the results and conclusions of Patricelli were confirmed, especially that the administration of such myotoxic serum in small doses does for a short time stimulate muscular action.

4, 5, and 6. Brunacci presents preliminary reports of a series of experimental investigations of the saliva, which promise to be of interest and value in the field of biochemistry. [R. M. G.]

Correspondence.

THE SEXUAL QUESTION: A REJOINDER.

Boston, July 2, 1909.

Mr. Editor: As author of the notice published on page 763 in your issue of June 10, and made the subject of a letter on page 37 in your issue of July 1, may I be permitted a brief, unofficial reply explaining my position?

It was not my intention to express disapproval of psychic research *in toto*, or to imply that the sexual problems are not desirable objects of medical investigation. Purely as a matter of personal opinion, however, I believe there are certain types of perversion and degeneracy whose amelioration is of questionable benefit to a community which natural process is trying to rid of undesirable members, and whose minute study is evidence of a morbidity in the investigator analogous to that of the subject of the malady. Far be it from me to derogate the value of that specialty in medicine of which my critic is so eminent and beloved an exponent. I frankly admit that I have not a hundredth part of his knowledge and understanding, and in so far am unfit to criticise. Unlike him, however, I believe that criticism from any source should be welcome, feeling that everyone can profit from the comment of those without his own bias. I need not say that I can only thank my present critic for honoring my obscure paragraph with such illuminating and courteous protest.

Very truly yours,
Robert M. Green, M.D.

Miscellany.

STATE BOARD OF HEALTH. CIRCULAR CONCERNING INFANTILE PARALYSIS (FOR 1909).

To the Medical Profession of Massachusetts:

The investigation of infantile paralysis made in this state in the years 1907 and 1908 has yielded facts of value to the public health and of interest to the medical profession. The results of the 1907 investigation appeared in "Transactions of the Massachusetts Medical Society for 1908." The 1908 results will be published shortly, giving the account of a very serious epidemic occurring in large part in Health District No. 13 (Franklin and Hampshire counties).

Your co-operation is earnestly requested for the continuance of the investigation in 1909.

Of great importance in the search for the exciting cause of the disease is the bacteriologic study of the stools during the febrile disturbance, which nearly always ushers in the attack; and you will render valuable assistance in the work and confer a great favor if you will collect for the pathologist of the Board a specimen of the stools *as early as possible*, in the acute attack in any case of infantile paralysis that you may be called to attend.

A sterile container will be sent to you at once for a specimen of the feces if you will notify the state inspector of health of your district; or this office can be notified by telephone (Haymarket 2700), reversing the charge, if any; or by telegraph ("Collect"). The container, when filled, can be forwarded to Boston by express, at the Board's expense. Full directions for use, with return tags, etc., will be sent with the container.

As certain clinical facts are of much importance, blanks for reports will be sent to you, if you will kindly *notify the Board of all cases* already observed since January 1, or which may occur during the remainder of the year (1909).

Mark W. Richardson, *Secretary.*

RECORD OF MORTALITY

For the Week ending Saturday, June 26, 1909.

Cities.	Reported deaths in each.	Deaths under five years.	Cities.	Reported deaths in each.	Deaths under five years.
New York	—	—	Waltham	10	—
Chicago	492	140	Pittsfield	12	1
Philadelphia	—	—	Brookline	4	—
St. Louis	—	—	Gloucester	—	—
Baltimore	175	55	North Adams	7	—
Cleveland	—	—	Northampton	9	3
Buffalo	—	—	Chicopee	11	3
Pittsburg	—	—	Medford	5	1
Cincinnati	—	—	Beverly	5	1
Milwaukee	—	—	Leominster	8	2
Washington	—	—	Hyde Park	1	1
Providence	—	—	Melrose	3	2
Boston	190	47	Newburyport	7	—
Worcester	51	11	Revere	5	2
Fall River	43	25	Westfield	2	—
Cambridge	36	6	Woburn	3	1
Lowell	34	7	Peabody	—	—
New Bedford	33	5	Marlboro	3	0
Lynn	25	4	Attleboro	3	2
Springfield	35	10	Adams	2	1
Lawrence	18	8	Clinton	3	—
Somerville	16	4	Gardner	4	1
Brockton	10	2	Milford	2	0
Holyoke	21	13	Watertown	2	0
Malden	13	2	Plymouth	—	—
Chelsea	11	4	Southbridge	2	1
Newton	10	1	Weymouth	2	0
Salem	19	3	Framingham	3	2
Haverhill	11	2	Wakefield	—	—
Fitchburg	6	2	Webster	—	—
Everett	11	2	Arlington	3	—
Quincy	—	—	Greenfield	—	—
Taunton	8	1			

CHANGES IN THE MEDICAL CORPS U. S. NAVY FOR THE WEEK ENDING JULY 3, 1909.

Rodman, S. S., passed assistant surgeon. Ordered to temporary duty at the Naval Recruiting Station, Indianapolis, Ind. June 25.

Guest, M. S., surgeon. Detached from the Naval Academy, Annapolis, Md., and ordered to the Naval Hospital, Las Animas, Colo., for treatment. June 26.

Huntington, E. O., surgeon. Granted sick leave for three months when discharged from treatment at the Naval Medical School Hospital, Washington, D. C.

Shook, F. M., passed assistant surgeon. Detached from duty in the department of government and sanitation, Canal Zone, Isthmus of Panama, and ordered to duty at the Naval Medical School, Washington, D. C. June 26.

APPOINTMENTS.

Milton J. Rosenau, M.D., Director of the Public Health and Marine Hospital Laboratory in Washington, has been appointed Professor of Preventive Medicine and Hygiene at the Harvard Medical School.

Wilder Tileston, M.D., of Boston, has been appointed Assistant Professor of Medicine at the Yale University Medical School.

RECENT DEATH.

Frank Huron Wallace, M.D., M.M.S.S., died in Boston, June 27, 1909, aged fifty years.

BOOKS AND PAMPHLETS RECEIVED.

Diseases of the Bones and Joints. Clinical Studies. By Joel E. Goldthwait, M.D., Charles F. Painter, M.D., and Robert B. Osgood, M. D. Illustrated. Boston: D. C. Heath & Co. 1909.

Principles of Pharmacy. By Henry V. Arny, Ph.G., Ph.D. Illustrated. Philadelphia and London: W. B. Saunders Co. 1909.

Bier's Hyperemic Treatment in Surgery, Medicine and the Specialties. A Manual of its Practical Application. By Willy Meyer, M.D., and Prof. Dr. Victor Schmieden. Second revised edition, enlarged. Illustrated. Philadelphia and London: W. B. Saunders Co. 1909.

Tuberculosis, a Preventable and Curable Disease. By S. Adolphus Knopf, M.D. Illustrated. New York: Moffat, Yard & Co. 1909.

Symptoms and Their Interpretation. By James Mackenzie, M.D., M.R.C.P. Illustrated. London: Shaw & Sons. 1909.

Address.

SOME ASPECTS OF THE PATHOLOGICAL PHYSIOLOGY OF INTRACRANIAL TUMORS.*

BY HARVEY CUSHING, M.D.,
Associate Professor of Surgery, the Johns Hopkins University, Baltimore.

INTRACRANIAL growths are of peculiar gravity to the individual inasmuch as they affect the most vital organ of his body. To the physiologist and pathologist they are of peculiar interest by reason of the light they often shed on the localization of function and the unusual physical disturbances which arise in consequence of their origin within a rigid bony chamber. To the clinician they are of peculiar importance owing to their frequent occurrence and the ease with which they may be overlooked.

There seems to be little basis for the prevalent belief that a brain tumor is a relatively rare lesion, particularly if we are to include with "tumors" the infectious granulomata, cysts and the neoplasms which arise in the cerebral envelopes and subsequently crowd their way into the cranial cavity. Oppenheim goes so far as to regard the brain as the seat of predilection for new growths, and Bruns with some severity affirms that when a general practitioner says he has never encountered an instance of this disease, it is an acknowledgment that cases have passed through his hands unrecognized. Unquestionably failure to appreciate the existence of intracranial growths in the early stages is among the commonest of diagnostic errors.

Nor is it difficult to advance a reason for this state of things. In reviewing the possible causes of a given train of symptoms one naturally inclines toward the malady for which the greatest relief may be expected from established methods of treatment. For this reason syphilis is apt to be thought of first in the case of brain tumors. The early recognition of any disease of insidious onset is apt to go hand in hand with successful therapeutic measures; if these are vague, uncertain, unavailing, interest becomes lax and the disease reaches a full-blown stage, which fits the text-book description considered typical of the malady, before the patient attracts any earnest attention and is induced to enter the wards of a general hospital. Hence the opportunity for observing any large number of cases of intracranial tumor in their incipiency is unusual, and, owing to the comparative infrequency of prompt surgical exploration in the suspected cases, there has been little chance of gaining a first-hand knowledge of the early lesion, of acquiring familiarity with the associated pressure phenomena and of studying the absolutely fresh tissue. Furthermore, it has been unusual likewise for these unfortunates to end their days in the wards of an active hospital, for most of them have a pitifully long history and frequently gravitate to asylums for the mentally afflicted, where an unsuspected tumor is often disclosed at autopsy, as Blackburn's figures from the Government Hospital for the Insane indicate. But even if the story has terminated in a general hospital, a post-mortem view of the terminal stages of tumors of the brain, as of other organs, naturally gives the impression of operative impossibility, which largely accounts for the hopeless outlook that statisticians have held in regard to these lesions.

Since the opening of the Johns Hopkins Hospital twenty years ago the pathological records show that, up to Jan. 1, 1909, in 3,150 autopsies there were 55 cases in which brain tumor was found, — about 1.7%, or 1 case in 57 autopsies. This is an even larger percentage than that given by Seidel, who found, in Munich, an average of 1 case in 80 autopsies, or 1.25%; and by v. Beck, who found, in Heidelberg, an average of 1 case in 120 autopsies, or 0.8%. There are, of course, many elements to be considered in these figures, such as the average age of hospital patients, the character of the hospital service, the interest paid to neurological cases, etc.

Bruns states that 2% of all patients classified as "neurological" suffer from brain tumor, and Blackburn's figures (29 tumors in 1,642 autopsies, nearly 3%) show an equal percentage for all mentally afflicted (i. e., asylum) patients.

In the medical wards of the Johns Hopkins Hospital, in approximately 25,000 admissions up to Jan. 1, 1909, there have been in the neighborhood of 20 cases diagnosed as brain tumor (?) in each successive 5,000 admissions, making an average of 1 tumor case in every 250 patients.

In Dr. Halsted's surgical service, since the opening of the hospital in 1889, the number of patients with the diagnosis of brain tumor has risen from .06% in the first 5,000 admissions to 0.2% in the second 5,000; to .3% in the third 5,000; to 0.75% in the fourth 5,000; to 1.3% in the last 3,000 (i. e., from Jan. 1, 1907, to Jan. 1, 1909). In the last 1,000 surgical admissions there have been, up to the present date, 40 brain tumor cases, showing the rapid increase in the percentage of these patients in a general service to 4 in every 100 admissions.

The disturbances occasioned by a tumor have been conveniently divided into (1) *general pressure symptoms*, which in a measure occur irrespective of the situation or histological character of the growth; and (2) *focal or localizing symptoms*, which are manifestations that indicate the area of the brain implicated. For example, the familiar benign endothelioma which arises from the meninges in the cerebello-pontine angle, in the course of its enlargement and encroachment on the intracranial space, will ultimately produce headache, vertigo and paroxysmal vomiting, together with the well-known alterations in the eyegrounds, and at the same time will definitely call attention to its situation by evidences of involvement of the adjoining cerebellar hemisphere, as well as by pressure palsies in the distribution of the cerebral nerves which emerge from the pons in its immediate neighborhood.

This commonplace illustration of the fully developed symptomatology applies to the condition ultimately to be expected in the course of most cases of tumor when the diagnosis is written on the patient's retina if not on his face. What will soon be demanded of us will be the recognition of such a lesion before its symptoms are thus outspoken — no easy matter, for we are cut off from the more familiar methods of a physical examination bequeathed to us by Auenbrugger and Laënnec, and only the distant effects of a brain tumor, not the actual lesion, are accessible to the eyes, ears and fingers.[1]

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* A lecture under the auspices of the Cancer Commission of Harvard University, Feb. 25, 1909.

I. THE GENERAL EFFECTS OF TUMORS.

In the first place, a tumor may give rise to pressure symptoms alone when it occupies a "silent" or "mute" area of the brain, and in consequence of our scant knowledge of the function of the larger part of the cerebrum the majority of such tumors remain absolutely unlocalizable, even if their presence be suspected. On the other hand, a brain tumor early in its development may give local symptoms alone, with no appreciable pressure phenomena, should it have originated in a "speaking" in contradistinction to a mute or silent area; in other words, when it primarily implicates centers or paths the function of which is well understood. Finally, a brain tumor may be present for years and give rise to none of the symptoms considered characteristic of a new growth, so that a diagnosis of dementia, hysteria, psychoneurosis, migraine, headache from eyestrain, dyspepsia or nephritis, and what not, is made in the attempt to explain the symptomatic disturbances which may be present. A tabulation of the various diagnoses made in the early stages of a series of brain tumor cases would make a professionally disconcerting record.

One of Hughlings Jackson's characteristic dicta reads, "The study of the thing caused must precede the study of the cause of the thing," a consoling epigram, for with certain of the symptomatic pressure phenomena of brain tumor we are still in the stage of "studying the thing caused," and this is notably true of the headache and vomiting — symptoms which do not readily lend themselves to experimental methods of investigation.

It is quite probable, in the case of the headaches at least, that the "cause of the thing" in all instances is pressure. Here, however, we are confronted with a problem very similar to that which has puzzled physiologists and surgeons in the case of abdominal pain. The organ itself, the brain, — like the liver, the spleen and the intestines, — is insensitive, as is also its immediately investing membrane. The cranial cavity, however, is lined with and partitioned by an outer sentient membrane, the dura, `whose sensory fibers, trigeminal and vagal, are capable of demonstration by dissection. It has been observed that patients, after removal of the Gasserian ganglion or severance of the trigeminal nerve, no longer suffer from the sensation of headache on the anesthetic side of the head.[2] These facts would favor the view that the dura plays a part at least in these subjective discomforts; but it has been found in a number of instances in which cranial operations have been performed without anesthesia upon conscious patients that the dura is actually insensitive to touch or incision, and that a sensation of pain is elicited only when traction is made upon it. This condition is again comparable with that found in the case of the abdominal viscera, and Meltzer's view, that it is the mere exposure of the viscera in an enfeebled patient that leads to their apparent insensitiveness, is difficult to reconcile with what we know of other definitely sentient tissues. It would seem, therefore, that distortion of the falx or tentorium and the consequent dragging upon or stretching of the membrane may be an important factor. We know, for example, that headaches are often particularly agonizing in cases in which the dural pocket enclosing the hypophysis cerebri is distended by an enlargement of the gland, and that they cease as soon as the capsule has been incised. It has been learned, furthermore, that the headaches of tumor are often promptly and completely relieved by a successful "decompressive" operation, and even when a certain amount of discomfort persists after these measures, its severity varies with the degree of tension evident in the protruding area. Indeed, many headaches not associated with tumor may be of pressure origin. This is certainly true of the headaches of traumatic edema and of nephritis, and may be so even of ordinary migraine, judging from certain operative experiences which we have met with in these cases.[3]

As the German proverb tells us, "Where there is much light, the shadow is deeper." And it must be admitted that there are many points in relation to headache not entirely explained by assigning pressure as the cause. Thus, a lumbar puncture with withdrawal of cerebrospinal fluid from a healthy individual, which supposedly brings about a lessening of the normal degree of tension, may occasion great intracranial discomfort, and there are definite reflex headaches of gastric or ocular origin, and possibly those of anemia, which are difficult to reconcile with this view. Moreover, problems arise whose solution is for the psychologist rather than the physiologist. Perception of pain is unquestionably a cerebral function, for without the brain it is inconceivable that it should exist, and yet the brain itself (with the possible exception of the basal ganglia), so far as we know, is insensitive to the stimuli which give pain at the periphery. Faradization of the supposed sensory cortex in two conscious patients, though giving vague tactual impressions referred to the periphery, was provocative of no local sensation whatsoever.[4]

Particularly vague is our knowledge of the agencies which provoke the so-called cerebral vomiting — a symptom inconspicuous or entirely wanting in two-thirds of the cases, even after they have reached an advanced stage when other evidences of pressure are pronounced. Whether there is a center for this act in the medulla — possibly vagal — can only be conjectured, but the symptom is thought to be more common when the bulb is involved. I have seen a case in which occasional projectile vomiting persisted for months after the successful removal of a frontal lobe tumor, in spite of the disappearance of all other signs of pressure.

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[1] It is true that inspection is indirectly aided by the ophthalmoscope and occasionally by the x-ray; palpation, by the chance thinning of the bone overlying a growth. Percussion, likewise, is at times useful, as Phelps and Macewen have pointed out, and auscultation similarly may detect an aneurismal brûit. But these are exceptional rather than usual opportunities.

[2] The Sensory Distribution of the Fifth Cranial Nerve. Johns Hopkins Hosp. Bull., 1904, vol. xv, p. 223.

[3] A subtemporal decompression, performed in an intractable case of this sort upon a physician who had suffered for years from hemicrania, afforded an unexpected degree of relief.

[4] A Note upon the Faradization of the Post-Central Convolutions of the Human Brain in Conscious Patients. Brain, 1909, vol. xxxii.

In the case of choked disk, however, our views are clearer, for it is an objective process and lends itself readily to experimental study. Time forbids a relation of the development of our knowledge of this interesting lesion — the most important of all symptomatic evidences of intracranial pressure, for the discovery of which we are indebted to Helmholtz and his " optical toy," as he was wont to call the now invaluable ophthalmoscope. Of the many views advanced in explanation of the process, a number have been based on conjecture alone, but of the two most important, one would ascribe the lesion to purely mechanical or pressure agencies, the other to purely toxic or inflammatory factors.[5]

Numerous observations, experimental and clinical, have served in the past few years to turn the scale in favor of the mechanical origin of the lesion. Thus, a condition typical of the early stages of choked disk has been found to accompany the non-inflammatory traumatic edemas described by Cannon and Bullard which so often follow fractures of the skull; again, the close affinity between the neuroretinal lesion of tumor and of nephritis has been demonstrated; further, it has been shown experimentally that a choked disk may be produced by increasing the intracranial pressure through the introduction of fluids or of a sterile elastic foreign body within the skull. But most conclusive of all is the rapid subsidence of the process which often follows the release from pressure brought about by the establishment of an adequate cranial and dural opening.

After Schwalbe's discovery that the investing sheath of the optic nerve was merely a prolongation of the meninges, its compartments communicating with the intracranial (subdural and subarachnoid) spaces, it became known, through the experiments of Schmidt-Rimpler, Manz and others, that an acute distention of the optic sheath comparable to the ampullaform dilatation, well known to pathologists in cases of brain tumor, will occur if fluid under pressure is allowed to enter the intermeningeal spaces enveloping the encephalon. These observations have been confirmed by others as well as by workers in the Hunterian laboratory,[6] where it has been shown that the distention of the optic sheaths, with accompanying congestion and edematous swelling of the nerve-head — a choked disk in its early stage — will occur not only in consequence of the introduction of fluid maintained under increased tension, but that the fluid normally present in the cisternæ about the infundibulum may play the same part in case an increase of intracranial pressure is similarly maintained by the introduction into the cranium of bodies simulating tumors. The fluid seems to pass, for the most part, into the subarachnoid spaces of the optic sheath, though in certain instances it may distend the subdural space as well. It has not been finally determined whether the fluid finds its way from the distended sheath into the neuroretinal tissue by lymphatic channels or whether the swelling which occurs is the result of a stasis in the central veins brought about by the greater tension of the fluid encompassing the nerve. Probably both elements play a part, but, however this may be, a rapid edema does occur, and if by proper devices the pressure can be maintained for days or weeks, the edema, as elsewhere in the body when accompanied by venous stasis, is followed by extravasations and infiltration, which in the course of time through the process of new tissue formation will shut down on the nerve and lead to atrophy and blindness.[7]

There are other " things caused " by general pressure which need no more than mention in passing. Among these are vertigo and dizziness, convulsions, the medullary symptoms with slowing of the pulse and a transient rise in blood pressure (usually a terminal and much less striking phenomenon than in the cases of acute compression due to sudden vascular lesions), and finally — what Dr. Bordley and I have come to regard as an early manifestation of tumor — the inversion or interlacing of the color fields. This symptom has been definitely wanting in only two of a series of forty cases in which a careful perimetric examination was possible, and thus promises to be a fairly constant feature of pressure from tumor, wherever its location, and irrespective of the presence or absence of an accompanying choked disk. This must be regarded as an important matter, in view of the supposed relation of this phenomenon to hysteria. Moreover, this is one of the first symptoms to disappear after a decompression, so that the normal relations of blue, red and green often return long before the complete subsidence of an accompanying choked disk (Figs. 1 and 2). Failure to investigate the eyegrounds and plot the visual fields in the physical examination of a patient the victim of headaches is equivalent to a neglected urinalysis when there is pain in the back and edema of the feet.

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[5] Hence a terminology has arisen which is confusing. " Optic neuritis " or " papillitis," introduced by Von Leber and signifying inflammation, as opposed to " choked disk " (Clifford Albutt's adaptation of the German term, " *Stauungsoedema* ") or " papilledema," suggesting the swelling of vascular stasis, are variously used by different writers to express the whole process or to indicate its different stages. It would seem desirable to fix upon one term to describe the lesion from its early to its terminal stage; that is, from the early vascular congestion of the nerve-head and retina, through the stage of marked swelling of the papilla with exudates and hemorrhage, to the final stage of new-tissue formation, atrophy and blindness. For this entire process, personally I should prefer to reserve the term " choked disk " rather than to limit this designation to a stage of the lesion in which there is a certain measurable degree of swelling. Marcus Gunn has suggested the term " tumor papillitis," which is undesirable, for the process seems to be the same whether produced by the edema accompanying cerebral injuries, vascular disturbances, nephritis or tumor; and " papillitis " suggest inflammation as the primary element — a view that more recent opinion has not supported.

[6] Observations on Experimentally Induced Choked Disk. Johns Hopkins Hosp. Bull., 1909, vol. xx, p. 95.

[7] By certain writers a process similar to that which occurs in the optic nerve has been described for the acousticus (" choked labyrinth " or *Stauungslabyrinthe*), but the clinical demonstration of the effects of such a process is inconclusive, and it has received no sufficient pathological or experimental confirmation.

We must turn from these symptomatic manifestations of the lesion to see, if possible, what has been taking place within the skull. The primary effect of most tumors is an encroachment on the space which normally should be completely occupied by the brain and its vascular and cerebrospinal fluids — the *Raumbeengung* effect of the Germans. I say "most tumors," for there are certain diffuse gliomatous growths which infiltrate and destroy the nervous tissue as they advance, and pressure phenomena may be absent unless a sudden hemorrhage or edema leads to an abrupt onset of these symptoms, with the clinical picture of apoplexy or thrombosis. Indeed, not only those of pressure, but all other signs may fail if such a lesion originates in a silent field, or if, as often happens, the growth prove to be a glioma which is traversed by intact nerve fibers.

The usual consequence, however, of the gradual encroachment by the new foreign body on the cerebral space is a crowding away of the neighboring brain substance, which suffers more through compression than from actual invasion of the tissue. The effects of this process are felt locally more than at a distance, especially since there is a certain degree of partitioning of the cranial

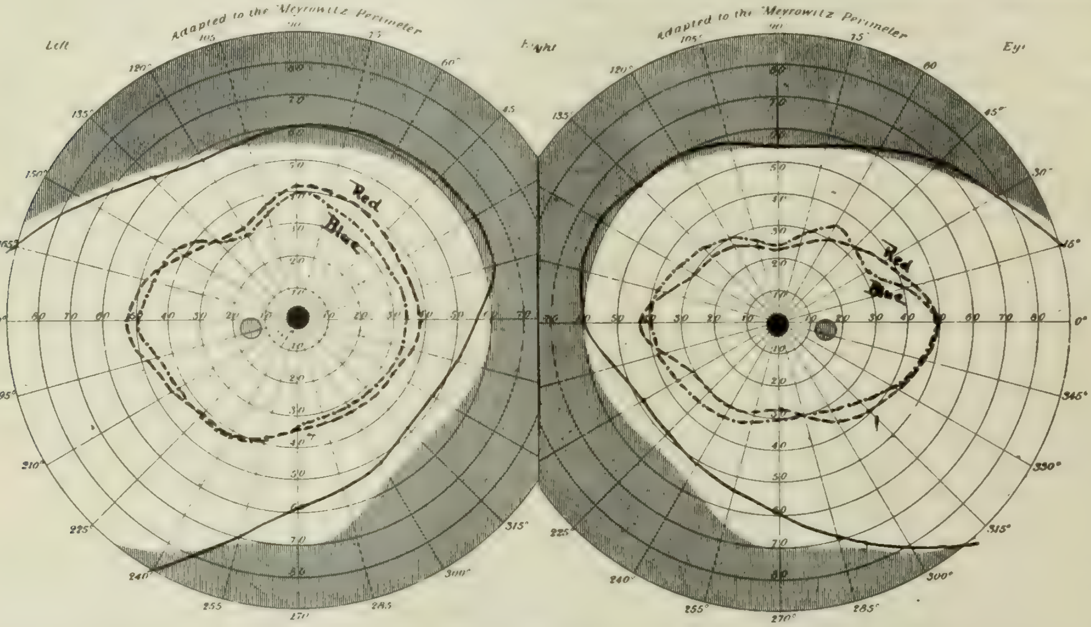

FIG. 1. Visual fields, taken a few days before operation, of a patient with a low grade of choked disk, headache and focal epilepsy. Note the typical interlacing with considerable inversion of the boundaries for blue with no alteration of the fields for form (white).

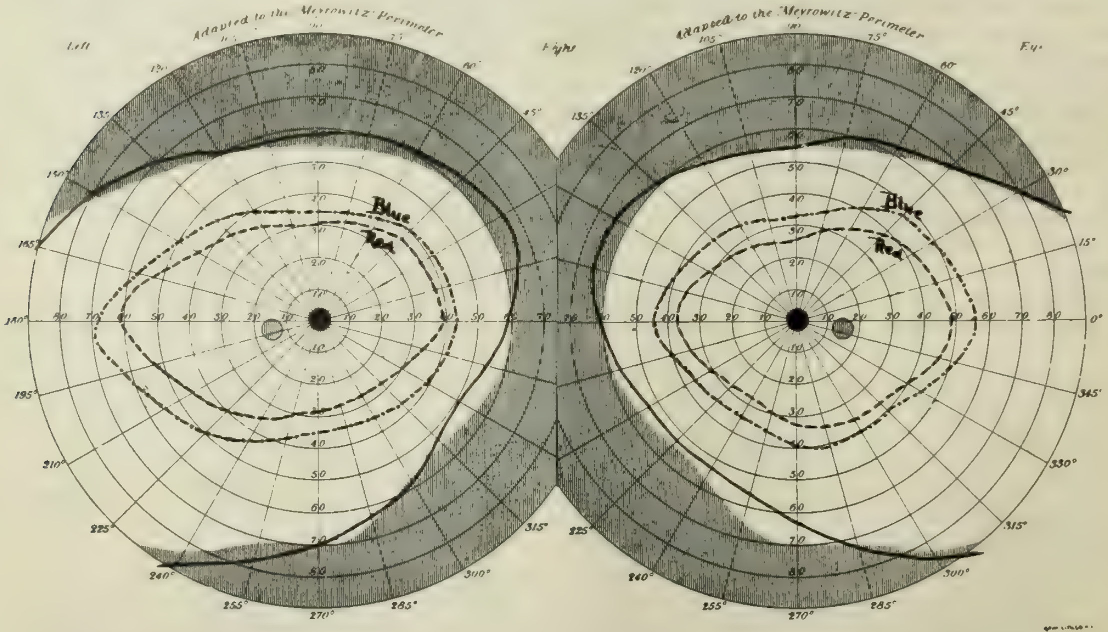

FIG. 2. Visual fields of same patient eight days after an exploratory craniotomy combined with subtemporal decompression as the tumor was not disclosed. Note restoration of normal color outlines following relief of pressure symptoms.

chamber, so that the pressure is more or less discontinuous, owing to the presence of the dural septa. The hind-brain, for example, is particularly well protected by its suspended dural roof against pressure exerted from above, and this is especially true in certain of the lower animals who possess an ossified tentorium. A slowly-growing tumor in a favorable situation may often attain a large size, the gradual pressure causing excavation with atrophy of the neighboring cerebral substance out of which the tissue fluids have been slowly but permanently expressed — for it must be remembered that the cerebral tissue itself is practically incompressible — without seriously jeopardizing the functions of the remoter portions.

As a rule, however, the pressure effects of a growth are transmitted in some degree throughout the entire intracranial chamber. This occurs in a number of ways: through circulatory stasis, through the intermediation of the cerebrospinal fluid in one way or another and through dislocation and change of position of the cerebral or cerebellar hemispheres.

Circulatory stasis is naturally one of the earliest results of pressure, for the slightest increase affects primarily the outflow from the veins, whose fluid tension is normally very low. External evidences of this stasis are not only observable in the eye-grounds, but are also shown by a fullness of the extracranial vessels of the scalp and eyelids, whose content normally passes in large part through the intracranial sinuses on its way to the heart. The distention in some cases may be extreme.

Now, the cerebrospinal fluid, which is constantly being secreted by the ependymal cells lining the choroid plexuses in considerable quantities — the amount being possibly increased under conditions of venous stasis — normally escapes from the skull in large part, if not wholly, through the intermediation of the arachnoidal villi which project into the sinuses and their dural expansions. Hence interference with the escape of this fluid may occur in consequence either of some obstruction to the free passage of blood through the sinuses — for it has been shown experimentally that these are compressible channels — or of an occlusion of the arachnoidal villi, possibly by the small herniæ of cerebral substance which Wolbach has demonstrated to be an accompaniment of marked degrees of pressure.

In all cases in which pressure phenomena are present and the obstructed fluid has acquired an increased degree of tension, it collects and distends the basilar cysternæ, finding its way into the optic sheath; hence the choked disk. It also passes into the olfactory nerves; hence its occasional escape from the nares (rhinorrhea); and into the spinal canal, where it may be demonstrated under increased tension if one wishes to take the risk of performing a lumbar puncture in these cases. But back of this a still more important complication may arise from this stasis of the cerebrospinal fluid, in case the lesion is so situated as to obstruct the outflow of fluid from the ventricles by compression of the iter or one of its foramina of outlet from the ventricles. A ventricular distention from this source is almost inevitable at some stage in the progress of subtentorial lesions, though it is by no means confined to them, for the iter or one or both foramina of Monro may become obstructed by cerebral growths or even by those arising from the pituitary body. The complication, as would be expected, always serves to greatly exaggerate pressure phenomena, which are often absent until it occurs. It is possible that the obstructive hydrops of the ventricles may lead to certain recognizable symptoms referable to the hypophysis itself, a portion of whose secretion (as Herring has shown and as we also have found) normally passes directly into the infundibular prolongation of the third ventricle. But this we will touch upon in a later paragraph.

And this brings us to the question of cerebral dislocation, an important matter, inasmuch as failure to appreciate its significance may lead to errors of localization and treatment, and since on the principle of its occurrence much of our present surgical therapy hinges.

For the purpose of studying the dislocation effects of tumors, it is essential that the brain be hardened *in situ* before its removal (preferably by carotid injections of formalin into the carotid), even at the sacrifice of the best methods of fixing the tissues for finer histological study. Furthermore, when possible, it should be removed with its meningeal covering intact. One can depend upon the macroscopic study of a brain prepared only in this way for an accurate appreciation of the topographical relations of the growth, with the accompanying dislocation of the meningeal septa, the degree of ventricular hydrops and the extent of the foraminal herniation.

This last condition deserves a word of especial emphasis, for it is not only a frequent cause of sudden death, but illustrates at the same time the principle upon which palliative operations are founded. Particularly in the presence of a lesion of the hind-brain with secondary hydrocephalus, though the same thing is true also of a growth above the tentorium whose pressure effects are far reaching, the nervous tissues tend to become molded or herniated into any defect in the investing meninges. At the foramen magnum is a natural defect, and, in consequence, the bulb, with a surrounding fringe of cerebellum, crowds its way through this opening in the effort to escape from the pressure within the chamber.

It is for this reason that the sudden withdrawal of fluid from below by a lumbar puncture may lead to serious bulbar symptoms from the local anemia thus produced by a further wedging of the medulla within the foraminal ring. The same thing takes place, of course, when there is a sudden increase of pressure from above through edema or hemorrhage into a growth, and it is well known that these bulbar symptoms are the usual terminal event in most cases of brain tumor.[8]

An embarrassed, possibly rhythmic respiration is the first evidence of the medullary compression, an excess of which may suffice to completely stop spontaneous respiratory activity. Under these circumstances artificial aids to breathing may tide over the first few perilous moments, and a consequent rise in blood pressure may reawaken the activity of the anemic centers. But in some cases spontaneous respiration is never resumed and the heart continues to beat as an isolated organ so long as the artificial aids to the act are continued. On one occasion during the past winter this accident occurred before recovery from the anesthetic in a patient subjected to lumbar puncture during the course of an operation, and after artificial respiration had been continued for twenty-eight hours the cranium was widely opened by a large osteoplastic resection and the brain examined. It was gray in color, absolutely without circulation, and, though after its exposure some of the larger arteries were seen to fill and pulsate, there was no through-and-through circulation. Stimulation of the exposed motor field by a powerful faradic current failed to elicit any movements whatsoever on the contralateral side of the body. On another occasion artificial respiration with a tracheal canula and bellows was continued for a period of three days, and it is conceivable that the cardiac action might have been continued for a week had it not been finally stopped by an attempted revival with adrenalin — death of the central nervous system beyond resuscitation having doubtless occurred soon after the circulation was shut off from the medulla.[9]

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[8] An analogous disturbance in the case of the pontine centers may follow the post-operative dislocation downward of the mid-brain when a suboccipital exploration has been made in the case of a lesion which, lying in or above the pons, proves to be inaccessible.

On this same principle there is a tendency for the cortex to protrude through and to enlarge any openings, even minute ones, and in this way are produced the small herniæ which have been described by Wolbach as occurring at the situation of the arachnoidal villi. These herniæ sometimes assume considerable proportions and become as large as peas, and, if Pacchionian granulations in adult life have already formed at the situation of the villi, they may even lead to complete pressure absorption of the immediately adjacent parts of the cranium.

Enlargement of the head due to separation of the sutures, with the peculiar change in the cranial percussion note, is a well-recognized symptom of tumor, particularly when in young individuals obstructive hydrocephalus has occurred; and the widening of the skull affords marked, often unexpected, relief from the pre-existing pressure symptoms. This diastasis of the sutures, however, can only be looked for in cases of long-continued and excessive pressure, in which, some time before the bones have separated, the choked disk has gone on to its atrophic stage; hence it is unusual to find vision present even in very young children whom nature has relieved in this way. An equally effective natural method of relief may result from the local pressure absorption of the skull should a growth lie immediately subjacent to it. We have seen a number of instances of this — chiefly in temporal lobe tumors — in which the thinned squamous wing of the temporal bone has been absorbed so that the mass forms a protrusion under the temporal muscle very similar to that which occurs as a result of the palliative operation which has been devised with this particular object in view. The dislocation outward, or the hernia of the brain which occurs after the making of such a purposeful defect, need not, to accomplish its object, occur directly over the situation of a tumor, and indeed there are certain objections to thus placing it, for a sudden dislocation of this kind has been shown to lead not infrequently to large extravasations within the substance of the underlying vascular growth, owing to the very change of position which was the object of the operation; for this change of position can easily be seen to favor the rupture of the delicate, thin-walled vessels which feed many tumors.

II. THE LOCAL EFFECTS OF TUMORS.

Though not entirely inappropriate to the scope of this lecture, a discussion of the neurological disturbances, functional, paralytic and irritative, consequent upon lesions in various parts of the brain would lead us too far afield. There are certain points, however, which deserve to be noted. Localization of function in the cerebrum is a concept of our own time, and that we are still forced to allude to " mute areas of the brain " is no occasion for reproach when the intricate difficulties of the problem are appreciated. Accessions to our knowledge of the structure and function of the nervous system follow one another more rapidly than is the case with any other organ or system of organs in the body. The combined labors of many lead to this end — investigations into the finer anatomy of the nerve cells, into the study of nerve tracts as they become primarily myelinized or secondarily degenerate, into the effects of excitation of different areas or of experimental lesions in the animals nearest man. Thus the recent work of Horsley and his co-workers on the accurate subcortical placement of experimental lesions leads us to hope for great advancement in our knowledge of function of the heretofore inaccessible basal ganglia; and the studies of Bolk and Van Rynberk promise to give us a knowledge of localization of function in the cerebellum comparable to that which we now possess for the cerebrum.

Man differs from the lower animals chiefly in the greater development of his central nervous system, and profitable as the studies of cerebral function in the lower animals have been in the past and will doubtless always be, the rapid advancement in our knowledge in the sensory field can only be made by the study of the effects of purposeful lesions on man, for he alone is able to communicate an interpretation of his sensations. Such experiments, of course, are out of the question, and our observations must necessarily be confined to the detailed investigation of such symptoms as arise in the course of disease, in the expectation that post-mortem examinations may reveal a sufficiently circumscribed lesion to make the condition comparable to that of a physiological experiment. This, however, is rarely the case, for by the time death occurs, the lesion, particularly if it be a tumor, will have rendered the degenerated pathways so obscure as to make their study unprofitable. To be sure, the situation of certain lesions giving a peculiar symptomatology was first made out in this way by the incomparable studies of Broca and of Hughlings Jackson, and much may still be expected from a similar correlation of gross pathological findings with clinical symptoms. How large a part surgery is to play in the furtherance of our knowledge in these regards will depend upon the preliminary training in neurology and neurological pathology of those who are to undertake this kind of work. Their privilege in this respect must be regarded as a liability rather than an asset, for to accept the opportunity of advancing knowledge is no light responsibility.

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[9] It is possible that patients in this condition, with a paralyzed respiratory center, might be revived by a prompt suboccipital exposure of the foraminal region. Since writing the paragraphs above, the measure has been successfully carried out in a patient with tumor suffering from sudden respiratory failure, though not from a lumbar puncture. Artificial respiration was promply instituted and continued for forty-five minutes while the imprisoned cerebellar margin was exposed and liberated. There was an immediate resumption of spontaneous breathing, and recovery followed. A cerebellar cyst was found and evacuated at a later sitting.

This point is well illustrated by the case of the hypophysis cerebri, — the so-called brain gland, — an organ until within recent times regarded as a functionless tissue relic which, according to our predecessors, discharged pituita or mucus into the nose. It is the frequent seat of enlargement and of tumors which give a definite intracranial symptom-complex, owing largely to the immediate juxtaposition of the optic chiasm. Physiologists had shown that an extract of the posterior lobe of the gland contains a blood-pressure raising principle (Howell) and causes diuresis (Schäfer and Herring), and here the matter rested until the observations by Paulesco, which have been corroborated in the Hunterian Laboratory, brought out the surprising fact that surgical removal of this physiologically active posterior lobe does not appreciably affect the individual; whereas, on the other hand, removal of the entire gland, or of the anterior lobe alone, leads, usually in the course of a few days, to a fatal issue with a peculiar train of symptoms. Hence the pituitary body is a structure as vital to the maintenance of life as are the parathyroid bodies or adrenal glands.

Clinical studies, furthermore, have suggested some intimate relation between hypophyseal activity and that not only of other ductless glands (the thyroid, thymus, ovary, etc.), but of various other functions. Thus it is connected in some way with the process of growth observed in dwarfism, gigantism and acromegaly, the activity of the generative organs (amenorrhea and sexual infantilism), the deposition of fat (adiposis dolorosa and Fröhlich's disease) and possibly other conditions. Marie's belief that the acromegaly is due to a primary hypophyseal lesion has not been uniformly accepted, and those who agreed with him doubted whether it was the result of a hyper- or a hypo-secretion of the gland, a matter which a single surgical observation has served to conclusively determine. Thus Hochenegg removed a portion of the enlarged gland from a woman suffering from acromegaly, and, as a result, not only did the local pressure symptoms disappear and menstruation return, but there also took place a rapid shrinkage of the previously hypertrophied tissues of the hands, feet and face. An equally striking result has followed a partial hypophysectomy in a case of my own.

As has been intimated in the earlier paragraphs, it is possible that in almost all tumor cases the hypophysis suffers to a certain degree, and one might expect its function to be particularly interfered with when there is an obstructive hydrocephalus, for Herring has shown that the posterior lobe of the gland discharges its secretion directly into the infundibular cavity of the third ventricle. From a clinical standpoint it is suggestive that amenorrhea is a not infrequent accompaniment, often an early symptom, of brain tumor in women, and further that after removal of the growth, or even after simple decompression, the menstrual function may be resumed. Another suggestive clinical fact is the rapid accession of weight which is often seen after these operations — more than can be accounted for by the withdrawal of drugs, the improved appetite and cessation of vomiting. One of our patients who had a cerebellar tumor accompanied by a low grade of hydrocephalus gained fifty pounds in the sixteen weeks following the extirpation of the growth. One is tempted to speculate upon a possible connection between this improvement and a restored activity of the pituitary body, and it may be added that our autopsies have invariably shown not only some histological alteration, but more or less structural deformation of the hypophysis, particularly marked when there was some obstructive dilatation of the third ventricle.

There are certain things, however, more strictly pertaining to the local effects of tumors which I wish to dwell upon. One of them concerns the relation of a growth to the surrounding structures. It is well known that a lesion which originates, for example, in the bone, the dura or from the cerebral nerves will be slow to invade the encephalon itself, however deeply it may become molded from pressure, owing to the barrier offered by the delicate leptomeninges; also that the enucleation of such a lesion leads to prompt restoration of function. On the other hand, when symptoms such as hemiplegia, hemianopsia or aphasia are occasioned by a new growth which has originated in the brain substance itself, it is widely believed that they will inevitably be perpetuated if the lesion be extirpated; in other words, that the symptoms are the result of an anatomical destruction rather than a physiological "block" of the pathway involved. If the centers themselves, ganglionic or cortical, have not been destroyed by pressure-anemia or tumor invasion, the degree of restoration of function is often astonishing and shows not only that pressure disturbances are much more common than destructive ones, but also that the power of restoration of function is surprisingly great. In a patient with total hemiplegia and hemianesthesia, after a subcortical sarcomatous cyst the size of a tennis ball had been removed intact, there ensued almost complete restoration of the contralateral motor and sensory paralysis in the course of two or three weeks. We have also seen a complete restoration of previously hemianopic vision in cases in which the sight had been affected simply from pressure upon the optic pathway. The recuperative powers of the brain, even when large areas of tissue have been removed with a tumor, are often extraordinary; and as our ability to localize tumors improves, they will be approached at an earlier stage and there will be less likelihood of damage, whether from invasion, long-continued compression or surgical injury. The old view that lesions limited to the paracentral convolutions which called early attention to their presence by the motor irritation or paralysis were alone suitable for surgical attack is rapidly being superseded.

The difficulties of making a local diagnosis of a lesion advance rapidly with the appearance of general pressure symptoms, supposed by many to be essential for the making of a diagnosis at all. It will be long, I fear, before physicians will awake to this fact. In many ways the general pressure phenomena rapidly obscure the main issue, and through distant edemas, through dislocations, through ventricular hydrops and what not, secondary or indirect symptoms (*Fernsymptome*) are produced which greatly confuse the primary focal manifestations. Then, too, the patient's mental processes invariably become affected in some degree, and when blindness has ensued, the difficulties may be still further increased. In illustration may be mentioned the case of a small boy in whom, owing to headaches, a tumor had long been suspected, but no careful neurological study had been made until his failing vision had gone on to blindnesss. At this stage he was first thoroughly examined, with an operation in view, and the only focal symptoms were suggestive of a lesion of the left cerebellar hemisphere, which on two occasions was thoroughly exposed and examined. He subsequently died, two years after the first onset of symptoms, and an operable, benign tumor, such as would unquestionably have produced an homonymous hemianopsia as its earliest symptom, was disclosed at autopsy in the left occipital lobe. The growth had slightly dislocated the tentorium downward and occasioned the left cerebellar symptoms. Many other illustrations of this sort might be given.

One may say, therefore, that the more pronounced the general pressure symptoms — the phenomena characteristic of tumor — the less the likelihood of making the focal diagnosis which is essential to the success of the only curative therapeutic measure — removal of the lesion.

III. THE HISTOLOGICAL PATHOLOGY OF TUMORS.

And now, after these general words as to *what the tumor does* and *where the tumor lies*, remains the final, and, possibly, in view of the foundation upon which this lecture is given, the more interesting question of *what the tumor is*. On this matter, unhappily, I feel far less competent to speak.

Needless to say, except in the case of evident metastases from a malignant growth elsewhere [10] and of the occasional undoubted syphiloma or solitary tubercle, in which the history is clear or concomitant foci of disease are recognized, a pathological diagnosis before the lesion can be seen and handled is difficult in the extreme, even though certain growths have certain seats of predilection. Indeed, it is often difficult to tell whether the general and local symptoms are, after all, actually due to a new growth, for they may be closely simulated by a formidable array of lesions; by vascular disease — thrombosis, embolism, aneurism, even apoplexy; by the edemas of nephritis, which may give characteristically focal symptoms; by certain chronic inflammations such as those of the ependyma, which may occlude some foramen of outlet for the cerebrospinal fluid; and lastly, by certain post-traumatic cysts. Furthermore, there is a group of cases — the so-called pseudo-tumors of Nonne — in which careful post-mortem studies have revealed no lesion whatsoever, though the ante-mortem symptoms, general and focal, were definitely characteristic of tumor.

But the difficulties do not end with the clinical diagnosis; they follow us to the laboratory, where the dissimilarity of the growths, even those which from a cytological standpoint evidently belong in the same group, makes a satisfactory terminology often troublesome, sometimes impossible. One important thing has been pointed out by Dr. F. B. Mallory, and that is the necessity, for satisfactory microscopical studies, of the immediate fixation of absolutely fresh tissue — and such material in the case of brain tumors, indeed in many others can only come through the intermediation of surgery. Dr. Adolph Meyer, too, has strongly emphasized the need of making sections of the entire tumor, for in the same growth areas of widely different histological character are to be seen.

When one considers the difficulties of satisfactorily classifying, for example, the various epithelial tumors of the mammary gland — tumors which in a fresh state, in large numbers and in all stages are available for histological study — it is easily comprehended how much greater are the difficulties in the case of the brain, where an unusual variety of neoplasms are to be found, epithelial growths arising from the hypophysis or choroidal ependyma, congenital tumors, the meningeal endotheliomata, cystic formations of peculiar and varied sorts, to mention but a few of the lesions besides those which are specific of the central nervous system — the gliomata.

These very gliomata by no means invariably conform to the accepted description either of their gross or finer anatomy. They need not, for example, infiltrate the brain, for we have encountered many examples in our series of about one hundred cases in which on all sides they were as definitely demarcated as the endothelial growths which affect the brain by compression rather than invasion. Gliomata seem to have an especial predisposition to cystic degeneration, and it would seem that the entire growth may at times become completely transformed into a cyst. Instances of this have been noted by Sir Victor Horsley, and elsewhere some personal experiences of the same kind have been recorded.[11] Thus on one occasion a large inoperable cerebellar tumor, presumably a glioma, was exposed by a suboccipital operation. Death occurred some six months later, and the autopsy disclosed a cavity the size of a goose's egg surrounded by a thin shell of cerebellum and filled with a semi-fluid, grumous, broken-down, browish tissue mass, no tumor cells whatever being found on histological examination of the surrounding walls.

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[10] Of these I have encountered six during the past year — a melanotic sarcoma from an unrecognized primary melanoma of the ovary, a cystic sarcoma secondary to a growth in the neck, and four instances of carcinoma occurring some years after a radical operation for cancer of the breast.

Such an occurrence in the history of a cerebral growth is presumably due to the shutting off of the local vascular supply, with death of the entire tumor mass; and it may be said that the centers of many of the larger gliomata show, in like fashion, a tendency toward gelatinous or cystic metamorphosis. A process of this kind seems to occur more frequently in gliomata of the hemispheres, cerebral or cerebellar, than in those arising from the basal ganglia, possibly as the former may attain a larger size and their vascularization become less secure. As usually encountered, the cysts contain clear fluid which often clots but otherwise resembles cerebrospinal fluid. It seems to be secreted in considerable amounts, so that there is a tendency for the cysts to refill even after their evacuation. Studies of the cyst wall not infrequently show in certain areas a persisting zone of new growth, and the cavity is usually lined with a delicate, loosely-attached membrane. Whether this represents a secreting membrane, or whether the fluid is merely lymph from the adjoining nerve-tissue which discharges into the cyst, can only be conjectured, especially since little is known of the lymph-flow in the tissues of brain and spinal cord. Cerebrospinal fluid, as is well known, will not be taken up and absorbed for any length of time by the areolar tissue. This has been well shown by the futile attempts to effect its discharge into the loose subaponeurotic layer of the scalp in cases of hydrocephalus. For some days the scalp remains edematous, but soon the fluid becomes confined in a definite pocket, which acquires a smooth endothelial lining.

To further the progress of surgical therapy a more accurate knowledge of the lymphatics of the brain and their relation to the cerebrospinal fluid circulation is, as pointed out in a previous section, one of the present needs in our study of the brain tumor question, and the function of the much-neglected choroid plexus probably represents the key to the situation. Were it not for occasional difficulties on this score, our present-day operative methods would give almost total relief to the pressure phenomena and would permit, in cases of tumors occupying silent areas, either of subsequent enlargement sufficient to call attention to their situation, or would allow time for degeneration in the cases in which this favorable outcome occurs.

During the past year Dr. G. J. Heuer and I have been given the privilege by the pathological department of the hospital of making first-hand studies of all of the brain tumor cases which come to autopsy, and thus we have gained the invaluable experience of making our own gross and histological examination of tissues and of comparing the findings with the results of our previous neurological examinations. Only in this way can errors of diagnosis and faults of surgical therapy be intelligently correlated. In the matter of histology we have received the kind co-operation of Dr. Mallory, and it is our hope that with his aid we may be able at some future time to speak more in detail in regard to this feature of the work. Up to the present time our attention has been largely confined, as the title of this lecture indicates, to the functional disturbances from tumors occurring in various regions of the brain, regardless of their anatomical make-up.

In conclusion, I wish to recall briefly some points touched upon in this lecture that possibly deserve this additional emphasis.

Contrary to the common belief, brain tumors are of frequent occurrence, and possibly there is no disease in which the symptoms are more often overlooked or incorrectly interpreted. For the sake of successful palliative or curative measures, a precocious diagnosis is necessary, and a careful clinical study of all suspected cases at an early stage, with a more intimate knowledge of the local and general pressure phenomena, will tend toward this desired goal.

A more widespread familiarity with the early appearance of the neuroretinal edema and congestion is needed, and also the understanding that this condition is merely a stage in the process of choked disk. Inversion or interlacing of the boundaries of the color fields, heretofore regarded as pathognomonic of hysteria, has been found to be a fairly constant early phenomenon in tumors.

One recognized characteristic of the brain under pressure is its tendency to herniate through a cranial defect, and as there is normally an opening at the foramen magnum, a certain degree of protrusion is usually present there. In the presence of such a condition, the withdrawal of the cerebrospinal fluid from the spinal meninges by a lumbar puncture is often hazardous, as it may tend to a sudden wedging of the bulb in the opening, with anemia and paralysis of the vital centers.

The pituitary body proves to be one of the most important of the ductless glands. It not only may be the primary seat of a new growth, but in the case of intracranial tumors elsewhere, particularly when they are accompanied by hydrocephalus, its function may secondarily become disturbed in ways which are clinically recognizable.

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[11] Removal of a Subcortical Cystic Tumor without Anesthesia. Jour. Am. Med. Asso., 1908, vol. l, p. 855.

The conducting paths in the brain are more often affected by simple pressure from tumors than by actual destruction, and the removal of the growth or simple relief from pressure may often lead to a surprisingly rapid restoration of function.

For an accurate focal diagnosis a thorough, early examination is often necessary, for with an advancing lesion symptoms at a distance may greatly confuse the clinical picture. A considerable percentage of cases that present themselves for surgical treatment are so nearly blind that a study of the visual fields, which should be one of the most helpful localizing signs, is precluded.

From a histological point of view the classification of brain tumors is most unsatisfactory, and the general behavior and manner of growth of many of them does not conform with accepted views. Some gliomata may be definitely encapsulated and favorable for operative removal, and many tumors of this supposedly malignant type may undergo cystic degeneration or gelatinous transformation.

Original Articles.

AURAL COMPLICATIONS IN THE EXANTHEMATA.* †

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AURAL complications of the exanthemata, because of their frequency and importance, deserve a more careful consideration than is often given them, especially among the general practitioners in whose practice they are most commonly found. Many cases of deafness of long standing date back to one of these diseases, and even at the present time large numbers of such cases arise each year.

In the minds of the profession at large diphtheria is regarded as the first of the three contagious diseases developing aural complications, scarlet fever next in frequency and measles last and least. As a matter of fact, measles is first, scarlet fever second and diphtheria is low in the percentage of ears involved. Statistics vary somewhat with the different writers, but all agree with the foregoing statement of relative frequency.

In the Boston City Hospital, Dr. McCollom [1] reports 24% in measles and 18% in scarlet fever. Downie, of Glasgow,[2] reports 26.1% in measles and only 12% in scarlet fever. Caiger [3] reports 11% in 4,015 scarlet fever cases; Burckhart[4] 33% and Finlayson [5] 10% in 4,339 cases of scarlet fever. In a series of cases observed by the writer, but 1.3% developed aural complications in diphtheria. Thus will be noticed the striking differences between the three diseases.

Naturally, more complications will arise in severe infections, in septic cases and in those having especially acute throat or nose symptoms. Broncho-pneumonia, a common complication of the eruptive diseases, causes not only middle ear inflammations, but many mastoids as well, and profuse nasal discharges, so common in these diseases, are particular enemies of the ear.

No hard and fast rule may be given as to the time of onset. But in a general way it may be said that in diphtheria and measles, the complications usually occur soon after the acute symptoms have developed. *This is particularly true of measles.* But in scarlet fever, middle ear infections may be expected any time, from the first to the last day: more frequently late in the period rather than early. Many cases are seen in the Boston City Hospital from forty to one hundred days after admission. Of course the complications may arise at any time, and do so in each of the three diseases with sufficient regularity to prevent any special rule being made. But in a large number of cases the general course will agree with the above statements.

The course of the complications ranges over a wide area. Beginning with the slight earache or simple deafness, they occasionally extend to acute mastoiditis with alarming complications. At the onset there is no means of knowing to what extent they may progress, consequently it is the duty of the attending physician to exert his greatest skill in each and every case.

Diagnosis to skilled aurists is usually easy. It sometimes happens, however, a case is seen which is exceedingly hard to diagnose, and will cause considerable anxiety before the true nature of the condition is decided.

In my experience, more obscure cases of mastoiditis have developed in diphtheria than in either of the other two diseases. As a rule, mastoid involvement in diphtheria is less active in its symptoms and less typical in a general way.

In scarlet fever and measles the usual pressure symptoms are prominent and unmistakable, and upon operation free pus is found in quantity. In diphtheria, not only are the symptoms less active, but in some cases, on operation, pus is usually small in amount and occasionally is not found at all. I have seen several cases in this disease, in which diagnosis was made entirely by exclusion, no typical symptoms being present. On operation no pus was found, yet recovery was complete and rapid, the lesion being probably an infective osteitis.

The ordinary course of the aural complications is to develop a simple middle ear inflammation, to rupture spontaneously, to discharge serum, sero pus or thick creamy pus; to persist from a day or two up to several weeks, and to heal without further trouble.

Were this all that might take place, little or no harm would result. Unfortunately, many cases fail to be arrested in the acute stage, but pass on into a chronic process, which occasionally persists for a lifetime.

In measles mastoiditis usually develops soon after the acute stages of the disease are present. In scarlet fever and diphtheria, especially in scarlet fever, it frequently arises after the discharge has become chronic. In the Boston City Hospital many mastoids have developed from three to ten weeks after admission, and it is the rule rather than the exception for them to arise late in the diseases of scarlet fever and diphtheria.

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* Candidate's thesis for the American Laryngological, Rhinological and Otological Society.

† Read before the New England Otological and Laryngological Society, March 30, 1909.

In both children and adults, aural symptoms differ somewhat from those of other causes, *a very prominent and striking difference being the absence of pain. Perhaps 80% of the children seldom complain of this symptom.* The majority of cases show the first evidence of middle ear complication by a spontaneous rupture of the drum membrane together with a discharge more or less profuse in amount. At times the first symptom will be a sudden rise in temperature, with no apparent cause. Inspection will show a bulging drum membrane of a grayish-red color. Even with a marked bulging of the tympanic membrane pain is frequently absent. Incision of the drum membrane in this case quickly restores the temperature to normal. In adults, pain is more frequently observed, but cases are often seen with bulging drum membranes and elevated temperature who have little or no distress from pain. As a rule, when pain is present, it is by no means as severe as in cases of acute otitis from grippe, pneumonia, etc.

In nearly every case seen by the writer, spontaneous rupture takes place near the same location. This is a spot near the lower margin of the membrane, immediately below or a little behind the umbo. The writer has seen few cases rupture far from this location. This is a very fortunate circumstance, and doubtless explains why so many cases recover in spite of the absence of scientific treatment. The character of the discharge varies in the different diseases. It usually begins with a thin serous fluid, sometimes tinged with blood. A few cases continue so for a few days and cease. The ordinary course, however, is to soon change to creamy pus and continue for a week or two, gradually becoming less and less, until dry. Diphtheria, as a rule, causes a thicker discharge and less in quantity, than the other two diseases. By all means the most characteristic discharge is seen in measles. In practically every case there is a profuse, brownish-white fluid with less of the creamy nature of pus. The amount is usually tremendous, and it causes more destruction of the membrane than any other aural discharge.

In my opinion, when such a condition exists, and daily inspection shows the perforation in the drum membrane rapidly becoming larger, a mastoid operation should be done at once, without waiting for other symptoms, in order to save the hearing apparatus from further injury. I have performed this operation a number of times for this condition, and have never failed to find the mastoid cavity filled with pus and soft granulations.

In many cases the discharge will be great in amount, yet inspection of the drum membranes will fail to show any redness or bulging of that organ. Such cases usually heal without any special difficulty. Other cases, however, will show redness and bulging, and offer greater difficulty to recovery and a greater menace to future hearing. Frequent incisions are sometimes called for and much good accomplished thereby. As a rule, however, when frequent opening of the membrana tympani is demanded in a case, a mastoid operation should be seriously considered, with a view to establish drainage backwards through that bone.

Pus from the middle ear is frequently kept active by profuse nasal and nasopharyngeal secretions, and will persist as long as this cause is present. I have frequently performed adenoid operations for the relief of both conditions in scarlet fever and measles, with most gratifying results.

An adenoid operation during one of the infectious diseases would seem at first strongly contra indicated. It may be done, however, when necessity demands, and splendid results follow in scarlet fever and measles. This does not apply to diphtheria, however, as dangerous sequelæ have followed the procedure in this disease.

Sudden rises in temperature in the exanthemata without apparent cause are usually due to ear complications. Inspection shows a bulging membrane, the color and appearance of which are quite different from the ordinary acute ear. The color is a grayish red and not the deeper red usually seen. The bulging assumes a flattened condition extending over the entire surface, also quite different from the ordinary, and is characteristic in a way of exanthemata. When incision is performed on this drumhead, a distinct feeling of resistance to the knife is encountered, giving a thick, porky sensation. This thickened, infiltrated condition of the membrane undoubtedly accounts for the color, flattened appearance and absence of pain.

The temperature seldom remains elevated after good drainage becomes established.

Except in diphtheria, acute mastoiditis is usually prominent and unmistakable.

The absence of pain is frequently noted, and *in children it is not the first symptom to excite attention.* In many cases, in young children, the first evidence of trouble is a sudden marked bulging forward of the auricle, together with edema and swelling over the mastoid. Tenderness is present on pressure over the swelling, and within the canal are found the typical mastoid symptoms.

In a series of 24 cases, edema was present in 18.

Tenderness over the mastoid process is usually present, but mistakes in this respect may be easily made from pressure on a swollen or tender gland. Many times when the patient winces from pressure on the mastoid, it will be found the pain is not in the bone, but in some tender gland near it. However, when a true mastoid exists, tenderness is rarely absent. In 24 cases it was present in 20.

Bulging of the posterior wall is too common to need mention; present in 21 cases out of 24. Bulging of the superior wall is less common, but was found in 8 cases. Bulging of the anterior wall was present in 4 cases.

Chills are rarely seen except in adults.

In this series, 6 cases had no previous aural symptoms, mastoid and middle ear occurring at the same time. Fifteen cases had previous discharge from the ear.

Incision of the drumhead was performed in 15 cases.

Vomiting was not present at all.

Temperature ranged from normal to 105°, and is not a safe guide in diagnosis. Many children with acute mastoiditis have normal or slightly-elevated temperatures.

Free pus in external tissues was found in 2 cases; carious opening in mastoid in 6 cases; free pus in mastoid in 21 cases; sclerotic bone in 8 cases; pneumatic bone in 16 cases; granulations in 16 cases; lateral sinus exposed in 8 cases; no infection of the lateral sinus or cranial cavity occurred in the series.

Eye symptoms were entirely absent, as were vertigo and convulsions. The age of the patients was as follows: Under one year, 1; two years, 2; three years, 3; five years, 4; six years, 4; seven years, 2; eight years, 2; ten years, 1; twenty-three years, 2; twenty-seven years, 1; twenty-eight years, 2.

In the series of cases, 3 had double mastoid involvement. Nine cases were in measles, 14 in scarlet fever and 3 occurred in diphtheria. One case complicated a mixed infection of scarlet fever and measles.

It would seem from the above figures that mastoids in scarlet fever patients were most numerous. This is true of the number of mastoids actually found and operated on, but the number of cases of scarlet fever were many times greater than those of measles. Had the cases been equal in number, doubtless measles would have led the series by a wide margin.

Of the 5 cases over twenty years of age, 4 were in measles and but 1 in scarlet fever.

One of the most striking features of aural work in the exanthemata is the alarming frequency of mastoiditis in adult measles cases.

Dr. David N. Blakely [6] has published valuable statistics on this subject. In a series of 341 patients ill with measles, he reports that 14.96% developed middle ear inflammation. Of this number, 11.76% of the cases having discharging ears came to a mastoid operation. Of the 6 patients having mastoid operations, 5 of them were in adults. The 6th occurred as a secondary operation in a child who had previously been operated on in another institution before admission to the Boston City Hospital. He further states that in 81 adult scarlet fever patients, not one had middle ear involvement of any kind.

In two series of mastoid operations of my own, 44.44%, and over 50%, occurred in adult patients having measles. In these two series of cases no mastoid operation occurred in adults ill with scarlet fever.

Adult scarlet fever patients occasionally develop middle ear inflammations, but mastoiditis among them is comparatively rare.

Thus it will be seen that in measles, adults are in considerable danger from mastoiditis, while in scarlet fever the danger is comparatively slight, even with middle ear inflammation present.

The following 3 cases are given as illustrations, not of typical mastoids in the exanthemata, but as examples of the more serious types occasionally seen. One case each occurring in diphtheria, scarlet fever and measles is given, each being an excellent specimen of the disease in which it occurred.

J. H., male, age three years. Admitted to hospital May 18, 1904, ill with diphtheria. The child was moderately prostrated by the disease, considerable laryngeal stenosis being present. The patient was intubed soon after admission. A marked nasal discharge was present from the first.

May 23, five days later, a spontaneous rupture of the left ear took place.

September 4. Considerable discharge from left ear since last note. Has been very comfortable and condition good up to this time. To-day again appears much prostrated. Temperature 105. Inspection shows right ear drum bulging. No mastoid tenderness, redness or edema. No bulging of posterior wall of canal. Complains of no pain. Drum membrane incised freely.

September 5. No discharge from right ear. Temperature 103. No pain and no mastoid symptoms. Incision of drum membrane again performed. After incision on both occasions, mental condition improved.

September 12. Both ears discharging. Child is dull and stupid; sits up in bed continually, but takes no notice of surroundings. Complains of no pain, does not cry and takes nourishment fairly well. No tenderness, redness or edema over the mastoid; no bulging of canal walls. Left drum membrane shows small perforation in lower central margin, color of drum membrane normal. Right drum shows similar perforation, but has slight redness in posterior half. Temperature 102, white count 27,500. Child shows no tendency to sleep during the daytime, but is otherwise very stupid. The child's condition is growing worse from day to day. He exhibits no marked symptoms, but behaves in a very peculiar manner of semi-consciousness.

September 14. Child continues to be stupid, and is generally becoming weaker. No condition other than ears can be found to account for condition. No mastoid symptoms whatever, except slight redness of right drum membrane.

After consultation with Dr. McCollom, it was decided to open right mastoid as the only possible course. Child was etherized and operation performed. The external bone was very hard, but deeper in the cavity was soft and very vascular. A very few granulations were found in this location, but no pus whatever. The entire mastoid cavity was chiselled out, but the sinus or cranial cavity was not exposed.

The patient began to improve at once after the operation, and was discharged well afterward, without further trouble of any kind.

W. H., female, age seventeen years. Admitted to hospital May 28, 1904. No previous history except an attack of scarlet fever could be obtained. Case was sent in from another institution, and was in process of desquamation on admission.

Right ear, profuse greenish discharge, drum membrane, posterior and superior wall of the canal bulging. Pin-hole perforation in lower posterior quadrant. Mastoid tenderness especially marked over the antrum.

Left ear, profuse discharge, marked swelling of posterior and superior walls and drum membrane. Behind the auricle and below it was great swelling and edema extending below more than half way to the clavicle. This was very tender, red and fluctuating. Patient was very dull and stupid, but upon urgent questioning complained of pain and headache.

Operation.— When the skin and periosteum were divided, from six to eight ounces of thick, green pus welled out. The fibers of the muscle were divided and more pus obtained. Entire mastoid cavity was removed with a curette. The tip was gone, admitting the finger down into the tissues of the neck its entire length. The cavity was filled with mushy granulations, only a thin, broken shell being left of the cortex. The sinus was not much exposed, however.

June 5. Mastoid on opposite side opened. First incision into the skin cut deep into the mastoid cavity. No pus found in the external tissues, but the cavity was filled with it and granulations. In removing the contents of the mastoid with a curette, one piece of soft bone came away, exposing the lateral sinus for an inch and a half. The dura was also exposed, but was not infected.

Recovery was rapid and uneventful.

F. L., male, aged twenty-eight years. Admitted to hospital April 5, 1904, in the eruptive stage of measles. Denies previous aural disease.

April 7. Slight earache. Examination revealed large white bleb involving nearly the entire area of drumhead. Membrane was incised and small amount of fluid obtained.

April 12. Temperature 101. Profuse brownish discharge. Very slight tenderness over the mastoid extending down the sterno-cleido muscle.

April 17. Slightly dull ache in ear. No tenderness over mastoid; no swelling of posterior wall.

April 21. Temperature normal, no tenderness, no bulging, no earache. Discharge still profuse.

April 25. Perforation growing very large. Discharge still tremendous in quantity. Operation decided upon to save further destruction of the membrane.

Operation. — Usual incision made. When periosteum was pushed aside, pus oozed up through the mastoid cortex. The outer wall was soft and easily removed. The cavity was filled with pus and granulations, and bleeding was profuse. The cells were infected from tip to tegmen, the tip being perforated. The bone was so rotten, the sinus was exposed with a dull curette. At the time of operation there was a perforation in the drum membrane of one third or more of its area.

April 29. First dressing. No pus found on gauze in the canal. Very little pus in mastoid wound.

Recovery uneventful.

The case was seen one year later. The perforation in the membrane had entirely healed and about two thirds of the hearing was present.

In conclusion, I wish to emphasize the following points:

1. In scarlet fever, children are *quite liable* to middle ear inflammation, which may or may not involve the mastoid cells. Adults are much less so, and rarely have mastoiditis.

2. In measles, both adults and children are very susceptible to middle ear involvement and adults are especially in danger of mastoiditis.

3. In cases where there is a tremendous aural discharge present for more than two or three weeks, the mastoid operation should be seriously considered as a means of providing drainage, other than through a small pin-hole perforation in the delicate membrana tympani.

4. Occasionally a case will arise in which the diagnosis may be difficult. If, after carefully ruling out every other possible cause by exclusion and the mastoid remains in doubt; if the symptoms of the patient are at all serious, *operate.* The danger is greatest from waiting.

5. If, after the acute symptoms of scarlet fever and measles have subsided, pus in the middle ear is kept active by profuse nasal or naso-pharyngeal discharges, examine the patient for adenoids. If the growths are present, remove them thoroughly. This procedure in the course of diphtheria, however, is questionable.

6. General practioners should regard aural discharges as a menace to hearing and occasionally to life, and not as a more or less common complication without special importance. In a series of 1,164 cases previously reported by the author [7] in children up to sixteen years of age, having aural diseases, 31.6% had chronic purulent otitis media of long standing.

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ON THE TREATMENT OF CHRONIC SUPPURATIVE NASAL CONDITIONS BY THE USE OF LACTIC ACID BACTERIA.*

BY J. L. GOODALE, M.D., BOSTON.

During the past four months a series of cases was treated by cultures of bacteria generating lactic acid, obtained through the Lederle Laboratories in New York City. The following communication is intended as a brief summary of the results noted. The preparation was supplied to experimenters during the past winter by the Lederle Laboratories, in the form of growing cultures of Bacillus bulgaricus, prepared according to the formula of Dr. North, which is, I believe, not yet published.

The cases may be divided into those where an apparent influence was noted, following the use of the preparation, and those where no effect could be detected.

These cases included conditions of atrophic rhinitis with ozena, and chronic suppuration of the various sinuses. The preparation was sent twice a week from the laboratory, in 2-oz. bottles, and a sufficient quantity was given to the patient to use in an atomizer. Fresh material was given them every week, with instructions to keep it in a cold place, and to observe aseptic precautions as far as possible in handling it. The patients were told to cleanse the atomizer with alcohol before introducing the culture fluid, and in the case of atrophic rhinitis with crust formations to remove the crusts as completely as possible before employing the spray. In a few cases the culture was also used by me in the office, once or twice a week, as a local application, or as an irrigation in the sinuses.

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* Read before the New England Otological and Laryngological Society March 30, 1909.

CASES APPARENTLY INFLUENCED BY THE USE OF THE CULTURE.

Mrs. A. T. H., fifty, came Feb. 25, 1909, with old atrophic rhinitis with ozena. Was given argyrol at her first visit, and reported in two weeks with moderate improvement, although still considerable odor and discharge was perceived. The culture was then given in place of argyrol and continued for three weeks, when examination showed noticeable diminution in discharge, and the odor was not perceptible. In this case I should be inclined to credit the culture with the possession of distinct effects.

Mrs. J. H. H., forty, old unilateral, dry ethmoiditis, with possible involvement of sphenoid. Troubled chiefly by crust formation with odor. Operation two years ago upon ethmoid cells which were opened and curetted. Since then much less anterior discharge, now usually without odor. Still troubled by moderate crust formation, coming probably from sphenoid, with occasional odor. The culture was used by local application and by sprays. According to the patient's statement, distinct relief was obtained, both as to quantity of discharge and freedom from odor.

Mrs. W. E. K., thirty-five, extensive atrophy with ozena, of many years' duration. Relieved somewhat by argyrol applications. The suspension of lactic acid bacilli was begun about six weeks ago, and employed by spraying into the nose, after previous cleansing. The amount of crust formation has apparently been somewhat less, although there has been no marked alteration. It seems to me that the application has been helpful in diminishing the amount of odor, but no marked difference between this and the use of argyrol could be perceived.

W. P. G., forty-four, seen Jan. 5, 1907, for pain over left eye, with apparent discharge from left, and considerable enlargement of the right middle turbinate, with ethmoiditis. X-ray examination showed normal antra and frontal sinuses. The right ethmoid region was dark. Moderate improvement was noted by the use of sprays, still considerable discharge persisted during the following year. Nov. 12, 1908, the Bacillus bulgaricus culture was used as a spray, with the result of distinct diminution in the amount of discharge and crust formation. December 22 little or no pus appeared to be secreted from the right ethmoid region. The culture was then discontinued. Feb. 23, 1909, he reported and showed no discharge or symptoms of pain.

Mrs. W. H. G., thirty-five, old chronic ethmoiditis both sides, especially right, with headache several years. Marked neurasthenia. Operation in 1903 for curetting of anterior ethmoid cells. Discharge has continued since with slight relief. The frontal sinuses and antra showed no opacity. Has refused further operation. The Lederle culture was used in early November, 1908, with apparently favorable results, the discharge diminishing in quantity. The neurasthenic symptoms here predominated to such an extent that the patient's statements of improvement should be taken with some reservation. Nevertheless, I think one may consider that the suppurative process was diminished in a measure by the use of the culture.

Miss A. B., forty, old atrophic rhinitis, many years' duration. Treated by a variety of sprays without relief, beyond temporarily cleansing the nose. Paraffin was injected into the lower turbinates about a year ago with slight improvement. Since then, however, crusts have continued to form without much remission. The Lederle culture was employed in December, 1908, with moderate diminution in the crust formation. Feb. 20, 1909, severe grippe occurred with cough and aphonia. Numerous dry crusts found in trachea, and interfering with phonation. The condition lasted for several weeks.

Miss C. G., thirty-five, seen March 1, 1909, was treated fifteen years ago in the Massachusetts General Hospital for ozena, with persistence of symptoms since. At the time of my examination the odor and crust formation were exceedingly marked. The Lederle culture was employed during March, 1909. The improvement was the most striking of any of the cases. The odor and crust formation have disappeared. A moderate amount of purulent material could be perceived in the region of the infundibula.

CASES IN WHICH NO RESULT COULD BE PERCEIVED.

Mrs. C. H. A., fifty, recurrent infection of eye showed at her first visit in August, 1908, enlargement of the right lower and middle turbinates, with a certain amount of purulent secretion in the infundibula. The anterior portion of the right middle turbinate was removed. Since then there have been six attacks of conjunctivitis, usually accompanied by increase in nasal discharge. The Lederle culture was employed here in the nose as an application to the middle turbinate region and as a spray without result.

Miss E. C., thirty-five, old chronic ethmoiditis and frontal sinusitis, with suppuration. Ogston-Luc operation two years ago, with curetting of the anterior ethmoid cells. Previous symptoms of pain have disappeared, as well as reflex ocular disturbance. The discharge, however, has persisted, moderately, without odor, better and worse by turns. The Lederle culture was employed by injection into the frontal sinus through the nose, and by spraying at home. No change could be detected from its use.

Miss A. H. P., twenty-five, ethmoiditis, with drainage into antrum of pus, several years' duration. Operated upon two years ago. Anterior ethmoid cells curetted. Antrum opened and drained. Now no anterior nasal discharge, but persistent post-nasal discharge, coming apparently from sphenoid. Unwilling to have further operation. The Lederle culture employed by anterior sprays and post-nasal applications. No material change could be noted.

E. B. H., sixty-one, acute left frontal sinusitis in July, 1908. Anterior end left middle turbinate removed by another physician several weeks later with moderate improvement. The frontal sinus was irrigated by him and by myself later without apparent result. The culture was used in November and December by irrigation of the sinus, and by spraying at home. No distinct improvement could be perceived.

The impression which I have received from a study of the preceding cases is that a distinct effect has been produced by the culture in some cases of ozena, characterized by generalized crust formation. The results appear to be comparable to those produced by argyrol, which has hitherto seemed to be one of our most reliable applications. It remains, however, to be seen whether more than a temporary effect is produced.

In localized chronic suppurative sinusitis, attended by hypertrophy and polyp formation, no effect could be detected. This negative result would naturally be expected in view of the extensive changes in the mucous membrane.

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Lord Strathcona has given half a million dollars to McGill University. Of this amount, $450,000 is to be used for completing the new medical building, and the balance for salaries of the faculty.—*Jour. Am. Med. Assn.*

I. A SPECIMEN OF AN ENCAPSULATED BRAIN ABSCESS.*

II. CONGENITAL OCCLUSION OF THE CARTILAGINOUS CANAL.

BY HARRIS P. MOSHER, M.D., BOSTON.

I. The patient from whom these specimens were taken was a man about forty years old. He was brought into the Massachusetts Charitable Eye and Ear Infirmary one evening unconscious. He presented the textbook picture of brain abscess; that is, he was unconscious, he had a slow pulse and a subnormal temperature, and a beginning optic neuritis. There was no paralysis. Some three months before he had been operated upon at the Infirmary for an acute mastoid. The operative wound had filled in, except for a small fistula. A week before his final sickness this fistula had been curetted by a local physician. I saw the case through the courtesy of Dr. Plummer.

The usual operation was done; that is, the antrum and adjacent territory of the mastoid were laid freely open. No fistula was found leading from the roof of the antrum into the cranial cavity. Then an opening was made through the side of the temporal bone above the antrum. The dura was bulging and pulseless. On cutting through this the brain substance welled up like thick cream. The knife dropped into a cavity and evacuated perhaps an ounce of pus. On exploring with the finger, the cavity was found to run inward and forward some two inches. The abscess was drained, partly by rubber tubes and partly by gauze wicks. The next morning the man was rational and better; that evening he was unconscious again and worse. In response to an emergency call, Dr. Tobey saw him and redressed the cavity. On the second morning the man was fast becoming moribund. At this time I redressed the abscess cavity and explored it with the finger for any unopened pocket or another abscess. In the upper anterior part of the wound there was a bulging, sloughing mass of brain tissue. In order to clean up the wound at this point and to make the drainage better, I cut off some of this and in so doing, removed the top of an encapsulated abscess. The abscess cavity was empty. The abscess sac was easily enucleated with the finger, except at the inner end where it was necessary to free it with scissors. The man died that afternoon, about forty-eight hours after admission. (See Fig. No. 1.)

Dr. Hennessey, the senior house officer, was fortunate enough to get an autopsy. I have here the abscess sac, the brain and the temporal bone. Before describing the specimens, I wish to mention some clinical points. The operation at the time seemed unusually easy, and, if I may be pardoned for saying so, it seemed satisfactory. I came at once upon the abscess, and if I had not hurried, it would have ruptured of itself. When the cavity was explored with the finger, no pockets were discovered. All the time, however, there was a large encapsulated abscess the size of a hen's egg lying in front of my finger. Only by a fortunate chance was this discovered and removed before death. Again, in this case there was an acute, unwalled-off abscess side by side with a chronic encapsulated abscess. It is a common happening to have a brain abscess start up a second one in another part of the brain. There is no reason, therefore, why a chronic abscess could not, as in this case, start up an acute abscess by its side. I do not, however know how often this happens. How old is this encapsulated abscess? Its walls are at least a quarter of an inch thick, and very dense. Three months would seem a short time for the formation of such a firmly-organized structure.

Both abscesses were in the typical place, the acute abscess above the roof of the antrum, and the encapsulated abscess above the roof of the middle ear. Neither abscess had a stalk, upon the finding of which Ballance lays so much stress. There was no fistula in the bone over the antrum, neither was there one in the bone over the middle ear, but the bone over the middle ear was red and slightly necrotic. This corresponds with the well-known fact that in at least one-half of the cases of brain abscess due to infection from the ear no bone fistula is found. (See Fig. No. 2.)

The histological structure of the encapsulated abscess interested me. There are sections of the abscess wall under the microscope. As I was not familiar with the formation of these abscesses, I looked up the subject in Zeigler's "Pathological Anatomy." In the volume which contains sections I–VIII, pages 429–430, the following statements may be found regarding abscess of the brain:

"Large abscesses may occupy the greater part of a lobe, but in general they are the size of a walnut or a bantam's egg.

"When recent, the abscess wall appears ragged, the surrounding tissue edematous and swollen, and is often dotted with small specs of hemorrhagic and inflammatory infiltration. An abscess which extends up to the pia mater gives rise to meningitis. Escape of pus into the ventricles sets up intense inflammation.

"Only the smallest abscesses are capable of repair by resorption of the pus and the formation of a scar. Larger abscesses, provided the inflammation recedes and the patient does not die from excessive intracranial pressure or from meningitis, become separated off from the surrounding tissue by a membranous layer of granulations. Such an abscess may persist for years. Even by the fourth week an abscess may be marked off from the surrounding cerebral substance by a gray or grayish-red zone. In the course of months this zone becomes broader, say from 2 to 5 mm. thick, and at the same time undergoes induration. It consists simply of granulation tissue which is afterwards changed into cicatricial tissue. In an old abscess the limiting membrane thus consists of an inner layer of granulation tissue and an outer fibrous layer.

"The abscess, once encapsulated, gradually increases in size by the accumulation within it of pus secreted by the membrane; it is probable, however, that this secretion ceases in the course of time. At all events, in chronic abscesses it is very scanty. The surrounding tissue is compressed and is liable to become atrophic or even perish outright by degenerative necrosis. At any moment inflammatory edema or fresh inflammatory infiltration may be induced and bring about conditions which impair the functions of the brain and frequently put an end to life. Even the risk of rupture into a ventricle or the extension of the inflammation to the pia mater is not done away by the encapsulation."

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* Read at meetings of the New England Otological and Laryngological Society held Jan. 22 and March 31, 1909.

My specimen of an encapsulated abscess corresponds nicely with the description just given. The abscess is about the size of a hen's egg. It was found empty. The walls are a quarter of an inch thick. The inner layer of the abscess wall consists of granulation tissue, next to this there is a layer of fibrous tissue, and next to this, where the abscess came to the surface of the brain, the hemorrhagic and edematous pia with its many vessels is seen. (See Fig. No. 3.)

II. Bertha and Grace P —, twins, four years old, were brought to the Massachusetts Charitable Eye and Ear Infirmary because they were very backward in the kindergarten and it was thought that their hearing might in part be responsible. On examination it was found that the cartilaginous canal with both children gradually tapered to a point and about a half of an inch in became occluded. There never had been any ear trouble, so that the condition was congenital. One twin, Grace, at birth had a malformation of the lower lid of the left eye. This had been successfully corrected. (Dr. Morgan.) Apart from the deformities just mentioned, the children were normal.

It was impossible to get any hearing tests of value. All that could be made out was that one child heard much better than the other, and that both children after some coaxing would answer " yes " or " no " to simple questions asked in the ordinary tone of voice with the questioner about three feet away. The x-ray showed a middle-ear cavity in both children, and gave a shadow which corresponded with the malleus. It was decided to do an exploratory operation upon one ear of each child. I saw the cases through the courtesy of Dr. Plummer.

Bertha, the child who heard the better, was operated upon first. The cartilaginous canal was approached by the usual post-auricular incision and the canal turned forward. The blind end was found to contain a small lump of cartilage. This was adherent to a flat plate of bone which filled about two thirds of the space usually occupied by the drum. There was no drum. On cleaning this plate of bone, a depression was seen in the upper part, showing that the malleus was incorporated in it. Beneath and in front of this bony and partial drum a middle-ear cavity lined with mucous membrane could be made out. This extended backward to the inside of the bony plate. (See Fig. No. 4 *a*.)

The cartilaginous knob was dissected out from the inner end of the canal so that the canal could be opened up. Then the greater part of the bony plate was chiselled away, leaving, however, the portion which corresponded to the head of the malleus. No incus could be made out. Care was taken not to work in the region of the facial nerve or in the region of the stapes. In order to enlarge the canal, a little of the posterior bony wall was removed. In doing this at once very large mastoid cells were opened. These filled the entire mastoid process and were white and glistening like the cavity of the middle ear. Further than to smooth off the edges of the cells thus opened up, nothing more was done upon the mastoid.

In closing the incision, a flap of skin was turned in over the opened cells and the incision was sutured except at the bottom where a wick was left for drainage. By turning in the flap of skin, it was hoped to cover the opened cells, to keep the remaining cells from becoming infected and necessitating a mastoid operation, and to furnish a focus for epidermis for the posterior part of the canal wall.

The after treatment consisted in packing the canal and in trying to maintain as large a lumen as possible by burning down granulations, after suppurating vigorously. The incision finally healed. The mastoid cells did not become infected. To-day an open and healed fistula remains at the pedicle of the buried skin flap. The child's hearing is so much improved that instead of being considered backward, she is now rated as one of the brightest in her class.

In the second child, Grace, the one who heard the poorer of the two, and the one who had the deformity of the lower lid, the cartilaginous canal was found to end in a lump of cartilage. This was the same condition that was found in her sister. Instead, however, of finding a plate of bone representing a partly ossified drum with which the malleus and the incus were fused, there was present only a knob-like process which was apparently a deformed malleus. There was no middle-ear cavity, so that it was necessary to isolate the hammer from a mass of connective tissue. The lower part of the knob of bone was carefully chiselled off. When the middle ear was freed from connective tissue, it was found that it had no bony floor; that is, the vaginal plate had not developed. Running across the inner wall of the middle ear there was an ill-defined fissure. This ran below the usual course of the facial nerve, but roughly parallel to it. On this account it was not considered at the time to be the canal for the nerve. The further history of the case throws doubt upon this conclusion. (See Fig. No. 4 *b*.)

The bony canal was not enlarged by chiselling into the substance of the mastoid process for fear of opening large cells, as happened in the first case. The canal was packed with gauze and the incision closed without turning in a flap of skin.

The incision suppurated badly, and it has been very hard to maintain a lumen of respectable size for the canal. The posterior incision in the lower part is still open after seven months. It is, however, gradually getting cleaner. On the second day after the operation, a facial paralysis developed. Under the use of electricity the paralysis has improved very much in the last three months. This child, like her sister, hears very much better, and has advanced in school from the dull grade to the first or bright grade.

Each child has an unoperated ear. The question now is what to do in the future. The first child had a nearly perfect ear. On this child I should advise operating upon the other ear. As to the second child I am in doubt. This child (in the ear operated upon) had no middle-ear cavity and one part of the bony wall of the middle ear was missing. If the same condition exists in the second ear, an operation would probably result in a second facial paralysis, unless the operation was modified, and no attempt was made to clean the connective tissue from the middle-ear space. It would seem desirable in this second case, if anything is done, to confine the operation to taking out the cartilaginous plug and to opening the canal. Had the hearing in this second child not been so much improved I should not think of another operation. As things stand to-day, I am inclined not to risk another facial paralysis, but to let the child get along with one good ear.

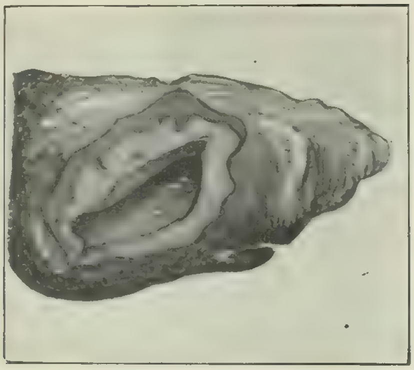
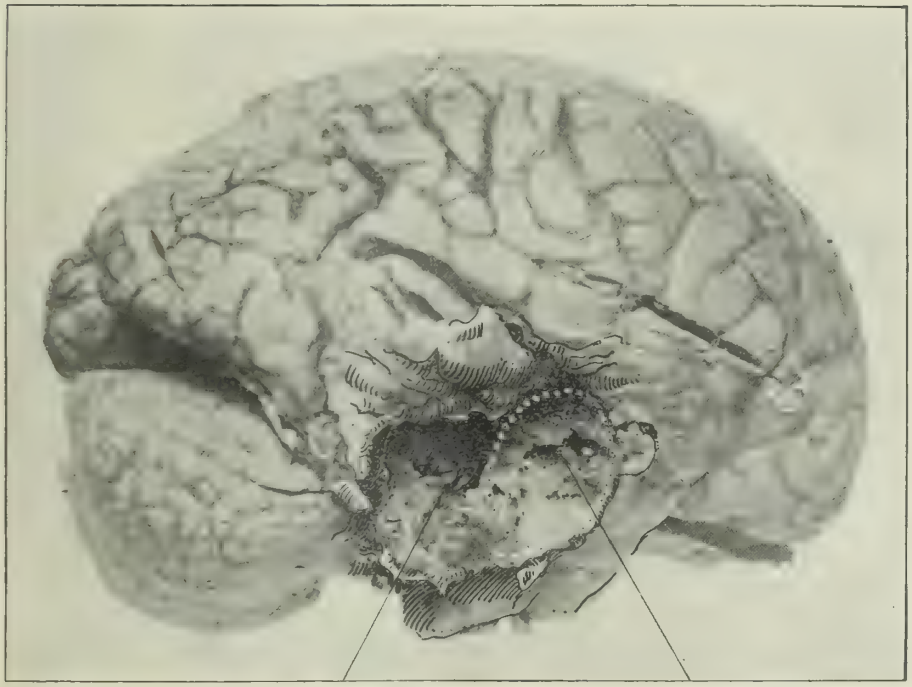


Fig. No. I.

Retouched photograph of encapsulated brain abscess. Natural size. The cavity of the abscess has been laid open by removing a portion of the outer part of the wall. The size of the abscess cavity is shown and the thickness of the abscess wall.



Unencapsulated abscess. Encapsulated abscess.

Fig. No. 2.

Brain showing the lesion produced by an abscess in the temporo-sphenoidal lobe. In this case both an encapsulated and an unencapsulated abscess were present. The encapsulated abscess lay over the roof of the middle ear, the unencapsulated abscess over the roof of the mastoid antrum.

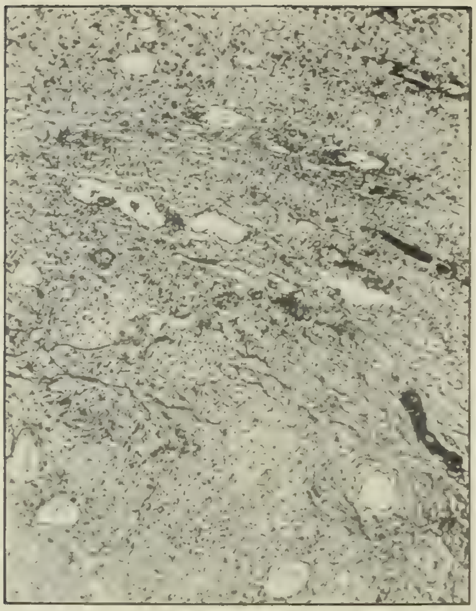


Fig. No. 3.

Photograph of a section of the abscess wall seen under the low-power objective. The section shows that the abscess wall is made up mostly of granulation tissue with a certain amount of fibrous tissue scattered through it in the outer or superficial part.

In the upper or the external portion of the specimen large vessels similar to those of the pia mater are seen.

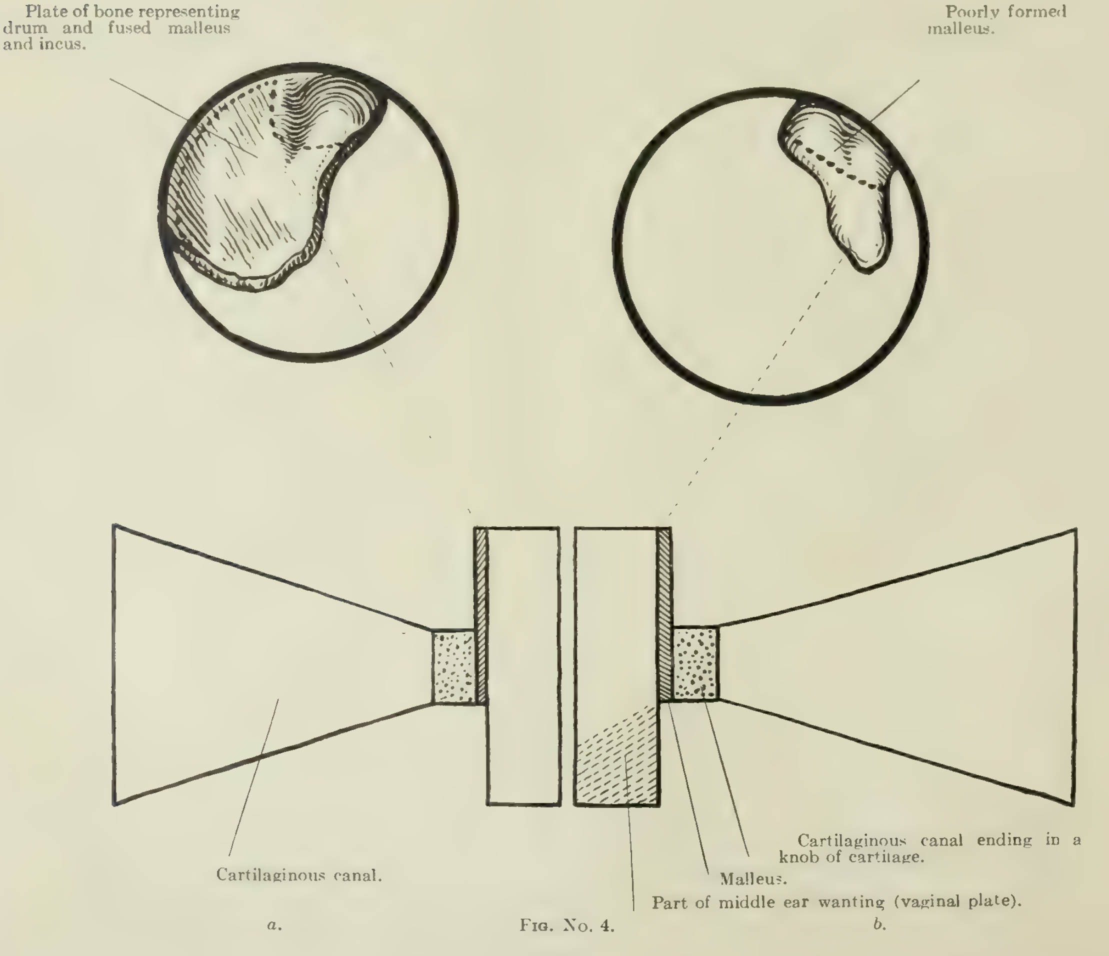


Plate of bone representing drum and fused malleus and incus.
Poorly formed malleus.
Cartilaginous canal.
Cartilaginous canal ending in a knob of cartilage.
Malleus.
Part of middle ear wanting (vaginal plate).
a.
b.

Fig. No. 4.

ANESTHESIA FOR ADENOID AND TONSIL OPERATIONS.*

BY ALBERT H. MILLER, M.D., PROVIDENCE, R. I.

From the standpoint of the anesthetizer, the classification of the operations for removal of the tonsils and adenoids depends on the length of the operation. There are, first, the rapid operations requiring an anesthesia of not over ten minutes, and second, the long operations, lasting for from ten to forty minutes with an average of twenty-two minutes.

For the first class of operations, the anesthesia is a simple thing and may be produced by nitrous oxide, ethyl chloride or a single administration of ether. To produce a smooth anesthesia for operations of the second class is the most difficult problem which has been presented to the anesthetizer. These cases are hard to anesthetize for two reasons: first, on account of the nature of the operation, and second, because of the condition of the patients.

The nature of the operation requires that the mouth shall be kept open by means of a gag or similar appliance, and that no cone or inhaler shall be kept over the face while the operation is being performed. The operations are attended with considerable hemorrhage, and the blood must be swallowed or pass out through the mouth or nose. For this reason the laryngeal reflex must not be abolished, but, nevertheless, the soft palate must be so relaxed that the surgeon may have no difficulty in introducing the adenoid forceps, and the pharynx must be so anesthetized that the vomiting reflex is not caused by contact of the finger with its wall.

In some adults the operation may be done with local anesthesia, but in the case of children, general anesthesia is always advisable. The children are from four to fifteen years of age. They are mouth breathers, and the nasal and pharyngeal air passages are often nearly occluded. They are often of the lymphatic diathesis and predisposed to sudden death from syncope.

These patients are anesthetized with ether or chloroform. The objections to the use of ether are the increased hemorrhage and the irritating effect of the drug on the respiratory mucous membrane, causing a tendency to coughing and choking with a profuse secretion of saliva and mucus throughout the operation.

The objection to the use of chloroform is the great danger attending its use. On account of the lymphatic diathesis, the patients are specially susceptible to the effects of chloroform. Chaldecott has reported one hundred deaths from chloroform in adenoid operations in England during the ten years from 1890 to 1900. Roberts has reported seventeen deaths from chloroform in adenoid operations in the vicinity of Los Angeles.

In this country the greater number of tonsil and adenoid operations are performed under the intermittent administration of ether. The patients are thoroughly anesthetized with this drug. The cone being removed, the operation is commenced and goes on until the patient recovers somewhat from the anesthetic. Then the operation must be stopped, while ether is again administered until sufficient anesthesia is restored. This process is repeated as many times as may be necessary until the operation is finished. The objections to this method are evident. It greatly impedes the operation and increases the time necessary for its performance; and moreover, the repeated deep saturation of the patient with the drug is attended with some danger.

To obviate these disadvantages and produce a smooth anesthesia throughout the operation, a number of procedures have been used. In England the plan originated by Hewitt is followed. The patient is anesthetized with ether until the operation is about to be commenced and then anesthesia is kept up by chloroform, administered with a Junker inhaler.

The Junker inhaler is little known in this country, but is extensively used abroad. The apparatus consists of a glass bottle with a metallic screw cap perforated for the passage of two tubes, one of sufficient length to reach nearly to the bottom of the bottle, and the other extending only through the cap. To the longer, or afferent tube, a hand bulb is attached by a length of rubber tubing, and to the efferent tube is connected a long rubber tube attached to a mask or to a mouth or nasal tube. The bottle is partly filled with chloroform and air is made to pass through this by compressing the hand bulb. The Junker inhaler was originally planned for the use of methylene bichloride. It is mostly used for chloroform anesthesia and answers well for this purpose. The English authorities, who use this method of anesthesia for adenoid operations, believe that the great objection to the use of chloroform, on account of its danger, is counterbalanced by the advantage of the smooth anesthesia obtained. Another objection to the use of this apparatus lies in the possibility of pumping liquid chloroform into the air passages by adapting the rubber tubing to the wrong metal tube of the chloroform bottle. Death has thus resulted in more than one case. In the Brophy apparatus this danger is obviated by passing the chloroform vapor into a second glass bottle before it reaches the air passages of the patient.

When the attempt is made to administer ether in this way, it fails, as the anesthetic is not vaporized with sufficient rapidity to maintain anesthesia. To adapt the Junker apparatus to the use of ether, Fillebrown puts the bottle in a jar of hot water and depends on the heat to vaporize the ether. This is not a satisfactory arrangement on account of the uncertain and constantly-changing temperatures of the water bath. Other similar forms of apparatus have been introduced, but they have no advantage over those already described.

The author's apparatus has been used in nearly one thousand tonsil and adenoid operations and provides for the continuous etherization of such cases without in any way interfering with the operation. It consists of a vaporizer which is worked by a foot pump and of several accessory implements which may be connected with the vaporizer by a long rubber tube.

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* Read before the New England Otological and Laryngological Society, March 30, 1909.

The features of this apparatus are:

1. It will vaporize 15 oz. of ether in an hour and will readily provide sufficient anesthesia in an adult with the face uncovered for a laparotomy of an hour's duration.
2. Neither the inlet nor the outlet tube dips into the ether. For this reason it is impossible to force liquid ether back into the patient's air passages.
3. The atomizer of the vaporizer sprays directly into the outlet tube. Thus the vaporizer is very sensitive to changes in the air pressure supplied to it.
4. The length of the outlet tube is such that when the ether spray reaches the top of the tube it has been converted into a vapor, imperceptible except from its odor.

The accessories which complete this apparatus are a mouth gag which has an ether tube incorporated in one of its jaws, a mouth tube similar to the tube of the Junker apparatus, a soft rubber nasal tube and a double nasal tip. For the adenoid operation the mouth gag or the double nasal tip is selected.

The conduct of ether anesthesia with this apparatus for an adenoid and tonsil operation is very satisfactory. The patient is prepared for operation in the usual way. The gag, or nasal tip, with a short rubber tube attached, is sterilized with the surgeon's instruments. The vaporizer, with foot pump attached, is placed on the floor at the head of the operating table, care being taken that it is not accidentally overturned.

A long piece of rubber tubing is brought up from the efferent tube of the vaporizer to the head of the table. The patient is first etherized in the usual way and is placed in the required posture. The surgeon then adjusts the gag to suit his convenience. The etherizer connects the long tube and the short piece which is attached to the gag and continues to administer ether by working the foot pump more or less vigorously. As long as the patient is breathing through the mouth, a satisfactory anesthesia is maintained. During the later stages of the adenoid operation, nasal breathing may so dilute the ether vapor that the patient begins to recover consciousness. If the mouth and nose are then covered with a towel and the vaporizer is worked for a few minutes, complete anesthesia is restored.

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Early not a Leper. — Health Officer Woodward, of the District of Columbia, consented to the removal of the alleged leper, John Early, when he received official word from the New York Health Department that he would be received in New York, and the patient arrived at the Skin and Cancer Hospital on July 4. For some time past Dr. Bulkley has been treating him for a dermatitis which he believes was caused by his work in a pulp mill in North Carolina, and the man is stated to be now free from all disease.

Medical Progress.

REPORT ON DERMATOLOGY.

BY JOHN T. BOWEN, M.D., AND H. P. TOWLE, M.D.

3. The Ultramicroscope in the Diagnosis of Syphilis.
4. Napkin Region Eruptions in Infants.
5. Verruga Peruviana.

(Concluded from No. 2, p. 57.)

THE ULTRAMICROSCOPE IN THE DIAGNOSIS OF SYPHILIS.[3]

Levaditi has given a very complete summary of our present-day knowledge of the ultramicroscope, or, as he calls it, "lateral illumination upon a dark field." This method of examining fluids and tissues for the spirochete pallida was introduced by Landsteiner and Mucha in 1906. Levaditi considers the method so valuable that he says," By it the treponema can be detected with but little difficulty as regards technic and often when other methods have failed. It also enables one to distinguish the treponema from most of the other saprophytic spirochete by the study of form and movements."

Whereas, under ordinary conditions, the central rays of light pass upward unhindered and illuminate the object directly, in the ultramicroscope the central rays are shut off by certain devices and only the outer rays are allowed to pass. Therefore no light reaches the central field, so that when seen through the microscope it appears dark. The outer rays are not obstructed and pass on. Specially constructed lenses then deflect them in such manner that they come to a focus at a point just above the object at about the center of the top of the cover glass. The microscopic particles are thus illuminated laterally, and as each becomes a source of light itself show upon the dark field as brilliant points. Zeiss, Reichert, Leitz and Stiassne, among others, now make an apparatus for lateral illumination upon a dark field which can be attached to the ordinary microscope.

The Zeiss apparatus consists of a plano-convex glass condensor whose external sides form a parabola, and a diaphragm. A voltaic arc lamp, an inverted gas lamp or a Nernst lamp may be used as a source of light. In order to prevent the possible overheating of the preparation, the heat rays are removed by causing the light to traverse a vessel filled with water placed between the source of light and the microscope. The condensor is made to fit the cylinder of the ordinary Zeiss condensor and is clamped in position about 0.1 mm. below the level of the stage of the microscope. Enough immersion oil is put upon the surface of the condensor to completely fill the air space which would otherwise exist between the slide and the condensor. The diaphragm beneath the condensor is so arranged that none of the central rays can pass. The lateral rays, however, are unobstructed and, passing outside the diaphragm, are so deflected that with a slide of a given thickness (about two millimeters) they come to a focus exactly upon the surface of the cover glass.

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[3] Levaditi Dr. C.: The new methods of microbiologic and serobiologic diagnosis of syphilis. Ann. de Dermat. et de Syph., 1909, February, March, April.

Of the Reichert condensors, there are three different types. In *Type A* the condensor is cylindrical in form and can be used in the tube of the ordinary Abbé condensor. It is provided with two diaphragms, one for use with a dry objective, the other with an immersion. As with the Zeiss apparatus, the slide must be of a certain thickness — about two millimeters. In *Type B* the condensor, instead of being placed at the level of the ordinary Abbé condensor, may be fixed below the stage of the microscope. It has a disk of crystal, in the center of which the lateral rays are concentrated. *Type C* differs from the preceding in that it is provided with a series of revolving diaphragms which allow the lighting to be so regulated that either a dry or an immersion lens can be used.

The Leitz apparatus is similar to the Zeiss. Its condensor, however, refracts the rays twice, which allows them to be precisely concentrated upon a single point on the cover glass. Like the others, this apparatus also demands the use of a slide about two millimeters thick.

" An important point, upon which the success of the examination depends in large part, is the manner in which the material to be examined is secured." He goes on to say that " Landsteiner and Mucha recommend that this material should be diluted with a certain amount of isotonic salt solution (of 9:1000)." Beer recommends one of the following methods: 1. Having first cleansed the surface with isotonic salt solution, the lesion is scraped very carefully until clear serum oozes out. Care must be taken to avoid the slightest hemorrhage, as the red blood globules are so refractile that they interfere with the examination. The serum is then removed with a pipette and placed upon a slide for examination. 2. The lesion is incised horizontally and parallel to the surface at a depth of one or two millimeters. The serum, slightly tinged with blood, is then taken up by a pipette. 3. The serum may be obtained from the ganglia by means of a Pravaz syringe with a large needle. As little blood or tissue as is possible should be withdrawn. If there should be too many fragments of tissue in the fluid obtained, they may be rubbed up between cover glasses. The addition of several drops of physiological salt solution forms an emulsion which can be used for the examination. Whichever of these methods is employed, the fewer cellular elements there are in the fluid, the more the search for the spirochete is facilitated.

Another point upon which Levaditi lays much stress is the choice of slides and their cleanliness. Certain condensors require the use of slides of a certain thickness, two millimeters or more, according to the system employed. As to cleanliness, he says that the slides and cover glasses should be as nearly perfectly free from every trace of dust and grease as is possible. He recommends very highly Cotton and Mouton's method of cleaning the slides. After cleaning the slide by the ordinary methods, collodion is spread over the surface. When thoroughly dried, the layer of collodion is peeled off.

Further, it is absolutely necessary that when the cover glass is placed upon the serum, no air bubbles should be present. For this purpose he recommends vaseline or wax to prevent evaporation. In this way the preparation can be preserved for a long time and the movements of the spirochete studied. Care should also be taken not to enclose any air when the slide is placed upon the oil covering the condensor. The light should be manipulated until it is well centered, when it is reflected upward by the plane mirror of the microscope. The preparation is then examined with either a dry or an immersion lens. The latter is the better, for not only is the image larger, but the illumination is clearer, as the light is diffused less in the oil than in the air.

When seen with the ultramicroscope, the spirochete appear larger than with the ordinary microscope and present the following characteristics: " They usually appear upon the dark field as very brilliant, fine filaments with regular undulations and pointed ends; the undulations are serrated and deep, their number varying, according to the length of the parasite, from five to twenty or more. Sometimes the spirochete have the appearancce of a wavy line made up of bright points alternating with more obscure zones. In still other conditions, largely dependent upon the illumination, the spirochete appear as zigzag lines. Compared with most of the other pathogenic and saprophytic spirilli, the movements of the spirochete are less accentuated. Its movements are those of progression and regression, movements around the longitudinal axis, movements of the entire body (pendular) and slow undulations forcing it from place to place."

NAPKIN REGION ERUPTIONS IN INFANTS.[4]

Under this heading Adamson describes four different types of eruption.

1. So-called seborrheic eczema in infants.

This eruption involves the whole area of the napkin region in a uniform red sheet covered with small, moist or grayish-yellow scales. The margins of the area are very sharply defined, and often extend as far as the umbilicus down to the thighs. Other parts are always involved, and there are often some areas at the bends of the knees, in the flexures of the elbows and in the axillæ. The scalp is invariably the seat of a red, scaling or crusted eruption on the vertex, and this has been present some time prior to the general eruption. The mother usually has a more or less marked seborrhea of the scalp.

Although the eruption looks so formidable, it is readily healed by local parasiticide applications. A daily bath containing boric acid, and an ointment containing sulphur, ten grains to the ounce, will cause the eruption to disappear entirely in a few weeks. This eruption is probably of parasitic origin, its initial lesion being a peri-follicular papule with a scaly top.

This affection corresponds with the well-known conception of seborrheic eczema, with the exception that stress is not laid upon its occurrence in this region. Its importance consists in its differentiation from eczema and from syphilis, and in recognizing that it is a local affection readily healed by local antiseptics.

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[4] H. G. Adamson: Brit. Jour. Dermat., February, 1909.

2. His second heading comprises the infantile erythema of Jacquet.

Jacquet, in 1806, showed that the cases described by Parrot as lenticular syphilides were in reality an advanced stage of a simple erythema of the buttocks of infants, and that these papules may become ulcerated, forming lesions which had been mistaken by Parrot for syphilis.

There are several stages in this process, beginning as a simple erythema upon the buttocks and genitals, extending sometimes down over the thighs.

The second stage represents an erythemato-vesicular form in which appear bright red, punctiform erosions which may coalesce. Towards the margins of the erythematous areas there are found small, flat, perfect vesicles which represent apparently the early stage of the erosion.

The third form is the erythemato-papular, or post-erosive, and this is really a stage of the erosive form, in which the erosions have thrown up flattened granules. These papules are arranged in groups upon the buttocks, upper half of the thighs and about the genitals.

The fourth form is less common than the preceding, although not rare in hospital practice. In these cases the erosions form ulcers which are punched out, sharply margined, circular, oval, often running together. In some instances these ulcers have exposed muscle or bone.

Ferrand has lately made a careful study of these eruptions from the histological point of view, and concludes that the name erythema is quite insufficient to indicate their character. He regards them as a dermo-epidermitis bearing clinically and anatomically a close resemblance to eczema.

3. The third class of eruptions in the napkin region of infants, which may be mistaken for a syphilide, has been called the vacciniform ecthyma of infants, as well as various other names. It has recently been described by Dr. Colcott Fox as a local infection, although the organism has not yet been definitely determined.

4. The bullous impetigo of infants.

The extreme type of bullous impetigo in infants is the so-called pemphigus neonatorum in infants a few days old, but it is well known that cases of common impetigo contagiosa in older babies have taken on a bullous character, and in these cases the napkin region is often involved, particularly the flexures. The large bullæ usually break, leaving raw, red surfaces with phlyctenular margins. It is seldom that the eruption is confined to this region, the bullæ or typical lesions of impetigo contagiosa being present elsewhere.

VERRUGA PERUVIANA.[5]

Material for a pathological investigation of this affection was obtained from the director of the Hygienic Institute in Lima.

The clinical symptoms of this affection consist in the appearance of tumors, some very small, others larger, which develop beneath the skin and are of a dark red color with some hemorrhagic appearances. These are accompanied by a pronounced anemia and pains in the muscles and bones. This affection is found only in Peru, and there only in certain districts. Two forms of the affection are described: The first, or severe form, was called Carrion fever, so called after a young medical student, Daniel A. Carrion, who inoculated himself with blood from a patient affected with verruga, and died later with typical symptoms of the so-called "oroya" fever, which he thus proved to be identical with verruga. The severe form begins with a remittent, or intermittent fever, accompanied by a severe anemia, and depression, by edema of the skin, pains in the muscles and bones, and nervous disturbances. Oftentimes this stage is the only one, death resulting before the appearance of an exanthem.

In the second type of the disease, the skin eruption is accompanied or preceded by fever, although sometimes the latter feature is lacking. Edema of the skin and profuse sweating is a common accompaniment. The form of the eruption may consist of small miliary papules, or sometimes larger nodules. The eruption often comes in outbreaks which are accompanied by a new rise in temperature. Not only the skin, but every organ, may be the seat of the nodules.

There can be no doubt that verruga is an infectious disease, from the high fever, and the exanthem. It has been assumed that the disease was transmitted through the water of the narrow valleys, but no proof of this has yet been offered. A certain resemblance between verruga and malaria has been traced, but no malaria parasites have been detected.

Three cases were examined carefully, and the following results as to the pathology of the disease were arrived at. This was the first time that all the different internal organs had been examined in this disease. Of these three cases the first one was of a man of thirty who had all the clinical symptoms of the disease, and who lived in a region where verruga was prevalent, and who had the severe type of the disease in which death occurred seventeen days after the eruption of the skin.

The second case was from a severe form of verruga in which the skin nodules were larger than those of the internal organs.

The third case was that of a man of eighteen, who died two months after the beginning of the disease with severe anemia, pains in the muscles, etc. The autopsy showed no nodules in the skin, nor in the internal organs, but severe degenerative changes in the parenchyma of the organs.

In all three cases bacilli belonging to the typhoid colon group were found, and the same results have been reached by other observers.

Conclusions cannot, however, be drawn from these findings as to the etiological significance of the bacteria. The writer thinks that it is most probable that these micro-organisms represent a very late, possibly post-mortem infection, because their number is small, and their position seems to have no relation to a particular locality.

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[5] De Vecchi: Virchow's Archiv, Dec. 31, 1908.

Reports of Societies.

NEW ENGLAND OTOLOGICAL AND LARYNGOLOGICAL SOCIETY.

Meeting, March 30, 1909, at the Boston City Hospital.

President, Dr. A. C. Getchell; Secretary, Dr. W. F. Knowles.

Dr. J. J. Hurley showed a case of a little girl seven years old in which he had done a thyrotomy. When he first saw the case she was absolutely aphonic on account of papillomatous tissue. The growths had been removed twice before by direct laryngoscopy at the Children's Hospital. She was aphonic and dyspneic and it was apparent something had to be done. What to do was the question. Whether to do a direct laryngoscopy or a tracheotomy and wait the indefinite period that literature tells that we must, that is, that at some future time there will be a change with arrest of growth, or whether to do a thyrotomy.

At that time I had not seen the recent literature which recommends a laryngotomy with a low tracheotomy: the operation of Baratoux which holds the larynx open with rubber dams, treatment by x-ray, and later on gradually taking out the tube and closing the larynx. There seemed to be a great diversity of opinion, although the bulk of opinion seemed to tend toward conservatism-tracheotomy, the tube and waiting. It seemed to me, that in view of the fact that she had weathered two laryngoscopies there were only two other things we could do, unless we wished to repeat. Then it was a question of thyrotomy or tracheotomy, or both. It seemed to me after reading up the literature that there were just as many successful cases of thyrotomies done, in fact the majority of all thyrotomies were cured; so I thought that as long as we had to do a tracheotomy it was just as well to do the thyrotomy at the same time, with the hope that in this case we would land on the right side, it being perfectly easy later on if we did get any recurrence to do a tracheotomy.

As I say, she was absolutely aphonic when I first saw her. For three weeks succeeding the operation she spoke as clearly as I do now. Within the last week she has had recurrence which is enough to make her hoarse, and of course the prognosis is, that she is going to fill up again. The question is, What to do? The mother wants something done, and if she gets dyspneic again, as she probably will, something will have to be done.

Dr. Dodge administered rectal anesthesia. Four or five hours after the operation there was a certain amount of tympanites, which was immediately pulled down by administering a high turpentine enema. She went on rectal feeding for some days and bore it well.

I invite criticism on my judgment in doing a thyrotomy, and would ask what I shall do in the future.

Dr. Crosby Greene: When I saw the patient at the Children's Hospital she had a growth on the anterior commissure. It was a very easy case to do by direct laryngotomy, as the child did not suffer much from the operation and, as I remember it, she went home in a day or two after the first operation. I expected, as we all expect, that she would have to have the operation again and we would have to try some other method.

I think Dr. Hurley is to be congratulated on his operation. It was very well done to produce such an excellent voice result. Every one is not as fortunate as he was in this instance. By direct laryngotomy the throat was perfectly clean, so that a week afterwards, looking down the throat, the throat was perfectly clear. I think Dr. Robbins will remember the case.

Dr. Hurley: Do you believe in repeated laryngotomies?

Dr. Greene: The danger is reduced almost to a minimum, it is not so much as a tonsillar operation.

Dr. Richards: Did you operate on our case?

Dr. Greene: No, I did not. Dr. Coolidge operated on her.

This was a small child two years old, or less, whose throat was very crowded. Dr. Coolidge operated on that case by direct laryngotomy and removed a considerable amount of papillomatous tissue. At the end of that operation the child's breathing was not satisfactory. The child was rachitic, there was a good deal of swelling of the larynx; a poorly nourished child, and the larynx was so small we did not dare to leave the child without laryngotomy. It was a very different proposition with a baby of that age than with a child with well-developed larynx. In the case of an infant one or two years old, the larynx is so small that it is very much more difficult to do a direct operation, and in such a case I think it would be better to do a laryngotomy.

The prognosis is, recurrence every time.

Dr. Richards: Would a child survive repeated operations?

Dr. Greene: Of course a child with a tracheotomy tube is not so likely to survive as one without.

Dr. Clark: I believe that all papillomata of the larynx will get well without opening the thyroid to remove them and without splitting the larynx. It is only a question of time, because they disappear by wearing a tracheotomy tube for a certain length of time. I believe that nowadays, with the new methods of reaching the larynx, and with the Jackson tube, that a number of cases can possibly be treated without a preliminary tracheotomy, but it is difficult to say what cases should be treated in that way and what should not. I think that if the growth recurs rapidly no further attempts should be made at removal and tracheotomy should be done, and the child should wear a tracheotomy tube until the growth has no tendency to increase. I think that subsequent attempts at removal are more injurious than helpful when the papillomata is growing.

TIC DOULOUREUX.

Dr. Leland. C. D., seventy-six S. This old lady had tic douloureux on the left side for about ten years. She had a great deal of accessory sinus disease, so instead of removing the Gasserian ganglion it seemed worth while to try to clean out these sinuses: and so for the last four or five years she has subjected herself to two or three operations, one of which was a Killian, and you will scarcely see the scar. What there was of a frontal sinus, a very small one, was curetted. She healed well and went on for about a year without pain. Soon after we also cleaned out her antrum, which had more or less pus and degenerated mucous membrane in it, by what might be called the Jansen-Gerber method.

About a year afterwards she developed more pain and we found some of the ethmoidal cells and the sphenoid were affected, so we curetted them out. Then she went along for about a year without any pain. It developed again this spring and we found that some cells between the sphenoid and the ethmoid were still involved, so they were obliterated recently. This has as yet not entirely relieved her, I am sorry to say, though the pain is subsiding, but I show her to-night as one of advanced age who has a great deal of fortitude and has submitted to many operations.

It has been my experience in a limited number of cases, say upwards of a dozen, that if the periphery is thoroughly searched, whether we find it in the accessory cells, in the nose itself, in the teeth or in the ear even, there is some focal cause for the trigeminal tic, and I have a goodly number of cases where trifacial neuralgia, either constant or in strokes, has been permanently relieved by the removal of the peripheral cause, making the resection of the branch of the nerve transmitting the pain, or even of the first station at the Gasserian ganglion, entirely unnecessary.

Talking this over with Dr. Munroe, a short time ago, I was surprised and pleased to hear him say that he had never resected a Gasserian ganglion. We find many of the general surgeons in favor of the removal of this structure; and we also find, if we follow up such cases, that they are relieved of pain for a year, or perhaps two years, and if the patient is truthful, for not much more than that. In one instance a patient said he was relieved of pain for a longer period (four years) because he did not wish to undergo any more cutting.

In this case before you the operations (clearing out of the frontal and maxillary sinuses, subsequently the middle ethmoids and then the sphenoid and posterior ethmoids) have each in turn given her complete relief for a time, but the relief, as a rule, lasts only about one year thus far.

This next case, male, about twenty-eight years of age, was operated on for frontal sinus and ethmoid suppuration, where we did not make a bridge, the cavity being too small. This was done by the ordinary Killian incision last April; then he lost himself, or lost us, until January. In the meantime granulations had been forming at the site of the floor of the ethmoid, and we had a new one reproduced. There was a return of the pain and pus broke through the scar at the side of the nasal bone. After the granulations with some new bone were removed again from the interior of the nose — the reproduced floor of the ethmoid — he has had no more pain and discharge has ceased, and the remarkable thing is that there is almost no scar to be seen.

This woman, thirty-eight years of age, had an acute mastoid, operated on 20th inst. I have been using a periosteal flap in order, if possible, to shut off the aditus so as to obviate the possibility of re-infection of a possibly unobliterated mastoid cavity. We have doubtless seen many cases where a secondary mastoid had to be performed and have found the mastoid cavity had not been filled, i. e., there was no bony filling. Sometimes there was more or less bony reproduction, but a fibrous interior, or one filled with unhealthy granulations. It seemed to me that if we could get viable periosteum to shut off the aditus by a reproduction of bone in that cavity, so that if the middle ear was re-infected through the Eustachian tube, the infection could not extend backwards we would not have secondary mastoids. The flap may be seen *in situ*, passing down on the anterior mastoid wall, and the cavity has nearly granulated in. This is rather rapid healing for such a large mastoid cavity. By the use of this flap it is found that the duration of convalescence, and therefore of hospital care, is much curtailed.

She came in on the 18th and was operated on the 20th of this month, this being the 30th, that was ten days ago. Now the bony side of the tip of the periosteal flap is fastened down over the aditus, therefore we shall doubtless have bony reproduction over the aditus and impossibility of re-infection.

R. C., male, seventeen years old. Acute mastoiditis. Flap operation.

This young man was operated on the 11th of this month and discharged from the hospital on the 20th. The wound has nearly closed up except a small sinus that runs down on the posterior surface of the flap, There are a few granulations on the edge of the wound. which will be conserved till the wound is filled in, so that the skin will grow directly over and leave no depression.

Dr. Richards: Do you do that in all acute cases, and do you let them granulate in?

Dr. Leland: Yes, I have done it in all acute cases this winter.

There is a proliferation from the superior surface, from the dermal surface of the periosteal flap, which helps to fill in the cavity. This young man had his dura and lateral sinus exposed, the flap was used just the same, and although he had temperature for a few days, the flap was not disturbed. He got along nicely, and now, nineteen days afterwards, the wound is almost filled in.

Some of the largest cavities fill in in so short a time, but the flap itself helps to fill the cavity and the proliferation from its superior surface (posterior after it is placed properly) helps very materially.

Dr. Richards: Do you have any trouble with the tip?

Dr. Leland: Not as a rule. In only one case did the tip pull up from the aditus. Here I re-etherized the patient, separated it from its faulty attachment and re-anchored it in its proper place, where it adhered satisfactorily. The objection the New York men make to it is, if the tip of the flap comes over the aditus there can be no posterior drainage. But after making a free paracentesis at the time of the operation, I contend that posterior drainage through the middle ear is not necessary, as the mastoid cavity is wholly cleaned out, and there is nothing to drain. Hence the middle ear has a chance to heal, undelayed by inflammatory products from behind.

Dr. Richards: Might not that close up too quickly?

Dr. Leland: No, it never has. In most of these cases the trouble comes from the mastoid cavity anyway and if you shut off the cavity you will have no trouble.

Now it occurred to me that if we could do this in an acute case it would be a good thing to do in chronic ones, because in doing an exenteration we are apt to have and generally have a large posterior cavity which we dermatize, but which will not take care of itself, and which requires more or less attention during the patient's life. The new covering of the interior of the cavity is not a dermis which has the " procession of the epithelium " (Blake) as the epidermis of the canal has, and therefore the detritus which forms there is not carried out as it is in the normal canal. This large exenterated cavity has an unhealthy pseudo-dermic surface, it is in a warm place where moisture easily macerates it, and whence we have to take out occasionally more or less débris for these patients. Most cases cannot take care of themselves.

Ruth M., six years, A. S. O. M. P. C. with caries and chronic mastoiditis.

This little girl had a large amount of caries of the middle ear as well as of the mastoid cavity. Her mastoid was thoroughly exenterated, the anterior wall was taken away down to the facial ridge as usual, the external meatus enlarged by Pause flaps, and a large rubber tube placed in the canal after the method of Heath, of England. The periosteal flap was folded down on this tube and anchored on the facial ridge and into the aditus, by firm packing in the tube and posterially in the mastoid cavity, and that was kept there long enough so that it adhered say eight to ten days. The posterior wound then filled in rapidly and now she has no depression and almost no scar behind the ear, and if you look into the external canal you will see a cavity a little larger than it was before, but not a big cavity which would be a calamity for her probably at her age and with her prospects, a very nuisance to keep cleaned out.

Mary O'B., fourteen years old, A. D. Otitis med· chron. with caries of middle ear and chronic mastoiditis.

This little girl had an exenteration, this a much larger cavity than in the foregoing case, was exenterated just the same, the canal split, a large tube put in, and the periosteal flap folded down upon it. Soon after this the wound healed without any depression, only a linear scar, and the middle ear and the canal do not look much larger than before. These were both chronic cases.

It seems to me that if we can obliterate the aditus, the port of entry from the middle ear to the mastoid cavity, and if we can eliminate this cavity from behind which requires such troublesome toilet for years afterwards, that this flap operation is a useful method of procedure.

Dr. J. L. Goodale read a paper on

THE TREATMENT OF CHRONIC SUPPURATIVE NASAL CONDITIONS BY THE USE OF LACTIC ACID BACTERIA.[1]

Dr. Richards: At the meeting of our new society at Pittsburg, Dr. Goodrich described his results with the serum. Also, at the same meeting, another gentleman described very enthusiastically the results of lactic acid bacilli powder on the intestines. Having no tablets at the institution it occurred to me that although it was a rough makeshift, we might get some dry powder up into the nose and some of this powder might land in some of these cavities; so I took some of the tablets and powdered them and put them in an ordinary powder blower and tried them to a certain extent in two cases. One was a frontal sinus case in which there was free communication from one side to the other and what went up one nostril appeared in the other. In that instance, after washing out and drying the canula, we were then able to replace the canula and blow this powdered lactic acid up into the sinus. There seemed to be a diminution of the discharge, at least the patient said she felt better after it.

The other class of cases were atrophic rhinitis, in which there seemed to be the same results Dr. Goodrich described, namely, a diminution of the stickiness of the crusts so that they came away rather more freely, and a diminution in the odor.

It is a perfectly simple thing to do; this method is cheap and easy to perform. It is sometimes difficult to get serum. I do not know whether results will show it is of any value and I merely mention it as a rough attempt to use some sort of thing. Certainly these dry lactic acid bacilli tablets will act on milk and ferment in it.

(To be continued.)

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Book Review.

Theatres: Their Safety from Fire and Panic, Their Comfort and Healthfulness. By William Paul Gerhard, C.E., Consulting Engineer for Sanitary Works, etc. Pp. 110. Boston: Bates & Guild. 1900.

This book, recently received, bears the copyright date of 1900 and is, in fact, a reprint partly of a contribution to the British Fire Prevention Committee, and partly an elaboration of a paper written for the *Popular Science Monthly*. The design in republishing this material is to render it accessible to a larger class of readers. As its name implies, the book discusses various practical matters in relation to theatres. The subject is approached from an engineering standpoint and certainly its presentation in this form has disinct value.

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PREVENTIVE MEDICINE.

The striking direction which medicine has taken during the past few years toward the prevention of disease has found active expression in the establishment of a new department at the Harvard Medical School, to be known as the Department of Preventive Medicine and Hygiene. We announced last week the appointment of Dr. M. J. Rosenau to this newly established chair. This choice is a peculiarly happy one from every point of view, but particularly from the fact that Dr. Rosenau's training has admirably fitted him, not only for the prosecution of research in the broad field of hygiene, but also for the organization of work on a comprehensive scale.

Dr. Rosenau was born in Philadelphia Jan. 1, 1869, was graduated in medicine from the University of Pennsylvania in 1889, studied at the Hygienic Institute at Berlin in 1892 and at the Pasteur Institute in Paris in 1900. From 1890 to 1895 he was an assistant surgeon in the United States Marine-Hospital Service, and in the latter year was appointed passed assistant surgeon. He was quarantine officer in San Francisco from 1895 to 1898, and in 1898 held similar office in Santiago and other Cuban ports. He has been professor of bacteriology in the Post-Graduate School for Army and Navy Surgeons in Washington since 1902, and also professor of tropical diseases at Georgetown University. His writings have covered a wide range of subjects and for the most part have appeared in the publications of the United States Public Health and Marine-Hospital Service and public health reports. His recent studies of the typhoid epidemics at Washington have been particularly illuminating from the point of view of hygiene. Dr. Rosenau's intimate association with the enlarged public health work of the government in its administrative details, together with the supervision of questions of hygiene concerning the interstate and international relations of the government, has afforded him an opportunity of familiarizing himself with the large questions underlying public health. Such a preparation for his future work has also fitted him to deal with the training of public health officers, and for the prosecution of investigations into the cause and method of spread of epidemics, both matters of increasing importance at the present time.

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[1] See page 83.

With the improved laboratory facilities provided by the new Harvard Medical School buildings, Dr. Rosenau will have an equipment for the type of work he proposes to undertake, which should permit original research in its completest sense. It should be remembered that, although the department is in one sense new, a beginning had already been made to develop hygiene as a distinct subject of medical investigation under the energetic direction of the late Dr. Charles Harrington. At the time of his death, although the department was at that time inadequately equipped, work was going forward which, under the new régime, will naturally assume an enlarged form and much wider scope.

In general, this new departure in medical education is significant from more than one standpoint. Not only does such a department bring a medical school into the closest possible relations with the control of public health, however administered, but it serves also as a commentary upon the often repeated attribute of the medical profession that it alone of liberal callings seeks through the prevention of disease to curtail the livelihood of its individual members. This fact is not to be questioned, but we are not in the least inclined to think that however beneficently preventive medicine may accomplish its task there will not still be left many conditions which can only be met through the personal relation of physician to patient. In the meantime, while this great problem is working itself out, it is a source of congratulation that preventive medicine as a distinct subject of medical study has finally attained its just place.

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THE USE OF TOBACCO BY SCHOOLBOYS.

A recent issue of one of our daily papers prints a communication on "Cigarettes and school backwardness," citing statistics from a number of sources in the attempt to prove that juvenile cigarette smoking is a leading cause of mental deficiency in schoolboys. No doubt many more boys than girls are backward in their studies, for the reason that girls are more docile, have fewer distracting interests in the form of play, and before adolescence are naturally brighter than boys. Neither does there seem any reasonable question that the use of tobacco in any form is physically injurious during the period of bodily growth. It is by no means definitely demonstrated, however, that the cigarette causes stupidity. There is at least an arguable possibility that the boy-smoker is not dull because he smokes, but smokes because he is dull; or rather that his desire to smoke and his failure at school are common products of a truant disposition, concurrent symptoms of a fundamental temperamental defect. Moreover, it is probable that there may be such a thing as acquired or inherited immunity to the evil effects of tobacco, as of alcohol and other toxines. In any event, the exact settlement of the question of cause and result is not of great importance, for all medical opinion agrees that the use of tobacco by the young should be discouraged and if possible prevented. Smoking, like certain of the functional activities, is a source of pleasure better postponed till maturity makes its moderate enjoyment possible without detriment.

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MEDICAL NOTES.

BOSTON AND NEW ENGLAND.

Acute Infectious Diseases in Boston. — For the week ending at noon, July 13, 1909, there were reported to the Board of Health of Boston the following cases of acute infectious diseases: Diphtheria 22, scarlatina 23, typhoid fever 10, measles 35, smallpox 0, tuberculosis 52.

The death-rate of the reported deaths for the week ending July 13, 1909, was 14.31.

Boston Mortality Statistics. — The total number of deaths reported to the Board of Health for the week ending Saturday noon, July 10, 1909, was 180, against 209 the corresponding week of last year, showing a decrease of 29 deaths and making the death-rate for the week 15.07. Of this number 97 were males and 83 were females; 171 were white and 9 colored; 104 were born in the United States, 71 in foreign countries and 5 unknown; 30 were of American parentage, 120 of foreign parentage and 30 unknown. The number of cases and deaths from infectious diseases reported this week is as follows: Diphtheria, 24 cases and 2 deaths; scarlatina, 15 cases and 3 deaths; typhoid fever, 7 cases and 1 death;

measles, 36 cases and 1 death; tuberculosis, 49 cases and 17 deaths; smallpox, 0 cases and 0 deaths. The deaths from pneumonia were 15, whooping cough 1, heart disease 19, bronchitis 0 and marasmus 2. There were 28 deaths from violent causes. The number of children who died under one year was 26; the number under five years 46. The number of persons who died over sixty years of age was 41. The deaths in public institutions were 74.

Cerebrospinal meningitis, 1 case and 1 death.

Of the above the following were non-residents: Consumption, 2 cases and 1 death; scarlet fever, 1 death.

Deducting deaths of non-residents, the total is 161. The corrected death-rate is then 13.48.

Bequest to Frost Hospital, Chelsea, Mass. — By the will of Mary J. Heywood, of Chelsea, the Frost Hospital of that city receives $1,500. This hospital was one of the buildings burned during the recent fire.

Camp of Springfield, Mass., Association for the Prevention of Tuberculosis. — The Springfield Association for the Prevention of Tuberculosis has made a good start on its second year. The camp has been moved to a much better location on the edge of an elevated pine grove in East Longmeadow, and its capacity has been doubled by the gift of a dormitory, so that twenty-five patients can now be accommodated day and night in addition to the day patients whose number is not limited. A trained nurse is resident and the camp is visited every day by one of the staff of six physicians. The association will realize more than $400 from the benefit baseball game between doctors and lawyers, played on July 3.

Appointment of Dr. Wilder Tileston. — Dr. Wilder Tileston, who has recently been appointed assistant professor of medicine at the Yale Medical School, was graduated from Harvard College in 1895, and from the Harvard Medical School in 1899. After serving as a medical house officer at the Massachusetts General Hospital, he spent a year and a half in further study abroad. Since his return he has held various positions at the Harvard Medical School and has been an assistant visiting physician at the Long Island Hospital. He has for several years been connected with this Journal, originally as the editor of the Current Literature department. Dr. Tileston is a profound student over a large range of medical subjects. The Yale Medical School is to be congratulated upon his selection to the important post which he is about to assume.

Report of Adams Nervine Asylum. — During the past year the Adams Nervine Asylum, located in Jamaica Plain, near Boston, has undergone a change in medical management through the resignation of Dr. Daniel H. Fuller, who resigned in March of this year, after a long and much appreciated service in the institution. By the appointment of Dr. Edward B. Lane as his successor, the managers have placed at the medical head of the hospital a man of wide training and admirable executive ability, who will undoubtedly carry forward the work of his predecessor. During the year under consideration 149 were admitted. Of these, 30 had been treated there in former years. The total number cared for was 197. Six women and two men were discharged and readmitted during the year, so that the 197 cases treated represent 189 different persons.

NEW YORK.

Bequests. — Among the charitable bequests in the will of the late Mrs. Marian Crawford, widow of William H. Crawford, of New York, are $5,000 each to the Seton Hospital for Consumptives and the Society for the Relief of the Destitute Blind.

Death-Rate. — The death-rate in the city during the six months ending June 30 was 16.92, and since 1904, when Dr. Darlington became the head of the health department, there has been an almost uninterrupted decline in the rate. In the corresponding six months of 1904 it was 22.08; of 1905, 19.04; of 1906, 18.88; of 1907, 18.99, and of 1908, 17.59. While, however, in most forms of disease there has been a greater or less decrease, there has been a noticeable increase in the deaths due to organic heart disease.

Dr. Frank Hartley Honored. Isabella McCosh Infirmary. — At the commencement of Princeton University, on June 15, the honorary degree of Doctor of Laws was conferred upon Dr. Frank Hartley, the New York surgeon. At the meeting of the Board of Trustees of the university, held the day previous, it was announced that the endowment fund of $75,000 for the Isabella McCosh Infirmary, which the Ladies' Auxiliary of that institution had been raising, was completed, and that the auxiliary had now decided to increase the fund to $100,000.

Sites for Tuberculosis Hospitals. — Much difficulty was formerly experienced in securing desirable sites for hospitals for the treatment of tuberculosis on account of the law requiring the consent of the county supervisors and of the town board. Fortunately this was obviated by the last legislature, which amended the law so that all that is now required is permission from the State Commissioner of Health and from the head of the local board of health. The State Commissioner and Dr. C. A. Baker, health officer of the town of Brookhaven, Suffolk county, have just granted the application of the Brooklyn Central Labor Union for permission to build a tuberculosis sanitarium near Medford and about five miles from Patchogue, Long Island. The site selected is one already owned by the Union, and is accessible to Brooklyn, so that relatives and friends can readily visit the patients. There is a fine tract of sixty acres, and it is intended to erect, at a cost of $50,000, a two-story structure containing one hundred single rooms arranged along balconies surrounding a central administration building.

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Current Literature.

NEW YORK MEDICAL JOURNAL.

JUNE 26, 1909.

1. NEWTON, R. C. *The Clinical History of Some Cases of So-called Cardiac Epilepsy.*
2. FISCHER, L. *Two Unusually Severe Cases of Myocarditis in Children, Caused by Profound Toxemia; Recovery.*
3. COBB, J. O. *Baldness.*
4. DANZIGER, E. *Indications for Operation in Acute Mastoiditis.*
5. BRADLEY, W. N. *Report of a Case of Congenital Heart Disease.*
6. SINGER, D. A. *A Case of Severe Auto-Intoxication with Acetonuria and Extreme Bradycardia.*
7. HOFER, C. A. *Pharmacology.*
8. *FAULKNER, R. B. *No Free Hydrochloric Acid in the Stomach.*

8. Faulkner protests against the loose way in which medical men talk about and test for free hydrochloric acid in the gastric contents. In the first place, he asserts, free hydrochloric acid is never present in the human stomach unless introduced from without. Secondly, the Gunzberg and all other color tests are declared to be worthless. [L. D. C.]

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION.

JULY 3, 1909.

1. SOUTHWORTH, T. S. *The Field for Prophylaxis among Children. Chairman's Address, in Section on Diseases of Children, of the American Medical Association, at Atlantic City, June, 1909.*
2. OSLER, W. *Old and New.*
3. STEVENSON, D. W. *The Unreliability of the Astigmatic Fan or Clock Dial Test.*
4. TENNEY, J. A. *Dropsy of the Optic Nerve Sheath.*
5. WALKER, N. P. *Clinical Features of So-called Acute Pellagra.*
6. FRANKENTHAL, L. E. *The Vaginal Operation for Prolapse of the Uterus. General Considerations.*
7. GIFFORD, H. *The Prophylaxis of Interstitial Keratitis.*
8. GAMBLE, W. E. *Simple Fibroma of the Orbit.*

THE LANCET.

MAY 15, 1909.

1. *EMANUEL, J. G. *Presidential Address on the Spread of Tuberculosis — Heredity or Infection.*
2. *MCCLEOD, J. M. H. *X-Ray Treatment of Ringworm of the Scalp, with Special Reference to the Risks of Dermatitis and the Suggested Injury to the Brain.*
3. COOMBS, C. *Histology of Rheumatic Endocarditis.*
4. *ADAMSON, H. G. *Simplified Method of X-Ray Application for the Cure of Ringworm of the Scalp; Kienböck's Method.*
5. HALL, J. B. *Case of Lithokelyphos.*
6. HARRIS, J. D., AND SOLLY, R. V. *Notes on a Sporadic Outbreak of Trichinosis in Devonshire; with Remarks.*
7. LITTLEJOHN, A. R. *Calcium Lactate in the Treatment of Epilepsy.*
8. BLIGH, W. *Two Cases of Traumatic Separation of the Upper Mandible.*
9. HARRIES, E. H. R. *Case of Pulmonary Tuberculosis Terminating with Acute Streptococcal Meningitis.*
10. HAWKINS-AMBLER, G. A. *Case of Hepato-Omental Bands Constricting the Stomach.*
11. WARDEN, A. A. *Plea for the Use of Anti-Diphtheritic Serum in the Laryngitis of Measles.*

1. Emánuel sums up the evidence in regard to the transmission of tuberculosis by heredity or infection. This question, however, seems to have been already fairly definitely settled.

2. McCleod discusses the treatment of ringworm of the scalp by means of the x-ray. He believes that with the single-dosage method it is safe and harmless; that severe dermatitis followed by permanent baldness is due to overexposure or accident, for which there is no excuse. He has been unable to find any definite evidence of injury to the brain by this method of treatment from his own cases or from the literature on the subject.

4. Adamson, by means of photographs and diagrams, describes a simplified method of x-ray application for the cure of ringworm of the scalp. [J. B. H.]

MAY 22, 1909.

1. ROLLESTON, H. D. *Oration on the Classification and Nomenclature of Diseases, with Remarks on Diseases Due to Treatment.*
2. *WETHERED, F. J. *Lecture on the Treatment of Chronic Disease of the Heart.*
3. IREDELL, C. E., AND MINETT, E. P. *Notes on the Effect of Radium in Relation to Some Pathogenic and Non-Pathogenic Bacteria.*
4. CROCKER, H. R. *The Therapeutic Effects of Radium Emanations in Some Diseases of the Skin.*
5. WALLER, A. D. *Electro-Cardiogram of Man and of the Dog as shown by Einthoven's String Galvanometer.*
6. MORTON, C. A. *Cause of Death after Operation in Acute Appendicitis.*
7. THOMAS, J. L. *Prostatic Calculi; Three Cases Illustrating a New Method for Their Successful Removal by the Combined Suprapubic and Perineal Routes.*
8. BATTEN, G. B. *Case of Double Pneumonia after Childbirth; Pulmonary Infarcts; Injections of Vaccine of Mixed Pneumococci; Recovery.*
9. ASHDOWNE, W. C. G. *Disappearance of a Tumor (Sarcoma?) following Injections of Coley's Fluid.*
10. BROWN, A. *Note on Normal Menstruation with Absence of the Body of the Uterus.*

2. Wethered considers the treatment of chronic disease of the heart under three headings: (1) To sustain the force of the heart; (2) measures for promoting the nutrition of the heart; (3) reduction of the peripheral resistance. Under the subject of symptomatic treatment he considers the most important condition that of insomnia, and believes that if rest can be procured, great relief would often follow. For the relief of palpitation he thinks bromides are the most useful drugs. [J. B. H.]

MAY 29, 1909.

1. LAWSON, A. *Clinical Lecture on the After-Treatment of an Uncomplicated Case of Extraction of Senile Cataract.*

2. Nicoll, J. H. *Clinical Lecture on Prostatectomy.*
3. Hutchinson, J. *On Auto-Inoculation and Reinfection of Syphilis.*
4. *Fleming, A. *Simple Method of Serum Diagnosis of Syphilis.*
5. *M'Intosh, J. *Sero-Diagnosis of Syphilis.*
6. *Browning, C. H., and McKenzie, I. *Biological Syphilis Reaction, Its Significance and Method of Application.*
7. *Bayly, H. W. *Serum Diagnosis of Syphilis; an Analysis of 200 Consecutive Sera examined for the Wasserman Reaction in which a Modified Neisser's Technic was used.*
8. Forbes, D. *Note on Tracheotomy Cases in the Course of which there were Long Periods of Inability to Dispense with the Tube.*
9. Cameron, A. F. *Smallpox as It Affects London; Retrospect and Forecast.*

4, 5, 6, 7. Fleming, M'Intosh, Browning and McKenzie, and Bayly, in four short articles, discuss the serum diagnosis of syphilis. Fleming describes the simplified method which he has devised. He believes that this is a clinical method requiring only the preparation of a suitable tissue extract and an elementary knowledge of laboratory methods. The only disease which he has met with giving positive results, apart from syphilis, is leprosy. M'Intosh believes that Wasserman's reaction possesses a sufficient degree of specificity to make it of considerable value from a diagnostic and therapeutic point of view, and that energetic treatment should be commenced at once after a positive reaction has been obtained in every case, without waiting for the development of further symptoms. He gives a lengthy table of 145 cases and an elaborate bibliography. Browning and McKenzie discuss the biologic syphilis reaction, its significance and method of application. Bayly gives an analysis of 200 consecutive sera examined for the Wasserman reaction in which a modified Neisser's technic was used. [J. B. H.]

British Medical Journal.

May 15, 1909.

1. Hall, F. DeH. *Address on Acute Rheumatism, Its Allies and Its Counterfeits.*
2. *Bradshaw, T. R. *Address on the Diagnosis and Treatment of Morbid Conditions of the Pleura.*
3. Groves, E. W. H. *Clinical Lecture on a Case of Bacillus Pyocyaneus Pyemia Successfully Treated by Vaccine.*
4. Higgs, F. W. *Case of Tuberculous Meningitis without Tubercles.*
5. McWeeney, E. J. *Observations on an Outbreak of Meat Poisoning at Limerick.*

SCIENCE COMMITTEE OF THE BRITISH MEDICAL ASSOCIATION:

6. *Findlay, L. *Condition of the Blood in Experimental Rickets.*
7. Balfour, A. *Treatment of Sleeping Sickness; a Suggestion.*
8. Battle, W. H. *Injury to the Vessels in Dislocation of the Shoulder.*
9. Underwood, A. S. *Surgical Considerations Connected with the Anatomy of the Maxillary Sinus.*

2. Bradshaw, in a paper on the diagnosis and treatment of morbid conditions of the pleura, considers the indications for paracentesis in pleural effusion, malignant disease of the pleura, and dwells at length on empyema and its treatment. He believes that any effusion big enough to diagnose is big enough to tap. There should be the obvious reservation that effusions apparently small and unattended by any special local or constitutional disturbance should be left for a reasonable time in the hope that they may undergo spontaneous absorption, but that if the signs persist the fluid should be drawn off without further delay. He does not believe in preliminary exploration with a syringe and fine needle. The presence of a dark chocolate colored fluid he thinks is very suggestive of malignant disease.

6. Findlay investigated 30 cases of active and uncomplicated rickets in children between the ages of twelve and forty-two months. In only 9 of these cases was there any degree of anemia and in 2 of these the hemoglobin was only 5% below the average, and in no instance was the number of red cells less than 4,100,000. Nucleated red blood corpuscles were found only once. The leucocytes were moderately increased. The differential count failed to reveal anything characteristic. In order to corroborate these findings, the writer induced rickets experimentally in young dogs. When the rachitic manifestations became very marked the animals were killed and the blood was carefully studied. As a result, he has found that experimental rickets is not necessarily accompanied by any anemia, and when anemia does appear it is as a rule of minor degree and may frequently be accounted for by some complication. There may or may not be a leucocytosis; but this also, when it occurs, may be the result of some complication. It can at least be truly said that in the blood of animals suffering from rickets there is no marked pathologic change and absolutely nothing characteristic. [J. B. H.]

May 22, 1909.

1. Mouillin, C. M. *Clinical Lecture on the Early Diagnosis of Carcinoma of the Prostate.*
2. Henderson, E. E. *Address on the Diagnosis and Treatment of Some Common Inflammatory Affections of the Eye, from the Standpoint of the General Practitioner.*
3. *Dunhill, T. P. *Remark on Partial Thyroidectomy, with Special Reference to Exophthalmic Goiter, and Observations on 113 Operations under Local Anesthesia.*
4. Stuart–Low, W. *Contribution to the Surgery of Lingual Thyroids.*
5. Leitch, A. *Note on the Removal of Portions of Doubtful Tumors for Diagnostic Purposes.*
6. Eyre, J. W. H., and Minett, E. P. *Incidence of Morgan's Bacillus No. 1 in the Normal Feces of Young Children.*
7. Freshwater, D. *Employment of Iodipin in Syphilis.*
8. Fullerton, A. *Prostate Weighing Seventeen Ounces. Removed by the Suprapubic Route.*

SCIENCE COMMITTEE OF THE BRITISH MEDICAL ASSOCIATION:

9. Paterson, H. J. *Two Cases of Jejunal Ulcer Following Gastro-Jejunostomy, in One of which Gastric Analyses were Made Before and After Operation for Jejunal Ulcer.*
10. Boycott, A. E., and Douglas, C. G. *Carbon Monoxide Method of Determining the Total Oxygen Capacity and the Blood Volume in Animals. With Some Experiments on Anemia and Transfusion.*

3. Dunhill during the past twenty months has performed partial thyroidectomy 113 times. In 88 cases this was done for exophthalmic goiter, with one death. In every case but one, he used local anesthesia. He divides exophthalmic goiter cases into four types as regards their suitability for operation: First, those typical cases of this disease with all the symptoms well marked but still in the early stage and without organic changes in the heart. These cases respond rapidly and almost completely to operative treatment. The second class of cases consists of those in which all the symptoms have advanced to a later stage, with organic changes in the heart. In the majority of these cases great improvement can be expected after operation, but no absolute cures. The third class is where the signs are incompletely developed, with little enlargement of the thyroid, but presenting signs of marked toxemia with tachycardia and a constant sensation of smothering. These cases are the worst type to handle; fortunately they are rare. The fourth class of cases is those in which the thyroid gland is very much enlarged and the nervous symptoms have followed at a later date, apparently secondary to this. These cases are usually cured after operation. He believes that operation should be done in every case after medical treatment has been systematically and thoroughly tried for three months. He realizes that the operation is a serious one and that the risk is great, but that under local anesthesia it is much less than under general anesthesia, and that the risk is no greater than that of any major operation. He advises removing one entire lobe and part of the remaining lobe. He emphatically warns against crushing the gland before removal. In summing up, he pleads for early operation, as soon as it is seen that medical treatment is not effecting a cure,

local anesthesia, rapid operating, no crushing and free drainage. Under these conditions he regards the operation as absolutely safe. [J. B. H.]

May 29, 1909.

1. *Waterhouse, H. F. *Address on Volvulus.*
2. *Bidwell, L. A. *Address on the Immediate and Ultimate Results of the Operation of Gastro-Enterostomy for Gastric and Duodenal Ulcer.*
3. Bailey, R. C. *Clinical Lecture on the Treatment of Acute Appendicitis.*
4. Cripps, H. *Clinical Lecture on Resection of the Cecum for Cancer of the Ileo-Cecal Valve.*
5. Noall, W. P. *Perforated Duodenal Ulcer Treated by Suture and Gastro-Enterostomy.*
6. Corner, E. M., and Bristow, W. *Perforated Gastric and Duodenal Ulcers Treated Successfully without Suture of the Perforation.*
7. Sheen, W. *Case of Traumatic Rupture of the Sigmoid Colon; Operation; Recovery.*
8. Mummery, P. L. *Treatment of Severe Cases of Chronic Colitis.*
9. Pendred, V. *Enterospasm; Operation; Death.*
10. Don, A. *Fistulæ between the Stomach and Bile Passage.*
11. Denver, S. E. *Fatal Case of Acute Volvulus of the Ileum.*
12. Goodwin, H. *Two Cases of Appendicitis.*
13. Collinson, F. W. *Case of Very Large Gall Bladder Successfully Treated by Excision.*
14. Rolleston, H. D., and Oliver, M. W. B. *Secondary Parotitis Due to Oral Starvation in the Medical Treatment of Gastric Ulcer.*
15. Fenwick, W. S. *Prevention of Parotitis during Rectal Feeding.*

1. Waterhouse believes that volvulus is not so rare a condition as is generally supposed. He divides intestinal obstruction into two classes: (1) Those in which there is mechanical obstruction only, and (2) those in which there is strangulation of the intestine in addition to mechanical obstruction. Volvulus comes in the latter class, which is by far the more serious. The greater number of cases are those of the sigmoid flexure, the mesentery of which becomes much elongated, usually by chronic constipation. This condition occurs in 3 to 4% of all cases of intestinal obstruction, is far more common in the male, and most frequently occurs during the period from fifty to sixty years. Spontaneous reduction is by no means infrequent. The onset is characterized by its extreme suddenness, usually in a patient in sound health. He deplores the use of cocaine in this condition, as in other acute abdominal emergencies. He believes that many cases can be reduced by the use of rectal enemata.

2. Bidwell gives a paper on the immediate and ultimate results of gastro-enterostomy for gastric and duodenal ulcer based on 132 operations which he has performed. In this series there were 6 deaths, or a mortality of a little under 5%. He believes that the mortality of gastric ulcer treated medically is about 10%. Of his 101 patients on whom he has operated, he has been able to follow 76 closely enough to judge as to later results. Fifty-six per cent of these 101 patients he considers to have had an absolutely satisfactory result, while in only 2 patients was the result unsatisfactory. He considers the presence of dilatation an absolute indication for gastro-enterostomy, which he believes can cure an ulcer in any part of the stomach or duodenum, but if the pylorus is not stenosed it must be occluded at the same time, otherwise the results are not likely to be permanent. [J. B. H.]

The Practitioner.

June, 1909.

1. Bonney, V. *Bearings of Pathology on the Prevention, Diagnosis and Surgical Cure of Carcinoma of the Cervix.*
2. Rowlands, R. P. *Some Points in the Treatment of Simple Fractures, with an Illustrative Case.*
3. *Broadbent, W. *Phthisis; Its Diagnosis and Treatment.*
4. Collinson, H. *Hypertrophy of the Prostate and Its Operative Treatment.*
5. Larkins, F. E. *Cerebro-Spinal Fever.*
6. Thursfield, J. H. *Diseases of Children; a Review.*
7. *Hort, E. C. *Bacterial Vaccines and Rational Immunization.*
8. Phillips, J. *The First Three Weeks of Pregnancy; and the Practical Bearing of Recent Investigations on Our Knowledge of Ectopic Gestation.*
9. Parry, L. A. *Some Points of Medical Interest in the New Children's Act.*
10. *Littlejohn, A. R. *Meat as a Source of Infection in Tuberculosis.*
11. Butler, H. O. *Some Clinical Aspects of Cases Accompanied by Increased Blood Pressure.*

3. Broadbent in a general article considers the diagnosis and treatment of phthisis. Among other things, he states that the sputum should be examined for tubercle bacilli, but phthisis can often be diagnosed before bacilli appear in the sputum. It might seem that this statement is putting the case rather mildly. He speaks in favor of the Calmette ophthalmo-reaction and recommends Von Pirquet's skin test as of value in only a few instances. This is hardly in accord with the best opinions in this country. As regards tuberculin, he believes that when this is given in any form the patient should be kept in bed for at least twenty-four hours, in order to guard against ill effects during the negative phase. This stay in bed is generally considered unnecessary.

7. Hort discusses the present status of bacterial vaccines and rational immunization. He believes that the true reason why the vaccinist of the day meets failure where failure should not occur and failure where failure must occur, is because he has forgotten the intra-cellular factor in disease and assumes much to which the present state of knowledge gives him no title. The writer believes that the cell itself and the numerous enzymes elaborated by the various body tissues are a most important factor in immunization and that this factor has been practically neglected by the adherents of vaccine therapy.

10. Littlejohn, in a thorough article on meat as a source of infection in tuberculosis, concludes that man can contract tuberculosis from cattle, but that considering the difficulty experienced in transmitting human tuberculosis to cattle, it is safe to assume that the transmission of bovine tuberculosis to man is also difficult to effect. That human infection with tuberculosis is not commonly caused by ingesting meat since it requires the swallowing of large numbers of tubercle bacilli to be effective, and that the flesh of tuberculous animals, even in generalized tuberculosis, is rarely infective. He believes that the ordinary process of cooking in a majority of cases is sufficient to render the contaminated meat non-infective. It has been shown that during a period in which the consumption of meat by man has increased in quantity, human tuberculosis has declined. [J. B. H.]

The Edinburgh Medical Journal.

June, 1909.

1. *Gibson, G. A., and Ritchie, W. T. *Historic Instance of the Adams-Stokes Syndrome Due to Heart-Block.*
2. *Pringle, J. H. *On Percussion as an Aid to the Diagnosis of Fractures of the Skull.*
3. Hart, D. B. *The Interpretation of the Porro Uterus in Relation to the Third Stage of Labor.*
4. Bramwell, E. *The Problem of the Sane Epileptic.*
5. Don, A. *Notes on Twenty Cases of Spinal Anesthesis with Stovaine.*
6. Sutherland, H. *Predisposition to Tubercle in the Child; Its Nature, Signs and Treatment.*

1. In an article continued from the previous issue, illustrated with numerous excellent photographs, tracings and plates, Gibson and Ritchie describe in detail the course of a historic instance of the Adams-Stokes syndrome due to heart-block in the case of Sir William Gairdner. They give the details of the post-mortem examination. The case is a valuable addition to the literature on this subject.

2. Pringle believes percussion is an aid to the diagnosis of fractures of the skull when the fracture effects the vault or lateral aspects of the skull. Percussion is carried out by the finger striking the scalp directly without any intermediary pleximeter. The head of the patient should be supported with the examiner's left hand placed beneath the occiput, while the right hand is left free to percuss. Any

swelling of the scalp that may be present will interfere with the examination. If a fracture is present, either the note is altered in pitch over the fracture zone, or, in addition to this, definite cracked-pot quality is produced. In some cases no change in the percussion note is obtained at all, but a patient who is conscious will often complain of pain, always elicited by percussion at one area and often along a definite constant line. [J. B. H.]

Deutsche Medizinische Wochenschrift. No. 22

June 3, 1909.

1. v. Leube, W. *The Treatment of Gastric Ulcer.*
2. *Cornet, H., and Berninger, J. *Breathing and Heart Work.*
3. Treibmann. *Treatment of Empyema.*
4. Kron, H. *Peripheral Nerves and Accident.*
5. *Schabad, T. O. *Chronic Chorea after Migraine.*
6. Poten and Griemert. *The Pirquet Tuberculin Test in Newborn Infants and Their Mothers.*
7. Galambos, A. *The Value of the Color Reaction in Syphilis.*
8. Heermann, A. *Scharlach Red in Cases of Perforation of the Drum.*

2. Cornet and Berninger have for some time been using an apparatus devised by Bogheau to assist breathing. This consists of two arms fastened to the sides of the thorax and worked by a motor so that breathing can be produced at any rate desired. This form of treatment has been of value in cases of chronic asthma, emphysema, etc. Also they have found that it exerts a very favorable influence upon diseases of the heart muscle. The increased respiration which this machine can cause increases the action of the heart and fills the vessels more thoroughly. In this way the coronary arteries become more filled and the heart muscle better supplied with nourishment. By observing the blood pressure a control is kept on the effect on the heart.

5. Schabad reports a case which has suffered from migraine for years. During one pregnancy chorea developed and the migraine disappeared. Later another attack of chorea came on which lasted for a long time without much improvement. The migraine again disappeared. Without making any claims, the author cites these cases to show the possible relation between migraine and chorea and urges a more careful clinical and anatomic study of these cases. [C. F., Jr.]

Münchener Medizinische Wochenschrift. No. 24.

June 15, 1909.

1. *Schwarz, G. *Desensitization against Röntgen and Radium Rays.*
2. *Bauer, J. *Passive Transfer of Hyper-Susceptibility to Tuberculosis.*
3. Hoppe-Seyler, G. *Diagnostic Significance of Diastolic Murmurs with a Stretched Aorta.*
4. *John, M. *Clinical Experiences with Intravenous Injections of Suprarenin in Severe Collapse of Heart and Vessels.*
5. Lobhardt, A. *Contributions to the Treatment of Postpartum Hemorrhage.* (To be concluded.)
6. Martin, E. *The Sterilization of Pregnant Tuberculous Women by the Total Extirpation of the Gravid Uterus and Adnexa.*
7. Gebele. *Relations between Accidents and Tumors.*
8. Neumann, W. *A Cheap and Easy Method of Cutting Plaster Bandages.*
9. Lossen, H. *Stiffening of Left Hand the Result of a Burn; Skin-grafting Followed by Good Results.*

1. Schwarz, working on the theory that by diminishing metabolism locally, the skin could be rendered less susceptible to burns by radium, tried the effect of pressing during treatment with the rays. As a control he exposed another part of the skin to the same doses without pressure. This experiment was repeated several times on the same parts of the skin, with the result that the area where pressure had been applied showed once only a little hyperemia, whereas the control area became considerably inflamed. Similar results were obtained with the x-rays on the scalp of a boy. The writer states the following law for radium and for x-rays: " If one diminishes the metabolism one reduces also the sensibility." The object of the work was to find a method by which the rays could be used for deep-seated conditions, in larger doses, without danger of burning the skin.

2. The writer as a result of some experiments on guinea pigs concludes that the tuberculin reaction is due to a condition of oversensitiveness, and he shows that it is possible by injection of serum from a hypersensitive animal to transfer the anaphylactic bodies to a normal animal which will then respond to the tuberculin test.

4. John reports a few cases which illustrate strikingly the effect of suprarenin used intravenously for collapse. Suprarenin is a preparation of adrenalin. It was used in a solution of 1-1,000 and 1 ccm. was given. Remarkable and prompt results were obtained in very urgent cases and in some cases where other circulatory stimulants including strophanthin had proved of little use. [G. C. S.]

Berliner Klinische Wochenschrift. No. 25.

June 21, 1909.

1. *Dubois. *Psychology and Therapeutics.*
2. Frank, E. *Organic Hemiplegia in a Young Girl after Psychic Trauma.*
3. Kann. *The Diagnosis of Initial Tabes.*
4. Preisich, K. *Scarlatinal Infection from a Discharged Well Case.*
5. *Frugoni, C., and Grixoni, G. *Favorable Influence of the Active Elements of the Thyroid on Experimental Tuberculous and Pseudo-Tuberculous Infections.*
6. Meyer, R. *Benign Chorio-Epithelial Invasion into the Mucous Membrane and Musculature of Normal Uteri.*
7. Landois, F. *The Origin and Metastasization of Tumors Derived from the Intestine.*
8. Knopf, H. E. *What must the Family Physician Know of Disturbances of Speech?*
9. Thilenius, O. *The Demonstration of Microparasites in Secretions and Excretions by Means of the Antiformin Method.*
10. Witte, J. *The Biologic Diagnosis of Carcinoma, with Special Reference to Gastric Carcinoma.*

1. In an admirably sane and judicial paper, Dubois reviews the rise of modern psychology and its application in medical therapeusis. Personally, he disagrees with James and others of the " physiologic school," who regard an emotion as the product of certain primary physical phenomena, and believes rather in the intellectualistic theory, which recognizes the independent entity and power of ideas, and explains the mental life as a psychophysical parallelism. Hence, in the treatment of psychic disease, he considers that attempt must be made to influence both elements. He discusses the method by which he seeks to modify mental conditions, a method which is always educational, never authoritative or suggestive, and describes its application in different psychopathic states. Above all, he emphasizes the importance of therapeutic optimism as an agent of greatest cogency in establishing the right thinking, right feeling and right willing which constitute mental and moral health.

5. As a result of animal experiments the authors conclude " that a course of thyroid extract treatment, daily carried out during a period corresponding to or preceding the time of infection (with tuberculosis), and in such doses as are well borne, yet which induce an energetic acceleration of the metabolic processes of the organism, in and of itself exercises an advantageous modifying influence on experimental tuberculous and pseudotuberculous infection in the rabbit, since animals which were so treated had a longer duration of life than the control animals, and in many cases even did not succumb to the disease." No suggestion is made as to the possibility of similarly employing thyroid extract in the treatment of human tuberculosis. [R. M. G.]

Revue de Médecine.

April, 1909.

1. Bernheim. *Pathogenic Concept of the So-Called Neurasthenic, Psychasthenic and Psychoneurasthenic States.*

2. JACQUET, L., AND JOURDANET. *Etiologic, Pathogenic and Therapeutic Study of Migraine.*
3. HEITZ, J., AND HARANCHIPY. *Absence of the Argyll Sign in Certain Tabetics.*
4. GUDER, E., AND DUFOUR, R. *The Pathogenesis and the Symptomatic Importance of Recurrent Paralysis.*
5. LAIGNEL-LAVASTINE. *Psychic Disturbances in the Parathyroid Syndromes.*
6. SARDOU, G. *Functional Discordances and Dissociations in the Morbid Evolution of Thyroid States.*

This number is devoted to a series of papers on neurologic subjects with special reference to the relation of neurology to clinical medicine.

MAY, 1909.

1. *LANDOWZY, L., AND LORTAT-JACOB, L. *Report of a Case of Progressive Muscular Atrophy, Followed for Thirty Years.*
2. *BENARD, R. *The Meninges in Scarlet Fever.*
3. GUDER, E., AND DUFOUR, R. *Recurrent Laryngeal Paralysis, Its Pathogenesis and Importance.*
4. LAIGNEL-LAVASTINE. *Outline of the Pathology of the Sympathetic Nervous System.*

1. The authors report a very interesting case of progressive muscular atrophy of the facio-scapulo-humeral type which they have been able to follow for thirty years, observing him at three distinct times. The first was in 1873, when he had suffered from muscular weakness, followed by atrophy since his eighth year. This progressed until 1873, when he presented marked atrophy of the muscles of the extremities and face, and considerable spinal curvature. Sensation was then normal and reaction of degeneration was only modified. In 1885 progress had been slow and only a few new muscles were involved, but the curvature was so marked that the upright posture was impossible. There was still no pain nor fibrillary contraction, but reaction of degeneration was present. In 1902 lordosis was so marked that when in the dorsal position only the occiput, scapulæ, buttocks and soles of the feet touched the bed. Atrophy had advanced to a great extent and he was absolutely helpless, the latter being aided also by the fibrous ankylosis of almost all the joints. There was then severe pain in the sciatic and crural nerves, arising probably from nerve-root pressure. Double advanced phthisis was found, which brought about his death in a short time. Except for the tubercular lesions, autopsy showed nothing of interest except in the sustentacular and nervous systems. Practically all the muscles were atrophied, pale and of a blue-yellow color. In many places nothing remained of the muscle bellies but fibrous bands, showing degenerative deposits of fat tissue. Atrophy and degeneration had progressed to a different degree in different muscles and in various places in the same muscle. Microscopic examination substantiated the gross findings by showng a marked proliferation of interstitial tissue and deposits of fat cells and a loss of striation of the less involved muscle-fiber. Except for a slight atrophy of the anterior horn cells of the cord, there were no changes in the central or peripheral nervous system. The bones were very small and short with deformed diaphyses, due to tension of the fibrous tissue, and showing by radiograph an increase of rarefaction. They conclude that the case represented a peculiar type of progressive muscular atrophy, distinct from the Aran Duchenne type, in that it originated in childhood, existed in a brother also, and presented changes only in the muscular and skeletal systems with no modification of the central nervous system.

2. Unfortunately, many of the cases of meningitis complicating scarlet fever which have been reported in the past are without foundation. The introduction of the lumbar puncture in 1900 has made diagnosis possible during life. Benard shows its rarity by finding only nine cases in 13,550 cases of scarlet fever in hospitals from all parts of the world. He has concluded from his 28 authentic cases, proved either by lumbar puncture or autopsy or both, that it is very rare, is found practically only in infants, secondary as a rule, and most often resulting from an otitis media, due to the patency of the Petrosquamosal suture. The most common organism is, as would be expected, the streptococcus. He makes the following divisions of its pathologic anatomy: Infection meningitis, bacteria being present without cellular reaction; secondly, reaction meningitis, manifested by simple cerebrospinal hypertension, lymphocytic spinal meningitis and meningeal congestion; and lastly, true meningitis, which may be merely histologic, seropurulent or purulent. The symptoms are typical of meningeal irritation or meningitis, according to the severity of the invasion. The same may be said of the progress and the prognosis. Some of the cases of reaction meningitis recover, according to the virulence of the organism. But on the whole the outlook is very grave. Hence the treatment is of little use. Repeated tapping may give relief, especially in cases of hypertension. But, as a rule, the progress is sure and rapid to a fatal termination. [L. H. S.]

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Miscellany.

MASSACHUSETTS MEDICAL SOCIETY. ASSOCIATED COMMITTEES ON TUBERCULOSIS.

SUCCESS in the attempt to control tuberculosis must depend in large degree on the active interest of the practicing physicians throughout the state.

We wish, therefore, at this time, to call the attention of all members of the Massachusetts Medical Society to certain important considerations and to enlist their co-operation in the work now being carried on throughout the state.

We wish to call your attention to the excellent results which have thus far been obtained both in the treatment and the control of the disease. The experience of the past few years has demonstrated beyond question the possibility of successfully treating even those patients with but moderate means, in their own homes. In a majority of cases, all the essentials of an appropriate régime of treatment can be provided in this climate, which has heretofore been considered so unfavorable. Notwithstanding these facts, however, it is the belief of the committee that the majority of incipient cases, at least among the working classes, should be sent to a sanatorium. The continued fall in the death-rate from tuberculosis offers the greatest encouragement for the further employment of measures designed to limit the spread cf the disease. In Boston the death-rate from consumption has been reduced in the past twenty-six years from 42.26 to 17.26 per 10,000 inhabitants, or approximately 60%.

In accordance with acts passed by the State Legislature in 1907, the registration of all cases of tuberculosis with the local boards of health is obligatory. Such registration is the first step towards administrative control, and we urge upon physicians the importance of at once reporting to the health authorities every case of tuberculosis under their care.

We also urge them to encourage and assist manufacturers in carrying out proper inspection and care of their employees.

Local health inspectors and boards of health should receive the countenance and support of the profession in their efforts to enforce existing sanitary regulations.

Incipient cases of tuberculosis are difficult to discover. The fact that at least 80% of all known cases are of the advanced type is sufficient evidence of the failure of the patient to consult a physician, or of the physician to recognize the disease in its early stages.

We desire especially to direct the attention of the profession at large to the need of more careful attention to early diagnosis. We consider it to be of the greatest importance that all members of the family of a consumptive should be carefully examined for any evidence of infection. In the great majority of instances where one case is found in a family, such an examination of other members brings to light one or more other cases. The tuberculin test in some form may be advisable in obscure cases, but this test should be made only by those thoroughly conversant with this method of examination.

It seems desirable to emphasize the great frequency of tuberculosis among children, particularly those of tuberculous parents. In children the disease seldom shows characteristic symptoms or signs, and is very frequently overlooked. Perhaps the two most important signs are loss of weight and fever. Puny and ill nourished children should always be regarded with suspicion and should be carefully watched. Constitutional signs and symptoms are more important than local pulmonary signs which are a late development. Pathological studies have shown an astonishing prevalence in the early years of life, and the clinical work of v. Pirquet and others is in close accord with this. The above mentioned author found tuberculosis in some form to be present in 70% of a large series of children under fourteen years of age. By finding the latent cases among children and treating them by proper hygienic measures, we can accomplish much along preventive lines.

Full details as to the existing institutions, associations and other facilities for the management of tuberculous cases are to be found in the valuable directory recently issued by the Boston Association for the Relief and Control of Tuberculosis, 4 Joy Street, Boston, which may be obtained on application.

ARTHUR T. CABOT, *Chairman.*
H. LINCOLN CHASE.
HENRY JACKSON.
ALFRED WORCESTER.
THOMAS F. HARRINGTON.
JOHN B. HAWES, 2d.

◆

RESOLUTIONS ON THE DEATH OF DR. LOUIS THORNTON WILSON.

LOUIS THORNTON WILSON'S death came with peculiar bitterness to the City Hospital Staff. He was one of our own, by training, tradition, appointment and promotion; he had worked with us and was to work for many years to come. For these reasons, as well as for others of a personal nature, his death affects us with exceptional pain.

He was the last surgeon appointed to the staff; a hard worker, much in earnest, charitable and kindly in judgments, and absolutely loyal. As we look back, he seems perhaps to have been too tireless in his duties, too forgetful of his physical needs, too ready to continue without relaxation the wearying daily exertion of hospital and professional service. He possessed a personal sympathy, an interest in the affairs of his comrades, which made the name acquaintance ripen rapidly into the name of friend. Against more than the usual obstacles he had made his way; and in his success he left no bitterness behind in the hearts of his comrades. He was tolerant of the beliefs of others, but firm in his own, a capable surgeon who had won his place, a thoughtful gentleman who looked into the future with quiet confidence.

A verse of Kipling's seems singularly appropriate:

"He scarce had need to doff his pride
Nor slough the dross of Earth.
E'en as he trod that day to God,
So walked he from his birth,
In simpleness and gentleness
And honor and clean mirth."

For these virtues his character commends itself to his associates, and it is hereby resolved that these minutes be spread upon the Records of the Surgical Section of the Boston City Hospital Staff and in the columns of the BOSTON MEDICAL AND SURGICAL JOURNAL.

JOHN BAPST BLAKE, M.D.,
L. R. G. CRANDON, M.D.,
Committee of the Surgical Section,
Boston City Hospital.

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Correspondence.

VACCINATION OF MAN WITH MATTER FROM A TUBERCULOUS COW AS A MEANS FOR CONFERRING IMMUNITY TO HUMAN TUBERCULOSIS.

NAVY YARD, NORFOLK, VA.,
July 8, 1909.

Mr. Editor: As the subject of tuberculosis is now being widely discussed and more efficient means of prevention and treatment are being sought for, would it not be worth while to investigate the question as to whether or not the human being could be rendered immune to infection with human tuberculosis by vaccination with bovine tuberculous matter?

It might in this way be shown that the humble cow, to whom man is now so deeply indebted for furnishing a certain means of arming himself against the loathsome smallpox, could also render inestimable service in the warfare against the white plague.

It does not seem illogical to believe that the same peculiar relation, or kinship, between cowpox in the cow and smallpox in man exists also between tuberculosis in the bovine and that in man; and, this relation being present, it would follow that it is possible to confer on man immunity to human tuberculosis by vaccination with matter from a tubercle in the cow.

The practice of vaccination against smallpox was established, as we all know, from the observation that those individuals who contracted cowpox were afterwards immune to infection by smallpox. When a person susceptible to smallpox is vaccinated with vaccine matter, the point of inoculation goes through a regular cycle of development practically identical with the eruption of true smallpox, but no systemic smallpox develops, — that is, none observed clinically, — except in rare cases there is a certain irregular or modified form. That there is an impress made on the general system, resulting in an immunity to infection by smallpox, is proved by the fact that the vaccinated individual, though he mingle with cases of the disease afterwards, does not contract smallpox.

It is, I believe, generally observed that when a human being becomes inoculated, through an open wound, with bovine tuberculous matter, only local manifestations of tuberculosis develop, followed by general adenitis and perhaps tabes mesenterica, but never true pulmonary tuberculosis or "consumption"; and, on the other hand, that it is extremely difficult, if not impossible, to infect cattle with human tuberculosis by inoculation.

Does it not seem, therefore, that the same process of immunization which inoculation with cowpox brings about against smallpox in the human being could be established against pulmonary tuberculosis by inoculating or vaccinating with matter from a tubercle in a cow; the matter used in vaccinating being either in the original or a modified form, as experiments may decide to be best?

The foregoing ideas may seem chimerical, but they are offered in the hope that investigators may inaugurate experiments along the line suggested.

Very truly yours,
I. W. KITE, M.D.

RECORD OF MORTALITY

FOR THE WEEK ENDING SATURDAY, JULY 3, 1909.

CITIES.	Reported deaths in each.	Deaths under five years.	CITIES.	Reported deaths in each.	Deaths under five years.
New York	—	—	Waltham	7	2
Chicago	—	—	Pittsfield	4	1
Philadelphia	—	—	Brookline	2	—
St. Louis	—	—	Gloucester	3	—
Baltimore	255	83	North Adams	4	2
Cleveland	—	—	Northampton	7	0
Buffalo	—	—	Chicopee	6	4
Pittsburg	—	—	Medford	2	—
Cincinnati	—	—	Beverly	3	1
Milwaukee	—	—	Leominster	5	—
Washington	—	—	Hyde Park	4	—
Providence	—	—	Melrose	5	0
Boston	170	41	Newburyport	7	2
Worcester	42	17	Revere	3	1
Fall River	43	22	Westfield	4	2
Cambridge	18	2	Woburn	5	0
Lowell	32	12	Peabody	—	—
New Bedford	25	14	Marlboro	4	1
Lynn	16	2	Attleboro	3	0
Springfield	20	10	Adams	1	1
Lawrence	23	9	Clinton	2	2
Somerville	18	3	Gardner	2	—
Brockton	7	2	Milford	—	—
Holyoke	15	6	Watertown	1	0
Malden	5	—	Plymouth	—	—
Chelsea	9	2	Southbridge	3	0
Newton	7	1	Weymouth	4	0
Salem	—	—	Framingham	—	2
Haverhill	14	4	Wakefield	—	—
Fitchburg	6	2	Webster	—	—
Everett	2	—	Arlington	1	1
Quincy	—	—	Greenfield	1	—
Taunton	14	2			

CHANGES IN THE MEDICAL CORPS U. S. NAVY FOR THE WEEK ENDING JULY 10, 1909.

GATEWOOD, J. D., medical inspector. Detached from the Naval Medical School, Washington, D. C., July 15, and ordered to duty on board the "Tennessee" as fleet surgeon of the Pacific fleet. July 2.

BYRNES, J. C., medical inspector. Detached from duty on board the "Tennessee," as fleet surgeon of the Pacific fleet, and ordered home to await orders. July 2.

LAW, H. L., surgeon, retired. Detached from the Naval Recruiting Station, Boston, Mass., and ordered home. July 2.

PAYNE, J. H., JR., passed assistant surgeon. Ordered to the Naval Recruiting Station, Boston, Mass. July 2.

BOGAN, F. M., surgeon. Commissioned surgeon from Sept. 2, 1908. July 3.

BUTLER, C. ST. J., surgeon. Commissioned surgeon from Sept. 19, 1908. July 3.

GRAYSON, C. T., passed assistant surgeon. Detached from the Naval Medical School, Washington, D. C., and ordered to duty at the Naval Medical School Hospital, Washington, D. C. July 3.

BASS, J. A., acting assistant surgeon. Detached from duty at the Naval Hospital, Philadelphia, Pa., and ordered to duty at the Naval Medical School Hospital, Washington, D. C. July 3.

BUCHER, W. R., surgeon. Transferred to the retired list from June 11, 1909, in conformity with the provisions of Section 1453, Revised Statutes. July 6.

FRENCH, G. R. W., acting assistant surgeon. Ordered to the Naval Hospital, Narragansett Bay, R. I. July 6.

HENEBERGER, L. G., medical director. Detached from command of the Naval Hospital, Newport, R. I., July 15, ordered home, and granted sick leave for two months. July 7.

LEACH, P., medical inspector. Detached from the Marine Recruiting Station, New York, N. Y., and ordered to command the Naval Hospital, Newport, R. I. July 7.

BUCHER, W. R., surgeon. Retired, ordered home, when discharged from treatment at the Naval Hospital, Mare Island, Cal. July 7.

PECK, A. E., passed assistant surgeon. Unexpired portion of leave revoked; ordered to the Marine Recruiting Station, New York, N. Y. July 7.

GARRISON, P. E., assistant surgeon. Detached from duty as Medical Zoölogist for the Bureau of Science, Philippine Islands, and ordered to Washington, D. C., via the "Buffalo," for examination for promotion. July 7.

CURL, H. C., surgeon. Detached from the "Buffalo," and ordered to the Naval Hospital, Canacao, P. I. July 7.

HOYT, R. E., passed assistant surgeon. Detached from the "Chattanooga," and ordered to the Naval Hospital, Mare Island, Cal., for treatment. July 7.

DOWNEY, J. O., assistant surgeon. Detached from the Naval Hospital, Canacao, P. I., and ordered to the "Chattanooga." July 7.

ALLEN, D. G., assistant surgeon. Detached from the "Buffalo," and ordered to the "Chattanooga," temporarily. July 7.

RECENT DEATHS.

DR. GERALD GARRIGAN, of New York, while on an automobile trip, died suddenly, at Troy, N. Y., on July 9, from cardiac disease. Dr. Garrigan was graduated from the Medical Department of Columbia University in 1902, and afterwards served as interne at St. Vincent's Hospital. At the time of his death he was adjunct assistant surgeon to Bellevue Hospital, surgeon to the out-patient department of Bellevue, and gynecologist to St. Vincent's Hospital.

DR. RAFFAELE ASSELTA, of New York, died on July 6, in the operating amphitheatre of the New York Hospital, while undergoing an operation upon his throat. He was a native of Italy and fifty-two years of age. He was graduated from the University of Naples in 1884, and soon afterward came to New York, where he established a large practice in the Italian quarter of the city.

DR. RUSSELL G. ANDREW, for forty years a practicing physician at Navesick and the Highlands, Monmouth County, N. J., died on July 6, in his sixty-ninth year. He was graduated from the Albany Medical College in 1866, and at the time of his death was the sole surviving member of his class.

BOOKS AND PAMPHLETS RECEIVED.

Rational Immunisation in the Treatment of Pulmonary Tuberculosis and Other Diseases. By E. C. Hort, B.A., B.Sc., M.R.C.P. New York: William Wood & Co. 1909.

A Handbook of the Diseases of the Nose and Throat. By Eugene S. Yonge, M.D. (Edin.). Illustrated. Edinburgh and London: William Green & Sons. 1909.

Studies from the Rockefeller Institute for Medical Research. Reprints. Vol. IX. 1909.

Handbuch der Arztlichen Sachverständigen-Tatigkeit. Siebenter Band, Erster Teil. Vergiftungen; klinischer Teil. Erste Hälfte: Allgemeines Anorganische Gifte von Dr. Franz Erben. Mit Vorwort und Zwei Beiträgen von Prof. Dr. R. v. Jaksch. Wien und Leipzig: Wilhelm Braumüller. 1909.

Address.

THE BEARING OF THE EXPERIMENTAL INVESTIGATION OF TUMORS ON THE TUMOR PROBLEM IN GENERAL.*

BY E. E. TYZZER, M.D., HARVARD MEDICAL SCHOOL, BOSTON.

The activity at present shown in the investigation of tumors is amply justified by the importance of this problem to every civilized people. In the case of the infectious diseases there is always the possibility of the development of a considerable degree of racial immunity through the survival of the more resistant individuals. This is shown by the fact that when certain of the infectious diseases are conveyed for the first time to isolated tribes, the latter succumb in far greater numbers than is usual in races accustomed to these diseases. The destruction of certain individuals by malignant tumors, however, fails to produce racial exemption, since such tumors most frequently occur after the reproductive period is past.

The statement of Bashford[1] that in the deaths of males above thirty-five years of age one in eleven dies of cancer, while in the deaths of females of similar age the ratio is one to eight, indicates the frequency of malignant disease.

The elucidation of the etiology, the early recognition and the cure of tumors constitute the more important goals toward which tumor investigation is directed. The etiology of tumors, for a long time the stumbling block of pathologists, has been a subject for philosophical quite as much as for scientific consideration.

A great variety of methods have, however, been applied to its investigation. The pathological anatomist has made clear the nature of tumors, — that they consist of tissues more or less atypical in structure, but similar to the tissues of the species in which they occur, — that in general they possess powers of unlimited growth, — and that they serve no useful purpose in the organism, but often grow at the latter's expense. Like other tissues, they are composed either of cells, or of cells associated with intercellular substance. It has been found that the rapidly-growing and more malignant tumors are, as a rule, more cellular, whereas many of the slowly-growing tumors possess a large amount of intercellular substance. The number of cell divisions present are also taken as an index of the rate of growth.

The employment of bacteriological methods has resulted in the isolation of various organisms by different investigators. None of the bacteria or yeasts found have been shown to have any causal relation to the development of tumors, and their presence was probably in all instances due either to co-existing infections or to secondary invasion. Subsequent endeavors to discover by the histological study of tumor tissue a causative parasite have resulted in descriptions of protozoa of almost every known as well as of some unfamiliar types. In a former report of the Harvard Cancer Commission, attention was called to the occurrence of similar objects in non-cancerous tissues, and evidence was found strongly indicating that they were not of the nature of parasites. More recently, the presence of spirochetæ in mouse tumors was given, in the absence of any control observations, rather undue importance. I have been able to demonstrate in refractory mice, months after the last inoculation of tumor tissue, large numbers of spirochetes morphologically identical with those occurring in tumor mice. The same organisms were also found in small numbers in uninoculated mice without tumors. As a last resort, cancer is now ascribed by certain adherents of the parasitic theory to an ultra miscroscopic organism. It is claimed by Salvin, Moore and Walker that after freezing and grinding mouse tumor-tissue with liquid air, a procedure which it is presumed destroys the epithelial cells, the resulting material is still capable of producing tumors on inoculation into other mice. This would amount, then, to the separation of a virus from the tumor tissue, an observation which finds no support in the results of most other investigators who have worked with the inoculable tumors of mice. After the filtration of an emulsion of tumor tissue through ordinary filter paper, the inoculation of the filtrate has been attended with negative results. If the tissue of inoculable tumors is kept at room temperature on its removal from the body it soon loses its property of producing tumors on inoculation, and this change takes place still more rapidly if incubated at body temperature.

The theories concerning the origin of tumors are so numerous that they will be no more than outlined in this paper. Thiersch and Waldeyer believed that there existed between epithelium and connective tissue an equilibrium, through which the growth of the former was held in check by the latter. On the weakening of the connective tissue in old age, the epithelium is allowed to proliferate, and tumors are formed. Cohnheim attached great importance to displacement of cells or groups of cells from their normal relations during the course of development. The idea of the dislocation of cells was utilized by Ribbert in the explanation of the origin of tumors. He, however, considered other forms of tissue dislocation than that which is represented in the so-called embryonic rests of Cohnheim. He found that epithelial tissue artificially implanted in the connective tissue remained alive for a time and was capable of a certain amount of growth. Epithelial cysts were thus formed, but tissue transplanted in this way possessed only limited powers of growth, and never resulted in a tumor. Ribbert also took into account the loss of the normal relations of tissues in chronic inflammations.

The theory of the gametoid nature of cancer tissue has reached its greatest development with Farmer, Moore and Walker, although it is not original with them. They found that in very early cancers the epithelial cells were penetrated by leucocytes, and from the fusion of these cells of different types a hybrid tissue resulted which possessed the properties of tumor tissue. Further support was found for this theory in the presence in cancer cells of what they considered to be "heterotypical" and "homotypical" forms of mitosis, which had been previously found only in reproductive tissue. In mitotic, figures of this sort not only are the number of chromosomes reduced, but the form assumed by the chromosomes is regarded as peculiar to sex cells.

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* A lecture under the auspices of the Cancer Commission of Harvard University.

[1] Third scientific report of the Imperial Research Fund, 1908.

Von Hansemann explains the reduction of the number of chromosomes by means of the intervention of asymmetrical mitotic division. The possibility is suggested that accompanying the loss of chromatin there may be also a loss of differentiation, which he terms "anaplasia." Hansemann does not maintain that anaplasia of itself results in tumor growth. A stimulus is required. He considers it possible that a stimulus which would produce hyperplasia in a normal tissue would produce a tumor when acting on anaplastic tissue. In this connection, the changes found in the chronic pancreatitis in cats, a study of which has been made in this laboratory by Dr. Ordway, is well worthy of attention. The gland cells in certain areas are devoid of zymogen granules, are of small size, and are faintly stained. Mitotic figures are frequently seen, and the activity of this epithelium is evidently formative rather than functional. It would be of interest to determine if this anaplasia of the gland cells is here the result of asymmetrical mitotic division. This sort of gland epithelium is so atypical in its arrangement that structures are produced closely resembling tumor nodules.

Certain principles concerning the regulation of the vegetative and the propagative activities in cells have been discovered by Hertwig and his pupils, but these will be discussed by Dr. Howard in another lecture.

Various facts which have been brought forward tend to show the inadequacy of the theories offered. It is obvious that hypotheses used to bridge over the wide gaps where the facts have not been ascertained add nothing of themselves to the knowledge of the subject. The successful transplantation of epithelial tumors into normal animals of the same species would indicate that a weakening on the part of the connective tissue as suggested by Thiersch is not necessary for the growth of tumor epithelium. In fact, the inoculation of tumors is most successful in young animals in which the connective tissue reaction is greatest. With Cohnheim's theory of embryonic rests it is necessary to assume the presence of cells throughout the entire body, which have been arrested in the process of differentiation. This, however, does not explain how these cells are stimulated to activity, nor their properties of unlimited growth. The theory of the dislocation of tissues as advanced by Ribbert to account for the origin of tumors finds no support in the experimental transplantation of normal tissue, since a true tumor has never been produced in the numerous experiments of this sort, although fetal as well as adult tissues have been used. That certain tumors grow continuously on transplantation demonstrates a biological difference between tumor cells and the cells of normal tissues.

Apart from the above-mentioned theories, there are certain facts bearing on the etiology of malignant tumors which are coming to be well established. The part played by injuries and chronic inflammation, although repeatedly noted in clinical observation, has been reluctantly accepted by many pathologists. The frequency of the development of carcinoma subsequent to x-ray burns can no longer be ascribed to simple coincidence. The frequency of the development of sarcomata after mechanical injury is now becoming recognized. The development of carcinomata is apparently oftener associated with inflammatory changes of considerable duration. The number of special forms of cancer is continually growing. Bashford, besides mentioning the paraffin, petroleum, arsenic and aniline workers' cancers, the smoker's cancer and the brain cancers of cattle, also describes certain cancers occurring in *unusual* situations, and associated with *peculiar* forms of irritation. The so-called Kangri cancer frequently develops upon the abdominal wall of the natives of Kashmir, India, where the custom prevails of maintaining body warmth by means of the Kangri, a small earthen-ware stove worn suspended against the abdomen.

The "horn core" cancer of cattle occurs where draft animals draw their load by a line attached to the right horn. Tumors are not infrequently asociated with parasites. Borrel, Bashford and I have found worms in association with tumors in mice. Cancer of the bladder is frequent in Bilharzia disease, and cancer not infrequently originates in old lupus scars. Attention has been called by numerous investigators to the endemic occurrence of tumors in the lower animals. Whether the prevalence of tumors among animals kept in certain localities or under peculiar conditions is due to the environment in which they are kept or to certain inherited tendencies, is not fully proven. The frequency of the occurrence of tumors in such cases scarcely warrants the interpretation of cancer as an infectious disease. It is not improbable, however, that parasites, or even true infections, may have an indirect influence in the origin of tumors.

The work of Loeb on the experimental production of decidual tissue has an important bearing on the origin of tumors. He found that by injuring the endometrium of certain animals, either within a given period after copulation, or within a similar period after the phenomenon of heat unattended by copulation, an indefinite number of nodules of decidual tissue could be produced. Growth in this tissue was always simultaneous with the development of corpora lutea, and if the latter were destroyed the decidual tissue then failed to develop.

He concludes that the corpora lutea manufacture a substance which prepares the connective tissue cells of the endometrium for active growth when stimulated later, either by the presence of the ovum or by mechanical injury. That this "preparatory substance" of itself does not produce proliferation is seen by the fact that not all the endometrium in these animals is engaged in the development of decidual tissue. That it affects only the connective tissue of the endometrium and not the connective tissue of the body in general may be due either to the peculiar character of the former or to its association with uterine glands.

It thus seems to be well established that irritations of diverse sorts play an important part in the origin of malignant tumors, but the problem of etiology will not be cleared until it is shown how these conditions excite the tissues to unlimited growth.

Concerning the diagnosis of tumors much has been done with the end in view of elaborating tests by which the presence of internal tumors could be ascertained. It is well recognized that there are no specific symptoms by which tumors may be diagnosed. In fact, tumors are often far advanced in their development before any disturbance of function is noted. With certain of the experimentally inoculable tumors it has been found that the serum of the animal in which the tumor is growing possessed hemolytic properties for the red blood corpusles of normal individuals. The corpuscles of the tumor animal are not hemolyzed. Crile has applied this principle in an attempt to obtain a diagnostic test for the presence of tumors. He found that the serum of persons possessing early malignant growths showed marked hemolytic properties, whereas the serum of persons with benign growths did not.

The serum from cases of advanced malignant growths failed to produce hemolysis. The reliability of this test has not been definitely established, although it is not denied that the sera of many cancer cases possess hemolytic properties. Difficulty is found in the fact that the serum in other conditions, notably tertiary syphilis, has been found to be also hemolytic.

For the present, therefore, diagnosis is usually established by the histological examination of excised tissue. Even here difficulties arise. Although in most cases tumors are sufficiently advanced as to make their recognition possible, in certain instances it is impossible to decide whether or not we deal with a tumor. There must be, theoretically at least, all transitions between the normal tissues and tumors. Furthermore, when dealing with recognized tumors it is difficult to decide whether we are dealing with benign or malignant tumors. The nature of the tissue, the relative proportion of cells to intercellular substance, the evidence of invasion of normal tissue and the rate of growth as shown by the frequency of mitotic figures are all taken into account. The distinction between benign and malignant growths, however, remains an arbitrary one, and the possibility of accurately prophesying the future biological behavior of an apparently benign tumor must be questioned.

The subject of treatment will be considered in other lectures of this course, so that I will say nothing more than that the experimental investigation of tumors has shown no mode of treatment which compares with complete surgical extirpation of tumors.

Such are some of the general problems of cancer. If we turn now to the trend of recent tumor investigation, it will be found that there has been great activity in the investigation of experimentally inoculable tumors. The study of the natural incidence of tumors in different species of animals has shown their wide distribution throughout the vertebrate series. Types of tumors are found which are more or less peculiar to certain given species, and tumors appear to be more frequent in some species than in others. Notwithstanding the type peculiarities presented by each species, there is perfect analogy between the tumors of animals and of man. Since in animals we may to a large extent control conditions, opportunity is afforded for the most promising line of investigation. As more study is devoted to the tumors of any given species, the types of tumors described are constantly increasing in number. Discrepancies in the results obtained by different investigators in this field are usually due to differences in the methods employed. Apolant states that, of the tumors in mice, 95% are external tumors of mammary origin. I have now studied a series of 62 primary tumors in mice, and of these, 37, or about 60%, originated in the lung. The next most frequent type of tumor in my series is the lymphosarcoma, of which there were 10. Only 8 of the 62 tumors were situated externally, and of these 6 were epithelial tumors. There were 4 tumors of the kidney, 2 of which are undoubetd hypernephroma. There were ovarian tumors in 2, and a sarcoma in 1.

Different types of tumors frequently occur in a single animal. Of the 49 animals of this series, 11 presented primary tumors of two types, and 1, primary tumors of four types. In the latter there was a hypernephroma, a lymphosarcoma, a papillary systadenoma of the lung and an adenocarcinoma of the ovary. About 25% of these cases, therefore, presented multiple tumors of different types. Multiple primary tumors were probably present in a far greater proportion, for in many cases the lung tumors were multiple, and occurred not only in single, but in several lobes.

Many of the tumors which develop spontaneously in mice and rats have been found to be inoculable. The careful histological study of a series of the inoculated tumors taken at short periods after their injection has shown conclusively that the development of the tumors depends upon the transplantation of tumor cells. The injected tissue is at first surrounded by an exudate which results from the injury caused by the injection. The tumor cells continue to grow and mitotic figures are found at all stages. There is usually, however, a tendency on the part of the central portion of the implanted mass to undergo necrosis. This necrosis is progressive until the tumor tissue comes to be in actual contact with the connective tissue of the host, and has begun to be vascularized. The stroma of inoculated epithelial tumors apparently undergoes necrosis and a new stroma is furnished by the connective tissue of the host. The reaction of the connective tissue and the blood vessels to the injected tumor tissue varies with different strains of tumors. From this study it is obvious that production of tumors by the experimental inoculation of tumor tissue is brought about by the transplantation of cells rather than by the introduction of a virus. The tumors, therefore, do not develop from the tissues of the inoculated animal, but from the transplanted tumor cells

In a former publication [2] I called attention to the frequency of tumors in certain families of mice. In one family of 25 mice there were 4 primary adeno-systomata of the lung. Another family was derived by the breeding together of the offspring of a female mouse with a large adenocystoma of the lung. After 100 mice were obtained, the breeding was stopped, and the mice were then kept under observation. Of this family of 100 mice, 89 are now dead. Definite tumors were found in 15 of these. Practically 1 mouse in 6 developed a tumor. A considerable number of these mice died while young of infectious diseases, accidental conditions, etc. Inasmuch as in the above estimate all were counted irrespective of the age attained, the proportion of those developing tumors is large. Thirteen of these mice presented adeno-cystomata of the lung similar to that which was found in the mother of the family, 2 had mammary tumors in addition to lung tumors, and 1 had double ovarian tumors.

Although the relation of heredity to tumors is studied much more readily in short-lived animals than in man, it is attended with difficulties, especially in the way of providing controls. In this instance another family of mice, which had never developed a tumor, was taken for comparison with the one just mentioned. A tumor of the lung was finally found in a member of the supposedly insusceptible family. It would be necessary, therefore, to show a constant and frequent occurrence of tumors in a given family to establish the existence of an inherited tendency.

Another phase of the study of inheritance was taken up employing an inoculable tumor. There are numerous observations on racial differences of susceptibility to the inoculable tumors. The attempt has not to my knowledge been made of carrying out systematic breeding experiments for the determination of the part played by heredity. The tumor used in this case originated in a Japanese waltzing mouse, and proved to be peculiarly adapted for this sort of experimentation. From the first it grew in practically 100% of all waltzing mice inoculated. Its rate of growth was slow, but fairly uniform, and tumors which attained large size showed but little necrosis, so that inoculations were attended with uniform results.

The attempt was made to inoculate common, tame mice with this tumor with negative result. The idea then suggested itself of obtaining hybrids and determining if they were susceptible. Hybrids were obtained by breeding together common males and Japanese waltzing female mice. Such hybrids were found to be susceptible, and the tumors grew more rapidly in them than in the control waltzing mice. Hybrids were obtained from Japanese waltzing males and common females. These were also susceptible. These results suggested that the susceptibility to the inoculable tumor might be of the nature of a Mendelian character, which would then necessarily be dominant since it was apparent in the first generation of offspring. The Mendelian expectancy would be, therefore, that in the next generation 25% of the mice would be insusceptible.

Fifty-four mice of the second generation of hybrids were inoculated with negative result in every case. In two or three of this number the tumor tissue evidently grew for a time, but later became rapidly absorbed in every case. These results indicate clearly that the susceptibility to this inoculable tumor is not to be considered an inherited character of the Mendelian sort.

Sixteen mice of the third generation of hybrids were inoculated in order to determine if the susceptibility might reappear. These proved, however, also insusceptible.

From these data it is evident that heredity is of considerable importance in the interpretation of results in the investigation of the inoculable tumors. Its influence is seen in the great susceptibility of Japanese waltzing mice, and in the absolute insusceptibility of common mice. There is, however, no evidence of Mendelian inheritance of susceptibility or insusceptibility, so that the influence of heredity remains obscure. These results are of biological interest in that the tumor grows in certain varieties of mice and fails to grow in others, although the different varieties breed freely with each other.

In order to determine the nature of the insusceptibility of the second and third generations of hybrids, a histological study is now being made of the subject. The tumor has been taken at different intervals of time after its inoculation into comparative series of susceptible and insusceptible mice. Japanese waltzing mice were used for susceptible, and second-generation hybrids for insusceptible stock. The reaction of the host tissue to the inoculated tumor was practically identical in susceptible and insusceptible mice up to the seventh day. The tumor epithelium had acquired a stroma, and had become largely vascularized in the insusceptible as well as in the susceptible mice. The next preparations taken at ten days, however, showed a complete and apparently sudden necrosis of the tumor epithelium, while in the susceptible mouse there was a well-established tumor. This result indicates the development of an immunity subsequent to the inoculation.

Curative properties have been claimed for the serum of mice refractory to tumor inoculation. Large doses of defibrinated blood of previously inoculated insusceptible hybrid mice were inoculated into mice with tumors. In the small number of cases done no curative action was observed.

In testing the susceptibility of the various series of mice, observations have been made concerning the effect of the growth of the tumor on the rest of the body. In a series of mice which developed tumors of great size, there was distinct hypertrophy of the heart, and the weight of the body apart from the tumor was increased as compared with controls. The liver was in some instances several times the weight of the normal, but this was probably in part due to congestion through failure of compensation. The kidneys and spleen were also increased in weight. The enlargement of the spleen, however, probably resulted from the absorption of toxic substances from the necrotic portion of the tumor. It seems that this increase in the weight of the organs represents a hypertrophy brought about by the extra weight and possibly the nutritional demands of the tumor.

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[2] Fourth report of the Cancer Commission of Harvard University, 1907.

An attempt was made to find some relation between the rate of body growth and tumor growth. It was found, however, that there was no constant correlation. In some instances the most rapidly-growing animals, while in others the slowly-growing animals produced the largest tumors. In their ultimate development, tumors attain greater size in large than in small animals. It seems probable that the nutrition of the body is sufficient for a time for the needs of the tumor as well as for the developing tissues. It appears that in some instances the demands of the tumor tissue are greater than those of the normal tissues. In one instance five young mice which had been inoculated all presented tumors.

One mouse, which was rather smaller than the others, lost weight and finally became emaciated. The tumor developed in this mouse, but was much smaller than in any of the others. It was found that this mouse had been gradually starved through a deformity of the teeth, preventing its eating. The rate of tumor growth had been diminished by the starvation, but it nevertheless grew to a certain extent at the expense of the rest of the body.

The pessimism sometimes expressed concerning the cancer problem serves only to discourage investigation. It is evidently based in many instances on the assumption that all tumors arise from congential defects or abnormalities. The successive description and exploitation of a long list of pseudo-parasites has served to bring discredit to this field of investigation, and the inadequacy of various theories advanced concerning the origin of tumors have served to strengthen the doubt. It is sometimes stated that there is no advance in our knowledge of tumors. In addition to the establishment by clinical observation of the part played by chronic inflammation, the experimental investigation of tumors has yielded certain definite results, which show such statements to be erroneous.

First it is proven by transplantation experiments that cancer cells differ biologically by their property of unlimited growth from normal tissue cells.

Peculiar conditions are not essential for the continuation of this growth. Certain tumors grow in normal individuals. Other tumors, however, require a special soil: they grow if transplanted into other parts of the same individual, but not if transplanted to other individuals.

Growth is found to depend upon the biological character of the cells and not upon their dislocation.

The experimental investigations have made untenable the interpretation of cancer as an infectious disease.

The development of sarcoma in animals inoculated with epithelial tumors is interpreted by most investigators with whom it has occurred to be the result of the irritating influence of the tumor epithelium.

The demonstration of the presence of substances which prepare tissue for growth on subsequent injury or stimulation is of great importance.

There is, therefore, no more basis for pessimism with regard to the tumor problem than there was formerly for a similar attitude with respect to the problem of the infectious diseases. The latter remained unsolved until the advent of the experimental method of research. The experimental investigation of tumors has been but recently taken up, and it has already yielded valuable results. The problems of growth are of broad biological significance, and they should not be considered solely from the point of view of medicine. Up to the present time no more is known of the principles regulating normal growth than is known of those principles concerned in the abnormal growth of tumor tissue. It is possible that the investigation of one may eventually throw light on the other. The essential problem is, therefore, one of growth, and its investigation concerns the biologist, the zoölogist and the embryologist, as well as the physician.

Original Articles.

PRIMARY CARCINOMA OF THE JEJUNUM AND ILEUM. REPORT OF TWO CASES.

BY HORACE W. SOPER, M.D., ST. LOUIS, MO.

Primary carcinoma of the small intestine is relatively rare, that of the jejunum and ileum, excepting the ileo-cecal valve, particularly so. In 41,838 autopsies in the Vienna General Hospital during the period from 1870 to 1893, Nothnagel [1] numbers 3,585 deaths from cancer, of which 343 originated in the intestines, divided as follows:

Ileum,	10	Colon,	164
Jejunum,	0	Rectum,	162
Duodenum,	7		

G. Heimann [2] collected 20,054 cases of cancer occurring in the hospital of Prussia during the years 1895–1896. Over one half of this number, 10,537, were located in the gastro-intestinal tract; 4,288 in the stomach; colon, 224; small intestine, 20. The remainder divided between tongue, esophagus, pharynx and rectum.

Alfred Stengel [3] states that the combined statistics of Maydl, Nothnagel, Zemann, Müller and Bryant show that 64.18% of all intestinal cancers occur in the rectum; 22.76% in the colon; 6.82% in the cecum and appendix; 6.22% in the small intestine.

Brill,[4] analyzing the combined figures of Maydl, Nothnagel, Müller, G. Heimann and Lubarsch, collects 2,128 cases of cancer of the intestinal canal, of which 2.3% were in the small intestine.

Duodenal cancer appears to have occurred more often. Geiser,[5] in 1906, collected 67 cases and reported 4 of his own.

W. Schlieps,[6] in the most critical and exhaustive of all the recent studies of primary carcinoma of the jejunum and ileum, collected 38 cases appearing in the literature since the year 1867. To this number he has added 5 cases from the Breslauer Surgical Clinic, making a total of 43. Nineteen of this number were in the jejunum, 22 in the ileum. (In 2 cases the exact location was not given.) The subdivision is as follows:

Jejunum.		Ileum.	
Upper third,	9	Upper third,	1
Middle third,	4	Middle third,	7
Lower third,	2	Lower third,	11

Thus the growth exhibits a marked predilection for that part of the small intestine nearest the stomach and colon, respectively.

In my search through the literature, I have found records of 12 cases not mentioned in the list collected by Schlieps. These may be briefly summarized as follows:

Case I. W. B. Ransom,[7] 1890. Female, aged fifty. Four small carcinomatous growths six inches above the ileo-cecal valve found post-mortem.

Case II. T. Richardson,[8] 1894. Male, aged sixty. Entered hospital with symptoms of acute ileus. Cylinder celled carcinoma (scirrhus form) six feet above the ileo-cecal valve producing almost total obstruction, patient dying fifth day after operation.

Case III. Kanamori[9] (Tokio), 1897. A case of primary carcinoma of the jejunum. (Details not accessible.)

Case IV. C. R. Keyser,[10] 1908. Female, aged thirty-eight. A case of primary cylinder celled carcinoma located in the first part of the jejunum. Cachexia, emaciation, large palpable tumor. Exploratory incision growth deemed inoperable, patient dying twenty-four hours later, post-mortem showing no metastasis.

Case V. L. H. Hempelmann,[11] 1908. Female, aged forty-seven. A suspected case of Addison's disease, the autopsy disclosing acute suppurative interstitial myocarditis and annular adeno-carcinoma of the upper third of the jejunum.

Case VI. Fagge,[12] 1907. Female, aged thirty-three. Carcinoma of the upper third of the jejunum. Vomiting and palpable tumor, patient living six weeks after operation (at time of report).

Case VII. A. Voelcker.[13] Male, aged thirty-three. Soft ulcerating carcinoma of the upper third of the jejunum. Weight loss and persistent diarrhea. No operation. Post-mortem diagnosis.

Case VIII. C. H. Bunting,[14] 1904. Male, aged fifty-two. Six small nodular primary carcinomatous growths in the upper third of the ileum. Accidental post-mortem finding.

Case IX. C. H. Bunting.[14] Male, aged fifty-nine. Three primary carcinomata. One in the upper third of the ileum almost obliterating the lumen, the second in the ileo-cecal region, the third in the sigmoid. Operation palliative ileo-colostomy.

Case X. S. Oberndorfer.[15] Female, aged thirty. Dying of typhoid. Autopsy disclosing three small carcinomatous nodules in the ileum.

Case XI. S. Oberndorfer.[15] Female, aged thirty-five. Dying of tuberculosis. Numerous small carcinomatous foci scattered along the mucosa in the middle third of the ileum.

Case XII. Walter.[16] Male, aged fifty. Dying of pernicious anemia. Two non-ulcerative cherry-sized carcinomatous growths found in the middle of the ileum.

Case A. Patient, male, aged forty-nine. Occupation, salesman. Referred by Dr. P. J. Heuer, Nov. 20, 1908. His father died at the age of fifty-six of some obscure stomach trouble lasting three or four years, probably cancer. No autopsy. Mother died aged seventy-eight of general debility. One brother died at the age of fifty-two of pulmonary and intestinal tuberculosis; autopsy. Second brother aged sixty-eight living in good health. A daughter of this brother is afflicted with carcinoma of the uterus. The patient has always been a pronounced neurasthenic. Ten years ago he had an attack of nervous prostration associated with digestive disturbances. Symptoms consisted of distress after eating, nausea, anorexia, flatulency, constipation, headache and vertigo. Since that time has had numerous similar attacks, the worst one occurring five years ago when he first came under the care of Dr. Heuer. This attack followed tonsillitis. He became extremely nervous and lost weight rapidly. Complete recovery after several months of tonic treatment coupled with physical exercises. About one year ago Dr. Thierry had him under observation for mental disturbances, mild hallucinations, etc., from which he recovered.

The present illness began about the 1st of October, 1908. During the previous summer he had felt unusually well, his weight in July being 190 lb. His symptoms at the onset were about the same old troubles as before, viz., occipital headaches, pain in the back, great weariness, insomnia, constipation, gaseous eructations and epigastric distress after eating; no nausea, no vomiting. This distress finally developed into real pain coming on in attacks at irregular intervals of hours, days or weeks, independent of the time, quantity or quality of ingested food. His appetite remained fairly good. Dr. Heuer sent him to the hospital Nov. 14, withdrew all food per os and instituted rectal feeding. This regime caused some amelioration of pain. I saw him first Nov. 20, 1908. He is a well-built man, 5 ft. 8 in. in height, weight 167 lb., complexion sallow, visible mucous membranes pale, face wears an anxious, worried look, muscles flabby, considerable subcutaneous fat. Pulse 80, regular, good volume, moderate sclerosis of radials and temporals. Chest well formed. Examination of heart and lungs reveals nothing abnormal. Rather large deposit of abdominal fat. The only point about the abdomen that is tender to pressure is directly over the celiac plexus. No tender points to the right or left of vertebræ. Tendon reflexes slightly exaggerated. Blood: Red cells, 4,500,000; leukocytes, 8,000. No poikilocytosis. Hemoglobin 80%.

Ewald Boas test meal: 150 ccm. chymification very good. No stomach mucus. HCl 35, total acidity 45, starch erythroodextoin. No lactic acid. Microscopically starch cells few fat droplets. Fasting stomach (morning after Leube's evening meal) 10 ccm. clear acid reacting liquid. No food rests. Sigmoidoscopy: Mucous membrane of rectum and sigmoid presents normal appearance.

Urinalysis: Spr. gr. 1,022 acid reaction, no albumin, no sugar, no indican.

Feces analysis: Stool thin, yellow color, acid reaction, containing much mucus in very small clumps intimately blended. Weber's guaiac blood test gives positive reaction. (As this is the day after the introduction of the stomach tube, too much significance cannot be attached to this.)

X-ray (fluoroscopic) examination. A meal consisting of 500 gm. of cream of wheat and 60 gm. of bismuth subnitrate was administered. Stomach extends two finger breadths above the umbilicus, presents the ordinary "fish hook" form, contour smooth and even, peristalsis good, no adhesions to abdominal wall or surrounding organs.[1] Twenty-four hours later the colon is fairly well filled with the bismuth mass and presents nothing abnormal except that the last 12 in. of the ileum is yet filled with the bismuth. No signs of stenosis in this portion of the ileum or at the ileo-cecal valve.

Patient, who is now up and about, determined on a business trip. Was absent one week, returning Dec. 12, 1908, reporting considerable improvement in subjective symptoms. Weight 163 lb. (a loss of 4 lb. in two weeks' time). Feces analysis shows strong blood reaction. As he has been eating meat liberally, its signification is yet doubtful.

Patient was now put to bed and a rigid "ulcer cure" instituted. During this period from December 13 to 26, daily examinations of the feces were made, always with the same result, viz., typical smooth, yellow milk stools, showing small masses of very intimately-blended mucus. Blood reaction strongly positive. The symptoms continued about the same as before; never any nausea or vomiting. It was difficult to estimate just how much pain was present so hypochondriacal was our patient. He often stated to me that he could not distinguish any difference in the character of the symptoms of his present illness from the previous ones several years ago. Efforts were frequently made to palpate an abdominal tumor, but always unsuccessfully.

A diagnosis was now made of malignant ulcerative growth in the upper part of the small intestine, based upon the following findings: (1) The constant presence of occult blood in the feces, despite ulcer cure diet and rest in bed. (2) The intimate mixture of the fecal mucus pointed to an inflammatory or at least to a congested condition in the mucosa of the small intestine. (3) The fact that some of the bismuth meal was yet in the ileum, twenty-four hours after ingestion, must mean a serious defect in the motility of the small intestine. At the same time the absence of stenosis or irregularities in the contour of the ileum excludes trouble here. (4) The evidences of normal gastric digestion and motility, the normal contour and peristalsis of the stomach as seen by the fluoroscope, excludes malignant disease in this organ. (5) The good view obtained of the rectal and sigmoid mucosa by means of the sigmoidoscope, the character of the feces and the absence of any signs of stenosis or irregularities in the colon observed in the fluoroscopic examination, excludes this portion of the intestinal tract.

Operation Dec. 28, 1908, at Deaconess Hospital. Drs. P. J. Heuer and W. J. Miller. About three inches below the beginning of the jejunum was disclosed a ring form, hard, uneven cicatrix about one half inch in width involving about one half of the circumference of the gut. Fifteen inches below this was a second growth, the size of a lemon, hard, irregularly nodular, lying close to vertebral column behind the stomach. Five or six inches of the bowel was bound fast to the mass by inflammatory adhesions. For several inches on either side and between these two growths the bowel presented a thickened congested appearance, containing but little gas and fluid. The lumen in each growth easily admits the index finger. Resection, end to end anastomosis, with Murphy button. Thirty-two inches of the jejunum removed. Patient did well for five days when he complained of pain about the site of the wound. This soon abated, but soreness persisted accompanied by fever and finally a large fluctuating mass could be felt. On Jan. 18, 1909, wound reopened through drainage canal and considerable pus evacuated. The fistula remained open for several weeks, finally closing. The patient, however, continued to complain of pain and finally, March 27, 1909, abdomen reopened. The coils of the jejunum were found matted together by fairly strong fibrous adhesions. These were broken up and the site of anastomosis was brought to view. This was found perfect. The retroperitoneal glands were enlarged to walnut size and adherent to the transverse colon. Several small nodular recurrences of the growth in peritoneum and mesentery. The patient is alive, but losing ground daily. Since the primary operation, frequent feces examinations were made which always showed an absence of mucus and of occult blood.

PATHOLOGICAL REPORT.

By Guthrie McConnell, M.D.

The specimen taken from the larger of the two growths shows the following characteristics:

In one portion the intestinal wall is found in a practically intact condition, the peritoneal covering, the two layers of muscle and the sub-mucosa showing plainly, the latter being covered by apparently normal glandular epithelium.

Immediately adjoining and encroaching upon this a very different arrangement becomes evident. Instead of the normal simple tubular glands, the epithelium shows most complicated folds with the formation of acini of all shapes and sizes.

Instead of a single layer of cells of similar type, the acini are lined by numerous layers of very atypical cells in a very irregular arrangement. The nuclei vary greatly in size and shape and many of them are undergoing division. These cells not only occur in many layers, but in numerous instances they are found penetrating the underlying connective tissue with the formation of irregular nests.

In that portion of the growth furthest away from the intestinal wall, the connective tissue shows marked degenerative changes. It becomes less dense, less cellular and does not stain well. The fibers become indistinct, widely separated, and in many places no definite structure can be distinguished. The tissue appears to have been replaced by a homogeneous material. Scattered strands of atypical epithelium are seen in these portions, evidently remains of the abnormal acini. Many pus cells and lymphocytes are present. These degenerated connective tissue regions form numerous minute semi-transparent masses that can be seen by the naked eye and which appear of a colloidal nature. They are evidently nothing more than collections of connective tissue that have undergone a mucin-like degeneration.

A marked infiltration of round cells is present in the muscular and subperitoneal coats of the intestine.

The above describes almost exactly the findings in the section from the smaller, ulcerated growth in the intestine. There are a few differences in degree, but none in the nature of the lesion.

In this specimen the acini are generally larger and more dilated. They are lined by several layers of atypical epithelium and in many instances contain some translucent exudate. Nests of cells, however, do not occur to the same degree as in the other specimen. The nests are neither so large nor so numerous. More nuclei undergoing division are seen, but this has no bearing upon the progress of the disease. The connective tissue shows only slight degenerative processes. Round cell infiltration is quite marked.

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[1] Unfortunately it is impossible to outline the small intestine by means of the x-ray. Not only because of the anatomical relations, but for the fact that the physiological segmentation of the food prevents the bismuth mass from distending the bowel.

What was supposed to be an ordinary lymph node is found to contain very little lymphatic tissue, being composed mainly of small blood spaces surrounded by a very cellular connective tissue. It did not show any indications of malignancy.

Diagnosis. — Multiple adeno-carcinoma of the intestine.

CASE B. Male, aged fifty-two. Priest. Referred by Dr. John McHale Dean. Entered St. Anthony's Hospital March 15, 1909. It was not possible to elicit a clear history of the case. The patient was almost in a condition of collapse and often delirious. He persistently refers the beginning of his illness to Jan. 1, 1909, when he experienced a sudden attack of severe abdominal pain accompanied by vomiting. Since then he has had many similar attacks. Bowels heretofore regular became much constipated. Lost weight and strength rapidly. Appetite remained fairly good, but after eating well for three or four days, vomiting of large masses of food occurred. Patient is a man of large frame, very much emaciated, complexion sallow, no icterus. Abdomen very tense, but little subcutaneous fat. Liver presents smooth, sharp edge at the rib margins. At irregular intervals, varying from one to three minutes, strong visible peristaltic waves begin at the region of the spleen and proceed to the right inguinal region. The contracting intestine may be grasped and appears to be considerably larger than the average sized colon.

Blood. — Hemoglobin 60%. Smear shows no poikilocytosis and no leukocytosis.

Urine.—No albumin or sugar. An excess of bile pigment. Indican much increased.

Feces.—Bowels moved by administration of oil and enemata. Stools, formed, clay colored, contain no mucus, no visible blood, no occult blood.

Microscopically, no fat droplets, crystals (or "schollem"); no starch; no proteid residue; no vegetable fiber; no connective tissue; no bile pigment.

Ewald Boas test meal 100 ccm.; little stomach mucus; chymification fairly good. No free HCl; total acidity, 13; no lactic acid. Microscopically, many fat droplets (patient insisted on having butter); many starch cells, no sarcina; no spr. yeast; no blood, no pus, no long bacilli.

A diagnosis of intestinal obstruction in the ileo-cecal region was now made. Patient stimulated and finally operated upon by Dr. Dean, March 24. The coils of the small intestine were immensely distended and full of fluid, rendering the operation exceedingly difficult. A small constricting band was found about twelve inches above the ileo-cecal valve completely occluding the lumen of the gut. The bowel above the obstruction was at least three inches in diameter, below it was completely empty and collapsed. Metastatic nodules were observed in the mesentery and peritoneal covering near the site of the growth. Exitus four hours after operation.

The specimen showed obstruction to be complete. It held water perfectly. A very small probe could with difficulty be passed through. Even now water passes through very slowly, drop by drop. The examination of the mucosa on either side of the obstructing band shows absolutely no sign of any ulcerative process.

Pathological report by Dr. R. L. Thompson. "Specimen consists of a portion of the small intestine 8 cm. long divided into two halves by a narrow, thick constricting band which so closes the gut that it will allow the passage only of the smallest probe. At the mesenteric attachment opposite this stricture the tissue is thickened considerably and the neighboring serosa exhibits a number of tiny nodules, discrete, round, slightly elevated, measuring from 1 mm. to 5 mm. in diameter. *Microscopic.* — Section of the thickened mass shows a dense connective tissue stroma containing islets of epithelial cells irregularly arranged in small groups. Only in places is original granular arrangement seen. The cells lack uniformity in shape and size and show various degenerative changes. *Diagnosis.* — Carcinoma. (The growth was evidently an adeno-carcinoma which has assumed a scirrhous type.)"

The points of special interest in the above case are:

1. The length of time in which obstruction to the passage of the intestinal contents must have persisted as evidenced by the character of the feces, i. e., an entire absence of all food products and bile pigment nine days before operation. The amount of feces obtained for analysis was but little below the average normal daily quantity, yet it must have represented only the excretion from the mucosa of the large intestine. This can, according to Schmidt and Strasburger,[17] reach a considerable quantity.
2. The vomiting simulated that of pyloric obstruction, due no doubt to the immense collection of food and waste products in the dilated small intestine.
3. The exceedingly rare non-ulcerative scirrhous form of growth prevented the appearance of occult blood in the feces.
4. Its small size and the absence of adhesions would have presented an exceedingly favorable opportunity for successful earlier operation.

The cases which I have collected, including the two just detailed, make a total of 14. Adding this to the 43 cases collected by Schlieps makes a grand total of 57 cases. Thirty-five of these were in males, 18 in females. (In 4 cases sex not mentioned.) The average age in Schliep's table is forty-six and a half years. Thirteen of the cases collected by the writer show an average of forty-five years.

Pathological anatomy. — Bunting explains the rarity of the occurrence of malignant new growths in the small intestine on the generalization "that carcinomata are most prone to arise where there are changes in the type of living epithelium and at points where the surface is most liable to mechanical irritation." He further calls attention to the fact that the small intestine from the entrance of the common duct to Meckel's diverticulum in the ileum is a simple unbranched tube, without variation in type of epithelium, without sharp bands, and containing semi-fluid material mechanically non-irritating.

By far the most common form is the simple cylinder celled adeno-carcinoma, which exhibits a marked tendency to ring-form construction of the gut and early annular ulceration. Metastasis occurs late according to Maydl,[18] Hausmann [19] and Rüpp.[20] Peritoneal adhesions to surrounding loops of intestine and organs is a very frequent occurrence. The scirrhous form, so common in tumors of the lower part of the large intestine, appears to be very rare in the ileum and jejunum. (But four reported cases, viz., Case B, Duncan,[21] Haberer,[22] T. Richardson.[8])

Nine cases of primary *small* multiple carcinomata in the ileum and jejunum are reported, viz., Lubarsch,[23] 2 cases; Notthaft,[24] Hammer,[25] Walter,[16] C. H. Bunting,[14] Ransom,[7] Oberndorfer,[15] 2 cases. These were all accidental post-mortem findings. Oberndorfer[26] regards them as simple endothelial carcinomata and asserts their growth to be slow and that they never reach large size. Moreover, they show no tendency to metastasis or infiltration of the surrounding tissue. That cases of *large* size multiple primary growths do occur is evidenced by the reports of Hahn[27] (cited by Schlieps), Kukula,[28] C. H. Bunting[14] and Case A.

Bunting is inclined to the view that these are primary foci, and not transplantation of cancer elements from the uppermost tumor.

Symptomatology and diagnosis. — In the large majority of cases the history is exceedingly meager, the patient coming to the operating table or to autopsy with symptoms of acute ileus. Boas[29] dismisses the subject with few words as rare and impossible of diagnosis.

Kanzler[30] doubts the possibility of an early diagnosis, pointing out that the semi-fluid contents of the small intestine are capable of passing through a considerably narrowed lumen without causing symptoms.

A study of the symptoms mentioned in the 57 cases thus far reported reveals " colicy pains " to be of the most frequent occurrence, viz., 28 times. A palpable tumor was present in 22 cases; progressive weight loss in 21; vomiting in 20; constipation 20; diarrhea 8; alternating constipation and diarrhea 5; visible peristalsis 8; hemorrhage from the bowels 6; indicanuria 3.

Vomiting, visible peristalsis, palpable tumor and indicanuria must be reckoned as late symptoms.

Schlieps[6] lays particular stress upon the occurrence of fixed pain in the abdomen and the presence of a palpable tumor. Case A never vomited, yet the growths were located at the beginning of the jejunum. Case B vomited, in all probability, only when a considerable degree of stenosis had occurred.

Constipation occurring in an individual not previously so disposed should always make one think of malignancy.

In no case report of cancer of the small intestine could I find a record of the test for occult blood having been made. Schlieps mentions that Teichmann's hemin test was made in one of his cases with negative results. *The hopes of an early diagnosis are based upon the systematic examination of the feces for occult blood.* Ulceration, as pointed out above, must occur early in a vast majority of these growths. Therefore any case presenting progressive loss of weight and strength without obvious cause, particularly if associated with colicy pains, or irregularities in the fecal evacuations, should be subjected to a careful examination of the stools for occult blood.

Boas[31] was the first to point out the great value of the continuous presence of occult blood in the feces as a sign of cancer in the gastro-intestinal tract. Many observers have since confirmed this view. Recently, Mathieu and Roux,[32] in a very large number of observations, conclude that the persistency of occult blood in the feces after " ulcer cure " régime is practically pathognomonic of malignancy.

The x-ray may furnish valuable corroborative evidence. Referring again to Case A, the presence of the bismuth mass in the ileum twenty-four hours after ingestion was very suggestive.

The radiographic studies of Sicord and Infroit[33] show seven hours to be the average time for blood to pass from the pylorus to the cecum. Pfahler[34] states six hours to be the average time. This coincides in the main with observations made on cecal fistulæ. *Increase* in the motility of the small intestine may be interpreted as being caused by a large variety of pathological conditions, while, on the other hand, marked *decrease* or tardiness probably always means obstruction of organic nature.

The unfavorable results of surgical interference are to be attributed to the lateness in which cases have hitherto come to operation. However, even when late, operative interference should not be denied.

Schede's[35] patient, in whom resection of 20 ccm. of the ileum was made, presented a very large tumor. Death occurred one year after operation of pneumonia, the autopsy revealing *no* recurrence of the growth,

Sörensen's[36] case was much emaciated. Visible peristalsis and fecal vomiting were symptoms presented. Because of metastatic nodules in the serosa and mesentery, entero-anastomosis was done. Yet the patient three years afterwards (at last report) remained in good health.

On July 13, 1900, v. Mikulicz[37] resected 14 ccm. of upper third of the jejunum (including cancerous growth) in a forty-six-year-old male patient. He had suffered for two years, was extremely emaciated, hemoglobin reduced to 35%. Seven and a half years thereafter (at last report) patient was in perfect health.

Nor should enlarged lymph nodes deter the surgeon from radical operation, for, as especially emphasized by v. Mikulicz,[38] these have often proved to be *not* carcinomatous.

Considering the lateness in which metastasis occurs as well as the accessibility of carcinomata of the jejunum and ileum, no other location in the gastro-intestinal tract offers a more favorable outlook for the radical cure of malignant growths by surgical procedure, provided the diagnosis is established reasonably early.

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THE OCCURRENCE OF INFANTILE PARALYSIS IN MASSACHUSETTS IN 1908. (SECOND PAPER.)

Reported for the Massachusetts State Board of Health.

BY ROBERT W. LOVETT, M.D., BOSTON.

In pursuance of the policy inaugurated in 1907, the State Board of Health in 1908 continued the investigation into the occurrence and distribution of cases of infantile paralysis in the State of Massachusetts with especial reference to etiology. As in the previous year circulars were sent to all physicians asking them to report to the Board cases coming under their observation, and to physicians reporting cases, blanks were sent to be filled out. From these blanks the following data were obtained.

Physicians seeing such cases were also requested to forward to Dr. Theobald Smith, pathologist of the Board, fresh specimens of stools from acute cases for bacteriological study with reference of course to etiology. It is not possible as yet to state the results of these examinations. The Board has already started on the investigation of these cases for 1909 which will follow much the same lines as those of the two previous years with especial efforts to obtain fresh stools for examination. Again the Board desires to express to the medical profession its gratitude for the most willing and helpful co-operation.

The present paper will first present a brief abstract of the literature dealing with the epidemiology of the affection appearing since the last report (Boston Medical and Surgical Journal, July 30, 1908), and second an account of the features of the disease as occurring in the state in 1908. The serious epidemic which occurred in 1908 in Franklin County will be dealt with separately by Dr. H. C. Emerson, who investigated it on behalf of the Board.

ABSTRACT OF IMPORTANT LITERATURE.

Bacteriology and experimental production. — The most valuable contribution of the year toward our knowledge of the disease has been made by Landsteiner and Popper, of Vienna,[1] who have apparently succeeded in producing the disease in monkeys by inoculation. A boy of eight died of the disease on the fourth day. The autopsy showed typical anterior poliomyelitis. In the spinal cord and cerebrospinal fluid there were no organisms to be found and cultures were sterile. Parts of the spinal cord were then emulsified in salt solution and injected into the abdominal cavity of rabbits, guinea pigs, mice and two monkeys. In the first three named no paralysis ensued and the spinal cords were normal.

The first monkey became violently ill on the sixth day and died on the eighth. He lay on the floor of his cage and his power to move his limbs was not investigated. After death changes typical of anterior poliomyeletis were found.

The second monkey was noted to have lost all power in the hind legs on the seventeenth day. No paralysis was present on the twelfth, although it may have been present before the seventeenth in some degree. He was killed on the nineteenth day and again typical pathological changes were found in the central nervous system.

From the spinal cord of this monkey inoculations were made into two other monkeys with negative results.

The conclusion of these authors is that "a so-called invisible virus, that is, one belonging to the class of the protozoa, is the cause of the disease."

With regard to the affection of domestic animals in epidemics of infantile paralysis, this was alluded to in the Rutland epidemic reported by Caverly[2] in 1894 (horses and poultry). Dana investigated a hen with paralysis and found the bacteriology negative and the changes in the cord "acute infectious softening rather than myelitis."[3] It was noted by Wickman that in the Swedish epidemic of 1903 dogs were apparently affected in many instances with the children, but he was not convinced of the identity of the two affections.[4] Free reported that pigs and chickens were affected in the Michigan epidemic alluded to below. The attention of the State Board of Massachusetts has been called to the occurrence of infantile paralysis in a mother and daughter shortly after an epidemic of "leg weakness" in the chickens of the household, and the matter is under investigation.

Pasteur,[5] Foullerton and MacCormac investigated the cerebrospinal fluid of a case of poliomyelitis, finding in it mononuclear round cells. On staining, large cocci grouped in pairs and tetrads were found eleven days and four weeks after the onset of the disease. Cultures were negative. Nine rabbits were inoculated with the fluid, of which some were paralyzed after about six weeks and the cord and spinal fluid of one of these was again inoculated into other rabbits with positive results. The inoculation from this series was negative.

Cocci which did not grow were found in the spinal fluid of affected animals, but in the one cord examined there were no changes in the ganglion cells or about the vessels. The conclusion of these authors, that anterior poliomyelitis is not the result of a specific cause, is disputed by others on the ground that the experimental paralysis is not anterior poliomyelitis (Wickman, Landsteiner and Popper).

EPIDEMICS RECENTLY REPORTED.

In Salem,[6] Va., and vicinity occurred between June 2 and Aug. 10, 1908, 25 cases; the neighboring city of Roanoke, seven miles distant in close communication with Salem, escaped with 1 case. The cases all occurred in children under six, the youngest being thirteen months old. The death-rate was 12%.

In September, 1908, there occurred "a number of cases" in and about Whittemore, Ia.[7] The following regulation was passed by the State Board of Health of Iowa: "It is hereby ordered by the State Board of Health that all physicians and osteopaths practicing in Iowa shall promptly report to the mayor or township clerk all cases of poliomyelitis occurring in their district, etc."

In central Wisconsin[8] in the summer of 1908 there occurred an epidemic with 60 cases in one of the smaller cities and 14 deaths.

In central Pennsylvania the disease was active in the summer of 1907,[9] 100 cases having been seen in and about Dubois, and Sinkler[10] estimated that in Philadelphia 30% more cases than usual were seen in that summer. Sinkler elsewhere[11] speaks of the etiology as follows: "The nature and progress of the disease indicate clearly that it is due to an infection. It is obvious, therefore, that the micro-organism which produces the infection is one which is developed by hot weather. A large proportion of cases have some form of intestinal trouble. . . . It is probable, therefore, that the micro-organism producing the disease has found its entrance into the system through the intestinal tract and thence to the spinal cord."

McCombs[12] contributed a study from the Philadelphia Children's Hospital of the disease as observed at that institution between 1903 and 1907 showing 50% more cases occurring in the summer of 1907 than the sum of all cases for the preceding four years. Forty-three cases in all were analyzed.

Manwaring[13] reported an epidemic of 30 cases in Flint, Mich., occurring in the summer of 1908 and alluding to[14] other epidemics in the state, one in western Michigan reported by Ostrander and another in Chesaning.

In the Flint epidemic the average age of affected cases was ten years. Of cases under ten all lived, between ten and twenty the mortality was 25%, over twenty the rate was 75%, corresponding to Wickman's observations.

Griffin[15] described an epidemic of 20 cases in Oceana County, Mich., occurring between July and September, 1907.

Twenty-nine cases were reported by Clowe[16] as having occurred in Schenectady in the summer of 1907. There were 2 deaths in adults and 10 of the cases were seriously sick, 5 were classed as having made a complete recovery, 19 cases were less than four years old.

Partial reports[17] of the New York epidemic of 1907 have already appeared in various articles. It seems best to wait for the published reports of the committee appointed to investigate the epidemic, before analyzing the conclusions reached.

In and about Vienna, in the summer of 1908, between the end of July and October, there occurred many cases of infantile paralysis, more according to Zappert[18] than had been seen since 1895. He notes the large proportion of older children to be affected and speaks of it as a frequent occurrence in large epidemics.

An epidemic occurred in Victoria,[19] Australia, in their autumn of 1908, selecting the months of March to June. It occurred chiefly in the most densely populated suburbs of Melbourne. There were 6 deaths in 135 cases recorded and the bacteriological findings are not sufficiently clearly given in the abstract, which alone is available, to be commented on.

Byron Bramwell[20] presented an analysis of 76 cases observed by him reaching over a period of years.

One of two inferences is possible from the literature of the last year or so: either the disease is increasing rapidly in this country or the attention of the medical profession has been called to the disease and more cases and epidemics have been recognized and reported.

CASES REPORTED IN MASSACHUSETTS.

Occurrence and distribution. — As against 234 cases of infantile paralysis reported in 1907 only 136 cases were reported in 1908. It is interesting to note in this connection that in 1907 444 cases of cerebrospinal meningitis were reported, while in 1908 there were only 183 cases. It was noted in the previous report that the two diseases, however, reached their maximum at different seasons.

In 1907 the cases of infantile paralysis in their distribution in a general way corresponded to the density of population in the state, grouping themselves as a rule about the centers of densest population, and only in and about Pittsfield, where some 28 cases occurred, was there evidence of any marked epidemic.

In 1908, however, the grouping of cases was largely different and bore slight relation to the density of population, and as a rule where the disease was prevalent in 1907 it was rare in 1908, thus corresponding to the conclusions reached by Scandinavian investigators that regions severely affected one year were for a while comparatively immune. As against 28 cases in the western end of the state in 1907 there were only 3 in 1908. In and about Lowell, Fall River and Haverhill there were in 1908 as in 1907 apparent slight centers of infection.

About half (69) of the cases reported in the state occurred in Franklin County, the remainder (67) being distributed through the state.

Cerebrospinal meningitis, however, in the year 1908 showed practically the same distribution as in 1907, in general being grouped about the densest population. These comparisons are made because cerebrospinal meningitis is an infectious disease apparently mildly contagious[21] affecting many children, and manifested in the central nervous system. Presenting these points of similarity it has been thought that its characteristics might possibly in the future throw some light on the disease under consideration.

For purposes of simplicity the epidemic in Franklin County will be dealt with separately by Dr. Emerson and in the following analysis will be considered *only* the cases occurring in the state at large. The two analyses taken together will give the occurrence of the disease in the whole state.

The *distribution* of the 67 cases may be seen in the map.

Contagion has been so carefully studied in the epidemic that it will not be dwelt on here.

Traumatism. — In one case a history of exposure to dampness was given and in 9 cases histories of trauma preceding the disease. These histories, however, were in many instances vague and unreliable.

Season of onset. — Cases occurred as follows: January, 1; February, 1; March, 1; May, 2; June, 1; July, 9; August, 11; September, 14; October, 15; November, 7. Date not given, 5.

The season of onset does not differ materially from that in 1907, but does differ essentially from the season of onset in Franklin County where it was as follows: March, 1; April, 1; June, 6; July, 28; August, 26; September, 5; November, 2.

Age. — The largest number of cases (19) occurred between the ages of one and two and for the years from two to eight there were reported from three to eight cases for each age, after this the reported cases were one or two a year up to sixteen. There were two adult cases reported, one twenty-one and one forty.

Sex. — There were 39 males, 26 females and 2 not stated.

As to other factors of possible interest in the etiology, 38 lived in detached houses and 27 in tenements, while 2 were not stated. Of the cases in tenements, 12 of the patients lived on the first floor, 10 on the second, 4 on the third and 1 in the basement. Sanitary conditions were described as excellent in 24, good in 20, fair in 16, bad in 5.

Symptoms. — In 54 cases fever was present, the temperature ranging from 100 to 104. In one case no fever was present. In 12 cases no record given. Brain symptoms occurred in 15 cases. There was usually delirium during the febrile state. Vomiting is recorded in 21 cases, constipation in 20, and diarrhea in 8. Retraction of the head present in 10 cases. Pain is recorded in 46 cases, absent in 2. The pain was usually along the distribution of the paralysis and did not, as a rule, subside at once after the acute attack. Incontinence of urine and feces in 2 cases, incontinence of urine in 1, retention and later incontinence of urine 1.

Relation of Beginning of Paralysis to Onset of Fever.

Paralysis preceded the attack by two days,	1
Occurred on the same day,	5
On the next day,	6
Two days later,	11
Three days later,	13
Four days later,	8
Five days later,	4
Six days later,	1
Seven days later,	3
Eight days later,	1
Ten days later,	2
Two weeks later,	1

Complete recovery is said to have occurred as follows:

Five days from beginning of disease,	1
Ten " " " " "	1
Two weeks " " " "	3
Six " " " " "	1
Three months from beginning of disease,	1

Distribution of Paralysis.

One leg,	15
Both legs,	7
One arm,	8
One arm and one leg,	11
One arm and both legs,	5
Both arms and one leg,	1
Four extremities,	6
Not stated,	14
	67

Mortality. — Four cases terminated fatally, 2 dying of respiratory paralysis and 2 of exhaustion, stupor and convulsions.

CONCLUSIONS.

The conclusions which would seem warranted by the investigation of 1908 are as follows:

That the disease was less prevalent in the state than in 1907, as was also cerebrospinal meningitis.

That the distribution of cases was unlike that of 1907, localities affected seriously in 1907 largely escaping in 1908. That this is quite the opposite of the almost identical distribution of cerebrospinal meningitis in the same two years.

That half of the cases occurring in the state were comprised in an epidemic in Franklin County.

Finally it may be stated that it is not to be expected that any material light will be thrown on the etiology of the disease by its observation during any one year, but it is hoped that by a study of the disease for a period of years in the same territory, conclusions of value may be established. It is also to be hoped that by the study of the stools of fresh cases some light may be thrown on the etiology.

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AN EPIDEMIC OF INFANTILE PARALYSIS IN WESTERN MASSACHUSETTS IN 1908.

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State Inspector of Health, District 14.

Note. — The details of this investigation will appear later in a publication of the Massachusetts State Board of Health.

The following investigation of this epidemic here published in abstract was made at the suggestion of Dr. Henry P. Walcott, chairman of the State Board of Health. The information was obtained through the courtesy and assistance of the physicians which enabled the writer to visit the homes of all the cases reported in this epidemic. The writer spent a month living in the towns in which the epidemic occurred and made several subsequent visits to these places.

Sixty-nine cases of infantile paralysis, or approximately one half the total number reported in the state during 1908, occurred in western Massachusetts and were distributed as follows:

Colrain,	24	Erving,	2
Buckland,	9	Adams,	1
Shelburne Falls,	8	Cheshire,	1
Montague,	7	Deerfield,	1
Bernardston,	5	Gill,	1
Greenfield,	4	North Adams,	1
Heath,	4	West Hawley,	1

GEOGRAPHICAL DISTRIBUTION.

With the exception of three isolated cases in Adams, North Adams and Cheshire, the cases occurred in a sparcely-settled portion of the state in the larger towns (Shelburne Falls, Buckland) on the Deerfield River, and its main feeder, the North River (Colrain), and at that point on the Connecticut (Turners Falls) where the Millers and Falls rivers empty into it. As both the valleys of the Deerfield and North rivers are very narrow, the bulk of the population lives naturally very near these streams.

Twenty-four cases occurred in Colrain (population 1,800), a town of five villages containing three cotton mills in the narrow North River valley. Nine of these cases occurred in Griswoldville (population 350), the largest of the three mill villages. Thirteen cases occurred in the village of Shelburne Falls, a manufacturing town with a population of 2,500, which includes the villages of Shelburne Falls and Buckland which are separated by the Deerfield River only. Six cases occurred in Turners Falls, a large manufacturing town on the Connecticut River, and two cases were in other towns across the river.

Fifty-two of the 66 cases were located in the valley on these streams, while 10 of the remainder were hill cases in country districts adjacent to these towns. There were 3 scattered cases in Greenfield. The actual distance from the houses where the cases occurred to these streams above mentioned, including mill ponds, canals, etc., was found to be as follows: Four cases were one quarter of a mile distant, 15 cases were one eighth of a mile distant, 33 cases were less than 500 ft. distant, of which 20 cases were from 10 to 200 ft. distant.

The relation of the hill cases to those in the valley was noted, and in every case it was found that the hill cases gave a history of visiting, driving or in some way spending time in the nearby towns which were upon the streams as above mentioned. It may be stated that there was no case in the 66 under consideration which had not been exposed recently to the valley influences, if any.

In addition to the above 69 cases in western Massachusetts, 6 cases of infantile paralysis occurred in southern Vermont in territory contiguous to the Colrain-Heath district. They all appeared to be independent cases and 4 of them were located near the Deerfield River or its branches.

SEQUENCE OF CASES.

Sixty-five of the cases occurred in the summer months as follows: June, 6; July, 28; August, 26; September, 5; while isolated cases occurred in March 1, April 1 and in November 2. The height of the outbreak appears to have been July 25 on which date 6 cases occurred in four towns as follows: Bernardston 2 (one family), Buckland 2, Shelburne Falls 1, Colrain 1. The early cases occurred at various points throughout the district concerned as follows: In Turners Falls district June 4 (the earliest case), in the Shelburne Falls district June 20, in the Colrain district July 1 in the southern part of this territory, and July 4 in the northerly part of this section. The outbreak in the various towns, with the exception of a few small groups, was not an explosive one, but cases occurred from time to time, covering a period of from six to eight weeks in each town.

CONTACT AND RELATION OF CASES TO EACH OTHER.

Turners Falls Village and suburbs. — The first case occurred in Turners Falls village on June 4, and from this time on to July 20 there were 7 additional cases in this district. There was 1 case of known contact and 2 of possible contact.

Greenfield-Deerfield. — Four independent cases occurred in these towns from July 9 to Sept. 8.

Bernardston. — There were 3 cases practically coincident in one family July 25 and 2 cases in another family, the second being sick three weeks after the first.

Shelburne Falls. — The first case in this group occurred June 20 on a mountain farm and the second case developed in this family one week later. There were 6 other cases in this group during July and August, 2 being coincident in one family, and 1 contact-case having frequently visited one of the cases.

Buckland. — There were 2 cases practically coincident in one family and one contact case who had visited a neighbor's sick child. There were 5 additional cases in this town during July and August.

Colrain. — Three cases occurred in the village of Frankton and had their first symptoms July 7, 16 and 25. The houses were 75 ft. apart and there was more or less commingling of all the children. Six cases occurred in the village of Shattuckville, 2 of which were coincident in one family on July 16 and 17, and 2 were coincident in another family on Aug. 3. There were 9 cases in the village of Griswoldville during July and August, 8 of which were independent and 1 a contact case who had been sleeping and taking care of her younger sister. At Willis Place there were 3 independent cases in a large tenement block.

The 54 cases just reviewed constitute what may be called the group cases, of which 43 are independent and 11 are possible contact cases, 7 of which are of known and 4 of possible contact. The 15 remaining cases are all independent, 9 of which are connected by location with the groups above mentioned and 6 are isolated.

Independent cases:		
Group,	43	
Connected with the group,	9	
Isolated,	6	
	—	58
Contact cases:		
Known,	7	
Possible,	4	
	—	11
Total,		69

TIME INTERVAL.

The time interval elapsing between the exposure and onset of symptoms of the 7 cases of known contact is as follows: Three cases of intimate contact with intervals of 24 days, 14 days and 8 days; 4 cases of contact not intimate, 14 days, 9 days (two instances) and 7 days.

EVIDENCE OF NON-CONTAGION.

Out of the whole number of cases there were but 2 that were isolated during their illness. One was in a family in which there were no other children and 1 was in a house in which there were 3 children, and this case was as thoroughly isolated as if it were a case of scarlet fever. The remaining 67 cases were not isolated in any degree except that in a few instances the serious illness of the child was a sufficient bar to any intimate contact with the other children in the family.

Careful inquiry into the conditions that obtained during the illness of the 67 in which there was no isolation shows that there were 166 children in these families, 4 of which later had the disease; that there were 4 instances in which the sick child slept with a brother or sister up to the time of illness, 7 during the first few days of illness and 5 throughout the entire illness; that there were 9 instances in which the other children of the family drank from the same cup; that there were 12 instances in which the children in the family and neighbors' children kissed the sick child during the acute illness. It is impossible to determine the number of times that contact of the kind just mentioned occurred, but the above detail indicates to how great an extent the intimacy of the well with the sick did occur. Out of the entire number involved to the intimate contact just described, 2 cases developed the disease.

Investigation further showed that there were, in addition to the 166 exposed children in the families, 86 children among neighbors and friends (making a total of 244 children) who were in intimate contact with the 67 cases. By intimate contact is meant (and this appeared to be almost universal) as free intercourse of the well and the sick as the patient's condition would permit. Playing with the child, sitting beside him, taking naps lying on the lounge or bed with him were the conditions that existed in almost every case. The total number of children that were more or less intimately exposed to the 67 cases is probably at least twice or three times the number of known exposures.

WEATHER.

A study of the plotted curves of temperature, rainfall (secured from the report of the Hatch Experiment Station at Amherst) and incidence of cases appears to show no correlation whatever.

DIET.

Investigation of the diet showed the following: General diet 58, cow's milk exclusively 4, breast milk and cow's milk 3, breast milk and fruit, etc., 4. Milk was found to be used in considerable quantities by 29 cases, in small amounts by 26, while 3 cases used no milk at all. Nineteen families produced their own milk and there were 22 milkmen serving 36 families, while the milk for the remainder of the cases was bought from various sources. None of the infants under one year of age were fed upon breast milk alone.

UNUSUAL DIET.

It was not found possible to get a more detailed history of the diet than is given above, except that in 6 cases it was especially mentioned that fruit and berries had been a very large item of diet. In the 2 infants, five and eight months old, bananas and berries were given as the diet in addition to breast milk. In 1 case the illness was attributed to eating heartily of English mulberries and in 3 cases to the eating of large amounts of blackberries and blueberries. In 39 instances it was stated that food supplies were bought from peddlers, and it was found that these carts frequently served the town and country districts in their localities.

PRECEDING ILLNESS.

Practically all the cases had been in good health previous to this attack. One child was in very feeble health, 5 were in a more or less run-down condition and 63 were in their usual condition or good health. (One had recovered two months before from a slight attack of scarlet fever.)

CONDITIONS IMMEDIATELY PRECEDING ONSET.

Traumatism. — There were 3 cases of traumatism as follows:

Fall from bicycle three weeks before illness.
Fall from piazza four weeks before illness.
Burn of arm and chest three weeks before illness.

There were no special symptoms subsequent to the two falls, and the burn was healing properly when infantile paralysis developed.

Over-heating. — Five cases gave a history of possible over-heating within a day or two of the onset of the disease.

Fatigue. — Four cases were noted as suffering from marked fatigue within a day or two of this illness. One was a child of seven who had been carrying bricks up a ladder the day before he was taken ill, another was a young man of eighteen who was a noted athlete, a third had been lifting very heavy weights and a fourth was tired out with school work.

Swimming. — Five cases had been in swimming in the streams nearby and 6 cases, among children, had been playing in the brooks, ponds, etc.

One child had a severe cold just before the symptoms of this disease appeared. It was noted in 1 case in a young man nineteen years old that he had been extremely nervous and very much worried for fear he would develop this disease, as he had recently attended a funeral of a classmate who died from infantile paralysis.

ABORTIVE CASES.[1]

There were 6 cases reported which, on investigation, were found to have the same acute symptoms as the other cases, but to a less degree, and no paralysis occurred. The history of these cases seemed to eliminate the possibility of their being simple gastro-intestinal disturbances; and while the diagnosis of infantile paralysis cannot be proven, the history of the cases seemed to warrant their being considered as abortive cases of this disease. One case occurred in a family more than three weeks after the onset of a rather severe case in another brother. One case was coincident (doubtful history) with that of an older brother, while 4 cases occurred without known exposure.

SYMPTOMS ACCOMPANYING ATTACK.

Pain, more or less marked, 62 cases; pain, little or none, 7 cases; fever, 63 cases; constipation, 47 cases; diarrhea, 2 cases; nausea and vomiting, 43 cases; retraction of head, 35 cases; retention of urine, 23 cases; incontinence of urine, 1 case; brain symptoms, 13 cases; stiffness of neck, 6 cases; stiffness of spine, 7 cases.

ONSET.

The onset in 65 cases was sudden and in 4 cases it was delayed, extending over several days.

COMPLICATING SYMPTOMS.

In one case a marked urticaria was an initial symptom; in 2 cases intense pain in the stomach was noted, also as an initial symptom; in 5 cases a complicating tonsillitis was present; in 1 case a severe nose bleed took place; an extremely offensive breath was noted once; double vision occurred once, as did also marked disturbance of speech. The early symptoms in 1 case were thought to be due to swollen glands, which had been present for a year, and in another case to a rheumatic condition. In 2 cases stumbling of the child while walking and playing was one of the first symptoms noted.

DIAGNOSES MADE.

In 1 case no diagnosis whatever was made; in 2 cases a diagnosis of typhoid fever was made and the following diagnoses of single cases: Digestive disturbance, heat stroke, cerebrospinal meningitis, rheumatism.

RECOVERY.

Excluding the 6 abortive cases, 58 cases were examined in this regard about nine months after the illness. Six cases appeared to have completely recovered from the paralysis. Six others appeared to have recovered, but of these 5 were infants and could not be satisfactorily examined, while the other was sick at the time of examination. These 6 cases were classed as apparent recovery. Forty-two cases had partially recovered from paralysis, while 4 cases had shown but very slight improvement since the attack.

DEATHS.

There were 5 fatal cases, 1 of which made a partial recovery and died two months later of bronchopneumonia. The length of the illness in days was as follows: Female eight months, sixty-five (broncho-pneumonia); male three years, six; female four years, four; female fifteen years, five; male nineteen years, six.

AGE AND SEX.

Forty-two were males and 27 were females. This epidemic was characterized by the number of cases in middle and late childhood and young adult life. It will be noticed that there were 6 cases over seventeen years of age all in males. The following table shows the age and sex of each case:

	Male.	Female.	Totals.
Under 1 year,	2	5	7
1 year,	1	4	5
2 years,	5	4	9
3 ,,	7	1	8
4 ,,	5	3	8
5 ,,	0	2	2

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[1] This type of the disease is recognized and described by Wickman.

	Male.	Female.	Totals.
6 years,	2	1	3
7 ,,	5	1	6
8 ,,	2	0	2
9 ,,	1	1	2
10 ,,	1	1	2
12 ,,	1	0	1
13 ,,	1	0	1
14 ,,	2	0	2
15 ,,	0	2	2
16 ,,	0	1	1
17 ,,	0	1	1
18 ,,	1	0	1
19 ,,	2	0	2
20 ,,	1	0	1
21 ,,	1	0	1
22 ,,	1	0	1
25 ,,	1	0	1
Totals,	42	27	69

SCHOOL.

As the outbreak occurred in July and August, there were no results that could be attributed to school influences and but 3 of the children attended school.

LOCAL CONDITIONS.

Investigation of the home conditions of each case shows that sanitary conditions were found to be excellent in 4 cases, good in 17, fair in 31 and bad in 17.

Forty-one of the cases lived in detached houses, 17 in two-tenement and 3 in three-tenement houses, while but 8 lived in houses having four or more tenements.

The elevation of the dwelling was noted as high in 28 cases, as medium in 22 and low in 19.

Forty-two of the houses were considered to be dry, while 27 were noted as being in a more or less damp location. There were cellars in all of the houses, 42 of which were dry and 23 were damp, while 4 were found to be very damp or wet.

The water supply was given as spring water in 53, as the town supply in 14 and from wells in but 2 cases.

The sanitary arrangements in the houses showed that 23 houses had water closets connected with the sewer and 46 had earth closets; that the sink water from 30 houses was carried into the sewer and in 39 cases it was disposed of in various ways on the land nearby or in pipes to the nearest brook, pond, etc.

Screens were found to be used in 65 cases and not used in but 4 cases. Inquiry into the question of flies and mosquitoes showed that flies were said to be numerous in 28 instances, few in 39 and not present in 2; that mosquitoes were said to be numerous in 22 instances, few in 45 and not present in 2. No history of insect bites at the time of illness was obtained.

SUMMARY.

We are dealing with groups of cases of an acute disease attacking children chiefly, but youth and adults frequently up to the age of twenty-five years, among the inhabitants of river valleys in sparsely-settled communities, occurring during the summer months of a hot, dry season. The persons attacked lived chiefly in detached houses and but eight lived in houses or blocks of more than three tenements. Although the cause of the disease is not known, it can undoubtedly be classed as infectious, as its distribution and incidence in localities are similar to those of other infectious diseases and strongly suggest a common cause.

Ninety per cent of the persons attacked were in good health, and while a few instances of traumatism, over-heating, fatigue and swimming were noted previous to the onset, the history of these cases does not seem to warrant the placing of much etiological responsibility upon these occurrences. They were not different from what might be found in the history of almost any groups of persons at this season.

With regard to the contagiousness of the disease, the investigation of this group of cases suggests that the disease is but mildly contagious to say the most. A large number of children were in intimate contact with those that were sick, and of these children an insignificant minority developed the disease. Although the group of cases investigated is a small one from which to draw generalizations, it must be remembered that the circumstances were particularly favorable to the investigation of points of contact between sick and well and of the detection of contagion.

The sanitary conditions under which most of the cases lived were not good. Dampness prevailed in many locations and most of the houses were very near water, but it must be remembered that the outbreak was in the valleys. Most of the houses had no sewer connection.

The marked digestive disturbances, which were early and notable symptoms, suggest the stomach as the port of entry for the infection. It does not seem possible in this outbreak to blame the varied sources of milk or water supply as a carrier of the infection, unless it be considered that the cause of the disease may be present in all milk or in all water. That the cause may be connected with the food seems possible. It is important to note that none of the seven infants under one year of age were fed exclusively upon breast milk.

The fact that all the cases living on the hill farms had been in the valley towns recently where infection may have occurred and that many families purchased some of their food supplies from peddlers' carts which act as the go-between between the town and the country, may be noteworthy.

It is not known what influences the dry season with its low water and the proximity of many of the houses to water contribute, but these facts appear to be significant.

CONCLUSIONS.

From an intimate acquaintance with all the facts and conditions of this outbreak we conclude that

1. Infantile paralyis is a disease produced by some external agent; that is, it is an infectious disease.
2. That it is mildly contagious at the most.

3. That the harmful agent appears to enter the digestive tract in most instances.
4. But that until the organism causing the disease is known, it would be impossible to say whether the infection is carried directly to the patient or by means of food.

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Massachusetts General Hospital.

CLINICAL MEETING OF THE MEDICAL BOARD, MAY 14, 1909.

TREATMENT OF FRACTURES WITH DELAYED UNION.

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Correct callus formation and bony union depend upon the co-operation of several factors: stimulation, nutrition, nervous influences, vital energy, etc.

The stimulation is produced by the original trauma, the extravasated blood, the contact of the fragments, and in later stages by the function of the limb. The stimulating action of the trauma does not need any explanation. Extravasated blood acts as a stimulant.

"In every case in which there is a fresh extravasation of blood, one sees the signs and symptoms of a slight inflammation. The affected part is painful, edematous and many times the patient has fever and feeling of heat in the part, at times also the patient has albuminuria.

"These phenomena, which are but the manifestations of the reaction of the body to the extravasation of blood, seldom fail, and are especially marked when, instead of the patient's own blood, that of another person is injected. The most intense reaction is called forth by the injection of the blood of animals." (Schmieden.)[1] Among the various components of the blood, the fibrin is to be considered to play an especially important rôle in this line. Bergel[2] found proliferation of connective tissue after injecting fibrin in the subcutaneous tissue and in the peritoneum of dogs, in the latter place only when a slight lesion of the peritoneum was produced previously. He calls the fibrin an important and powerful protective and curative agent within the body, and states that it causes leucotaxis and hyperemia, that it favors the proliferation of granulation and connective tissue and stops the growth of bacteria.

In compound fractures, whether caused by accident or artificially produced, sometimes considerable delay of bony union results. This fact is explained by the loss of hematoma occurring often in such cases. Koenig,[3] therefore, who recommends the reduction of fragments by open incision, advises against washing out the blood clots in so far as they do not interfere with the contact of the fragments. Esmarch's constriction has in bone operation the special advantage that, after loosening the rubber bandage, considerable hemorrhage takes place within the tissues.

The contact of the fragments is not absolutely necessary for the union, as we can see especially in the fractures of the thigh, where, in spite of great deformity, the bones may be united by a large bridge of callus. Such cases are exceptional, however. Generally the contact of the fragments favors the callus formation. Insufficient contact, as for instance the over-riding displacement, or as occasionally seen in spiral fractures of long bones, is often followed by pseudarthrosis.

On the other hand, in cases where contact is present, the pressure of the fragments produced by the contraction of the muscles may be so great as to interfere with the nutrition.

Bardenheuer[4] calls special attention to this fact. He has among 10,000 simple fractures never seen any pseudarthrosis, except in fractures of the femoral neck, and claims as a reason for this result, the regulation of the pressure of the fragments by his extension method.

In the fixation method the function of the limb is not made use of to stimulate callus formation. More modern treatment, however, as the extension method and the treatment by massage and early motion, as inaugurated by Lucas Championnière,[5] make reasonable use of the function of the broken limb, not only in order to restore the function, but also to hasten bony union.

As a rule, the nutrition in fractures is well provided for with a few exceptions, as for instance in the fracture of the femoral neck. Furthermore, the circulatory disturbances usually accompanying fractures are supposed to have a beneficial influence upon the nutrition. The extravasated blood is not only a stimulating agent, but furnishes also nutritious material for the callus formation.

A few words need be said about the importance of vital energy and nervous influences upon the union of fractures. Lack of vital energy is the chief cause of delay of bony union or pseudarthrosis in cases of cachexia, senile marasmus, diabetes, chronic alcoholism, etc. In some nervous diseases, such as tabes and syringomyelia, pseudarthrosis or delayed union is often seen. Moreover, experiments of Biagi[6] have shown that cutting of the sciatic nerve results in pseudarthrosis in fractures of the tibia of rabbits.

In the treatment of fractures we have to keep in mind these various points in order to avoid delayed union. It is not our intention, however, to discuss these interesting matters here in detail, but only so far as they are important for our special subject. We may pass over such indications as are found in the fractures of patients suffering from diabetes or syphilis, nor is it necessary to speak about the importance of general tonic treatment in anemic and marantic persons. Let us here only briefly consider the methods applied to delayed bony union in the fractures of otherwise healthy individuals with special reference to the mechanical stimulation.

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[1] V. Schmieden: Jour. Am. Med. Asso., 1907, 49, p. 395.

[2] Bergel: Deut. Med. Wochenschrift, April, 1909.

[3] Koenig: Langenbeck's Archiv für Klinische Chirugie, vol. lxxvi.

[4] Bardenheuer und Graessner: Die Technik der Extensionsverbände. Stuttgart, 1909, iv edition.

[5] Lucas Championnière: XIII international med. congress, Paris, 1900. Rev. Centralbl. für Chir., 1900, p. 1302.

[6] M. Biagi: Policlinico, 1905, p. 8. Rev. Centralbl. für Chir., 1907, p. 1243.

The operative method is chiefly indicated when the retardation is due to the interposition or displacement of fragments. However, in such cases simple replacement and suture of the parts is often not sufficient. In three of our cases fixation was not obtained two to three months after the operation. It may be therefore advisable to apply greater stimulation by nailing the fragments or by implantation of foreign bodies like ivory pegs or pieces of bone with their periosteum. Strict asepsis is necessary in such cases, as any infection may interfere with the callus formation. I wish to report two cases of pseudarthrosis of the humerus which were operated upon a considerable time after the fractures. The fragments were freshened and sutured with silver wire. Slight infection took place, and little pus was discharged from a sinus. The fragments remained movable for several months. Finally by a new incision the wires were removed and bony union was then obtained in a remarkably short time. The explanation in such cases is not quite certain. It is possible that the tryptic ferments, contained in the leucocytes of the pus, interfere with the regenerative processes going on in the formation of callus.

The non-operative methods try to increase the stimulation and nutrition of the tissues the normal metabolism of which is disturbed. The methods applied for the accomplishment of this are mechanical, chemical, thermic, electric and biological stimulation, passive hyperemia, the introduction of thyroid extract into the general circulation, etc.

Stimulation is applied externally by the use of tincture of iodine or by the vesication of the skin; even eschars have been produced on the surface of the skin by caustic potassium and the red-hot iron. Electric current and electro-puncture have been applied with success in some cases. Injections of alcohol, oil of turpentine, tincture of iodine, zinc chloride or lactic acid to the point of fracture have also been made.

Bier[7] at first recommended the injection of blood, freshly drawn from the vein of the patient. There have been published a number of cases of delayed union and even of pseudarthrosis of long standing which have been healed in a remarkably short time by this method. Bier's passive or obstructive hyperemia has been used for hastening the bony union. Recently, Bum,[8] and Hilgenreiner[9] have studied this question. The latter author recommends different forms of passive hyperemia in the different stages of the repair. In cases of slow or delayed union he recommends an obstruction of long duration, twelve or more hours daily, which will result in a slight edematous swelling. It seems doubtful to us whether such method is advisable in cases which often have edema and poor circulation, as did most of our cases. We used Bier's congestion in some cases, but only for one hour daily and in connection with mechanical stimulation. Whether it has had any additional effect has not been proven in our experience.

Non-operative mechanical stimulations have been used in different forms. Rubbing of the fragments against each other, striking with a small hammer and some kinds of massage have yielded good results. Walking with the injured leg in a plaster of Paris cast produces mechanical stimulation in cases of fracture of the lower extremity.

The method used in our cases consists in a firm, slightly-vibratory pressure with the fingers on the point of fracture. The aim is to stimulate the callus with as little movement of the fragments as possible. Rubbing the ends of the bones once together to produce laceration and hemorrhage within the callus is quite different from making frequent unnecessary manipulations, which tear the newly-formed tissue of delicate capillaries and bony spicules, thus preventing bony union.

Therefore we have constructed special plaster casts, from which the limb can be removed without shaking or pulling the fragments. For the same reasons we have strictly avoided all unnecessary trials to flex the fragments and have not examined the limb until we felt certain that considerable progress had been made.

X-ray plates were taken in the beginning of the treatment and later on every two or three weeks. In every case there was no distinct change to be seen in the first control-picture, but in the second, four to five weeks after the beginning of the treatment, such change was evident. The shadow of the calcified part of the callus was more dense than in the first picture, and there was calcification on places where there had previously been none. In later stages, increase of the calcification was found in most pictures.

These changes in the x-ray pictures take place while clinically the callus becomes smaller, but firmer and more compact. It must be added, however, that the x-ray examination does not show, or at least only to a limited extent, the bony union which was evident in the clinical examination. This was especially true in Case III where we still found a distinct space between the fragments at the time when no elasticity was felt manually. This point has a special medico-legal interest. It is at times not possible from an old x-ray picture to state later on whether or not complete union was obtained clinically at the time the picture was taken. The changes seen in the x-ray pictures are quite distinct on the negative plates, but the prints do not show them plainly enough. We therefore have not made any reproductions, because they would not give the right idea of the real changes.

We have combined the mechanical stimulations with massage and passive movements in the joints in order to improve the function of the broken limbs which were in all cases completely useless. This combination is the great advantage of this method as compared with others which require fixation, as for instance, the operative methods. While moving the joints, care was taken not to shake the fragments themselves, and for this reason active movements were avoided the first time. The result of this combined treatment was that most of the patients were able to work in a short time after union of the fragments was obtained.

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[7] Bier: Medizinische Klinik, 1905, 1, 2.

[8] Bum: Centralblatt für Chirurgie, 1901, p. 1153.

[9] Hilgenreiner: Brun's Beiträge zur Klinischen Chirurgie, vol. liv, p. 531.

Case I. Nineteen-year-old healthy boy with simple fracture of both bones of the forearm. After fourteen weeks' treatment with fixation, the ulna was slightly, the radius markedly flexible. The forearm was somewhat edematous, its muscles were very atrophic and wrist and fingers much limited in motion. Then he was treated with mechanical stimulation, massage and passive movements; in four weeks the bones were completely fixed, while the restoration of function needed further treatment for two months. X-ray pictures of this patient were not taken.

Case II. Twenty-seven-year-old healthy man came into the hospital Aug. 18, 1908, with a fresh compound fracture of both bones of the left forearm. Open cleaning of the wound and replacement of the bones were done immediately. In the first weeks there was much discharge from the wound, and the fragments of the radius slipped out of place again and freshening and suture were performed November 9 by a new operation. Jan. 2, 1909, the fragments of the radius showed still marked flexibility, while the ulna was only slightly elastic. The arm was completely useless and hardly any motion possible in the forearm, wrist and fingers. Then by daily stimulating treatment the fragments were united within seven to eight weeks, and in the same time wrist and fingers became readily movable; only supination and pronation were still much limited. Patient began to work in April, 1909. By the last examination in May there was found nearly perfect function of wrist and fingers and marked improvement of supination and pronation.

The first x-ray picture showed very little callus. On the control pictures four and seven weeks afterwards, the shadow of the callus became more dense and new bony structure was seen.

Case III. Fifteen-year-old healthy boy with compound fracture of the lower end of the radii of both arms. He was operated upon in the hospital a few hours after the accident, September, 1909. The right arm healed normally, while suppuration took place in the left. An abscess of the left wrist was opened November 27, and some sequestra removed. The edges of the fragments were curretted. On January 6, fourteen weeks after the fracture, the fragments of the left radius were still completely flexible, the hand and fingers almost entirely useless. Stimulating treatment and massage was applied only ten times until March 25, when the bony union was perfect and the function very much improved.

The x-ray pictures showed in this case very little bony structure of the callus, and even at the time, when clinically the union was perfect, a distinct separation could be seen on the x-ray picture.

Case IV. Man of forty-eight years. Hard drinker. He sustained a compound fracture of both bones of the left forearm, the fragments were wired on the following day and the wound healed by granulation. January 6, fourteen weeks after the accident, both bones were markedly flexible, and the function of arm and hand was completely restricted. Stimulating treatment, massage and passive movements were applied daily. Within about eight weeks almost complete bony union was obtained, but then he loosened up the fragments again, probably by an accident when he had been drinking. The pictures showed slight but distinct growth of the bony callus.

Case V. A fifty-one-year-old healthy man with simple fracture of both bones of the forearm, November 16. Ten weeks later, on January 29, the bones showed no union, the fingers were almost completely stiff, also the wrist and forearm. By daily stimulating treatment, bony union was obtained within six to seven weeks, and at the end of April the patient was able to resume work with satisfactory function of his hand. The x-ray pictures showed marked increase of new-formed callus. The possition of the bone was improved to some extent as seen on the x-ray picture and clinically.

Case VI. Thirty-two-year-old healthy man, with compound comminutive fracture of the lower one third of the radius on Sept. 13, 1908. Slight infection took place in the second week, lasting for a short time. Jan. 28, 1909, the fragments were still very flexible, and the fingers much limited in flexion. Stimulating treatment was applied twenty-three times until March 12, when perfect union and satisfactory function were obtained. The x-ray pictures showed very little change of the callus.

Case VII. Thirty-seven-year-old man in good health. He sustained a simple fracture of the radius Aug. 30, 1908. He came to the hospital Jan. 21, 1909; then the fragments showed over-riding displacement, moderate callus, but no union. Therefore an operation was done; the periosteum was freed from the callus, a small piece excised, the deformity corrected by completing the fracture, holes were bored in the ends of the bone, and the fragments sutured with catgut. All bleeding points were carefully tied and the wound closed. On February 23 the fragments were slightly flexible. The active function of the hand was hindered by paresis of the musculus extensor communis and pollicis longus. Massage and functional treatment was given to the arm for three weeks, but at this time, whether by the treatment or by an accident we do not know, the fragments were loosened again and slipped partly out of place. Complete fixation for two and one half weeks did not make any improvement. Then stimulating treatment was daily applied while the patient was wearing a removable right-angle splint. Within four weeks the union was almost perfect and the function slightly improved.

The x-ray pictures showed distinct growth of the bony structures while the patient was under treatment.

Case VIII. Man forty-four years of age, in good health, with fracture of both bones of the right leg. Eleven weeks after the accident the fragments still showed slight elasticity of the callus. The leg was much swollen, the motion in the foot limited, and marked peroneal spasm was present. Complete union and satisfactory function was obtained within four to five weeks by stimulating and functional treatment.

Case IX. A thirty-four-year-old healthy man with fracture of the ground phalanx of the second finger of the left hand, on Dec. 10, 1908. The bones were reset on February 3 by an open incision. On March 27 there was still a slight elasticity of the fragments, and the finger was quite stiff. Stimulating treatment was applied, and after three weeks no elasticity was felt and the finger became more flexible.

In conclusion, I wish to emphasize the simplicity and efficiency of the methods here described in treating a class of cases, often so obstinate under ordinary treatment. Moreover, greater routine use of functional and stimulating methods would be of great prophylactic value in those cases as well as of great advantage in all fractures.

ON MAGNESIUM POISONING.

BY WILLIAM F. BOOS, M.D., PH.D., BOSTON.

Magnesium poisoning is probably more frequent than is generally supposed, the true cause of the toxic condition remaining unknown in most cases. Two of the three cases which the author had the opportunity to study were brought to his notice merely through the high specific gravity of the urine. In one case the specific gravity of the specimen obtained was 1070, and in the other 1080. These two cases recovered, while the third case ended fatally. Fraser [1] reports a case of his own and discusses six others which he found in the literature. Five of these six cases ended fatally. In the author's three cases the intoxication was undoubtedly caused by the absorption of large quantities of magnesium sulphate from the gastro-intestinal tract.

The author has made a careful study of the ten cases now available and in additian has carried out certain experimental work on the conditions which govern the absorption of Epsom salt solutions. He finds that in the absence of hydremia, the tendencey of magnesium sulphate to be absorbed increases with the concentration of the solution, the dry salt being completely absorbed without action on the bowels. This fact was shown by Hay [2] to be true also of Glauber salt.

In hydremic conditions, however, the salt, even when it is given in very concentrated solution, is not absorbed. It appears, therefore, that the practice of giving very concentrated solutions of magnesium sulphate to deplete the system of excessive water is rational but perhaps not without possible danger.

In the absence of edema or ascites, the object of giving magnesium sulphate can be none other than to produce efficient catharsis. To attain this object without incurring the danger of intoxication from absorption, the salt is best given in solutions not exceeding 6% in concentration. Above this concentration more or less magnesium sulphate is absorbed and is lost to catharsis, while its presence in the circulation is a menace to the patient's life.

In the wards of the Massachusetts General Hospital the patients are now given ½ oz. of Epsom salt dissolved in 3 oz. of water, to be followed immediately by a glass of water (6 oz.); this represents approximately a 6% solution.

A description and discussion of the cases of poisoning now known, as well as the detailed results of the author's investigations on Epsom salt absorption, will be published in a longer paper.

A CASE OF OBSCURE RENAL BLEEDING.

BY LINCOLN DAVIS, M.D., BOSTON.

J. N. W. Thirty-six years old, a carriage painter. Entered Massachusetts General Hospital, service of Dr. Cutler, in May, 1907, with severe painless hematuria of one week's duration, coming on without apparent cause. Previous health rugged. One attack of gonorrhea ten years ago.

I was asked to make a cystoscopic examination, which I did immediately after the voiding of claret-colored urine. The bladder washed perfectly clear, and appeared absolutely normal. No source of hemorrhage was found. The bleeding stopped from that moment, except for rare blood corpuscles found microscopically. The patient left the hospital with instructions to return if the bleeding recurred.

On Jan. 17, 1909, he re-entered on the service of Dr. Shattuck, with the history that he had been free from all symptoms until three weeks previously, when the bleeding suddenly recurred, at the time that he had a severe cold, and had persisted since.

Cystoscopy at this time showed a bloody stream issuing with great force from the right ureteral orifice; from the left, the efflux was clear. The right kidney was palpable, but not appreciably enlarged or tender. x-ray plates were negative. Skin tuberculin test positive. The urine continued very bloody; the test for lead was negative. Blood pressure ranged from 150 to 130 mm. of mercury. On Jan. 25 a solution of adrenalin was injected into the right ureter through a ureteral catheter (it is somewhat problematical how much adrenalin solution reached the kidney pelvis). The urine cleared up for a short time and then became as bloody as before. On Jan. 27 he was discharged to the Out-Patient Department still bleeding, having gained four pounds in weight during his stay in the hospital.

In the Out-Patient Department he was followed for a month, the urine being more or less bloody all the time. There were no other symptoms and the general health was excellent. Ergot and calcium lactate were without effect. The eye fundi were examined and found negative. On March 2 the right ureter was again catheterized, and the catheter advanced into the renal pelvis, which was determined by the change of urinary flow from being intermittent to continuous. The kidney pelvis was filled twice with ʒ II of adrenalin solution 1.5000. This caused considerable pain at the time, and was followed by quite severe pain during the following night and the passage of clots. On the next morning the urine cleared absolutely, and has remained normal since. Repeated examinations have failed to show blood corpuscles, leucocytes or casts.

This case is reported as another instance of the vagaries of obscure renal bleeding, of which the literature already contains many. It also illustrates the value in selected cases of the injection of adrenalin solution, first advocated, I believe, by Dr. H. H. Young. This method is applicable only when such sources of bleeding as stone, tuberculosis and new growth of the kidney can be reasonably excluded. It is fair to assume in this case, I believe, that the cause of the bleeding may be an angiomatous condition of the renal papillæ, a condition reported by Mr. Fenwick in England, and recently demonstrated in this hospital by Drs. W. F. Whitney and H. Cabot.

HAND DISINFECTION.

BY P. W. HARRISON, M.D., BOSTON.

The work here reported was an effort to ascertain the best method of disinfecting the hands between ward dressings. The procedure was simple. A liberal amount of a culture of bacillus prodigeosus was placed on the hands, which were then vigorously scrubbed. At intervals, a wad of sterile gauze was rubbed over the hands and dropped entire into a bouillon tube. These tubes were taken at once to the laboratory, mixed, gauze wad and all, with agar, previously melted and cooled. The cultures were kept for three days or longer at room temperature. Among the numerous colonies of tapwater bacteria, the red colonies of bacillus prodigeosus show beautifully.

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[1] Lancet, April 24, 1909.

[2] Hay: An experimental investigation of the physiological action of saline cathartics, Edinburgh, 1884, also J. of Anat. and Physiol., vol. xvi, xvii, 1883, 1884.

The first series of cultures were made with bare hands, scrubbing in running water.

Culture after 15 seconds scrubbing in running water: Many red colonies.
Culture after 30 seconds scrubbing in running water: Many red colonies.
Culture after 1 minute scrubbing in running water: Moderate number red colonies.
Culture after 2 minutes scrubbing in running water: Few red colonies.
Culture after 4 minutes scrubbing in running water: No red colonies.

To make the matter more precise, two further experiments were done, with cultures taken at intervals of fifteen seconds. The red colonies became few and scattering after from one and a half to two-minute scrubbing. Occasionally colonies persisted up to four minutes, and in one case up to four and one quarter minutes. Apparently, then, four minutes' scrubbing in running water will render the bare hands very nearly clean, from the surgical standpoint.

The second series of experiments was made wearing rubber gloves. Running water was used in one part of these experiments. In a second series the hands were scrubbed in still water, changed every fifteen seconds, at which intervals the cultures were taken.

Technic as stated above. Unpatched rubber gloves. Still water changed every fifteen seconds.

15 sec.	Many colonies.	1.15 min.	4–5 colonies.
30 ,,	Few colonies.	1.30 ,,	No red colonies.
45 ,,	Very few colonies.	1.45 ,,	One colony.
1 min.	4–5 colonies.	2 ,,	No red colonies.

This same experiment was repeated with carefully patched gloves, with practically the same results.

In a further series of experiments with the gloves, running water was used. Technic as above. Cultures every fifteen seconds.

Cultures after scrubbing in running water 15 seconds: No red colonies.
Cultures after scrubbing in running water 30 seconds: No red colonies.
Cultures after scrubbing in running water 45 seconds: No red colonies.
Cultures after scrubbing in running water 1 minute: No red colonies.

The culture of bacillus prodigeosus used for this experiment was tested on the same media used in the experiment, and found to grow vigorously. Evidently vigorous scrubbing for fifteen seconds in running water was sufficient to remove all of the bacteria in question from the gloves. The same experiment with gloves patched gave identical results.

The same experiment was repeated on rubber gloves having a pebbled surface instead of the usual dead smooth finish. Results as follows:

Cultures after scrubbing in running water 15 seconds: Many red colonies.
Cultures after scrubbing in running water 30 seconds: No red colonies.
Cultures after scrubbing in running water 45 seconds: No red colonies.
Cultures after scrubbing in running water 1 minute: No red colonies.

Evidently it is somewhat more difficult to remove bacteria from such a surface than from the usual smooth rubber glove.

It would seem from this that in passing from one surgical dressing to another, the transferring of infectious material can be avoided without great difficulty. If rubber gloves are worn and the hands scrubbed in running water for a short time before each dressing, the patient's safety would seem to be satisfactorily ensured.

CARCINOMA OF THE TONGUE.

BY C. L. SCUDDER, M.D., BOSTON.

Dr. Scudder showed two patients.

Patient No. 1 was a man sixty years old who had had the tongue removed together with a dissection of the neck as low as the clavicle. Patient No. 2 had had the neck dissected as low as the clavicle as a preliminary to the removal of the tongue. In each of these cases the carcinoma was localized superficially in the anterior lateral third of the tongue. There were no palpable glands in the neck.

I wish to emphasize the importance of a two-stage operation in these cases of carcinoma of the tongue. I prefer to operate upon the neck first and to remove the tongue by a division of the jaw as a second step.

These cases will be followed with interest because it is rather unusual to see in this clinic such early instances of carcinoma of the tongue.

ANKYLOSIS OF JAW.

BY DR. S. J. MIXTER, M.D., BOSTON.

The patient, W. L., a twelve-year-old boy, had had complete ankylosis of both articular condyles of the jaw for seven years following either trauma, meningitis or inflammation. On April 29, 1909, the condyles were removed and a portion of both rami through small incisions just in front of the ears. The patient was at once able to move his jaw and without pain. There was fully an inch of separation between the teeth.

A CASE OF INFANTILISM.

BY JAMES MARSH JACKSON, M.D., BOSTON.

A case of infantilism in a young man seventeen years old was shown whose height was only three and a half feet and whose weight only forty-two pounds. Mental development was good and there was no history of thyroid diseases in the family. His parents were intelligent people and, as far as could be learned, he was a perfectly normal baby and it was not until he was five years old that it was noticed he was not growing as he should. Thyroid treatment has been without effect.

Medical Progress.

PROGRESS IN SURGERY.

BY JOHN B. HARTWELL, M.D., BOSTON.

TRANSFUSION IN HEMORRHAGE.

During the past two years the attention of the surgical world has been re-engaged in the subject of blood transfusion. The most brilliant results from this rejuvenated therapeutic measure have been in the treatment of uncomplicated acute hemorrhage, though remarkable benefit has followed its use in a few cases of chronic suppuration and in the prevention of shock.

To Crile and his associates is due the credit of simplifying and perfecting the technic of the operation of transfusion and for defining the indications for its most successful use. The idea of transfusion is far from being original with them. The idea is old; it is very old. The ancient Greeks and Romans knew of it, and the more ancient Egyptians practiced the operation. The first authentic description dates back to 1492, when on each of three occasions a boy exchanged his young blood for that of the failing Innocent VIII. Incidentally, the experiment was a costly one, for the three boys died, and the old Pope was not benefited.

With Harvey's discovery of the circulation of the blood, renewed interest was taken in the subject of transfusion, and the therapeutic possibilities accorded to the operation were almost limitless. For example, in 1667, Denys successfully transfused lamb's blood into the veins of a young man who was comatose following a fever of long duration, and also of another man with intermittent insanity, while in the following year Mann claimed to have cured a young man of leprosy by the transfusion of lamb's blood. During the eighteenth and nineteenth centuries the topic of transfusion was a relatively live one, and was made the subject of much experimental investigation. Heated controversies arose as a result of this work; as to the relative advantages of human and animal blood, of whole blood and defibrinated blood; as to the merits of indirect and direct methods of transfusion, and finally as to the indications for the operation. The conclusion formulated is that whole human blood is the best medium for transfusion.

Clinically, the results of transfusion were uncertain, and in several instances fatalities occurred. Technical difficulties were partially responsible for the bad results. The blood clotted in the conducting mechanism, shutting off the flow, or clots entered the recipient's circulation. Sepsis was not at all uncommon. Symptomatically, chills, fever and hemoglobinuria of transitory or longer duration were not infrequent.

So great was this uncertainty of transfusion of blood that the introduction of saline infusions was sufficient to cause abandonment of the former operation. Salt solution is easy of preparation, easy of introduction into the circulation; its results seemed certain and its dangers minimal. But experience teaches that in severe hemorrhage the benefit derived from saline infusion is frequently of short duration, and investigation shows that the fluid does not remain in the vessels but rapidly passes into the tissues and cavities of the body, and is rapidly excreted. So once again a more effectual treatment is sought and this is found once more in the transfusion of blood.

The picture of the white-lipped, shrunken and anxious-faced, cold-skinned patient gasping for breath and almost pulseless is familiar to all who have had any experience in the accident room of any general hospital. And in marked contrast to this, every surgeon knows that a loss of a considerable quantity of blood may be borne by the patient without other objective manifestations.

The maintenance of normal circulation is dependent on the maintenance of a high arterial pressure. The factors concerned in such a maintenance are the force of the heart beat, the resistance of the peripheral vessels, the elasticity of the arteries and the amount of blood in the circulatory system. In any given case, a loss of fluid from the circulation will not alter the elasticity of the arteries, so the other three are the variable factors. The loss of moderate quantities of blood is compensated at once through the activity of the vasomotor center. The diminution in volume is made good by constriction of the arterioles and the normal pressure is thus maintained until fluid from the tissues makes the volume of the circulating fluid up to normal. So the vasomotor center is a very important factor, and, though acting by increasing the peripheral resistance, scarcely deserves to be relegated to a dependent position.

In excessive hemorrhage the "symptoms are due to diminution in the circulating blood and to the physiologic effects of the resulting anemia." [1] This anemia is most marked in its effects on the heart itself and on the central nervous system. The dyspnea observed after hemorrhage is but a manifestation of partial asphyxia of the respiratory center, and the rest of the central nervous system, including the vasomotor center, is similarly affected. The lowered blood pressure means less blood to the coronary arteries, and the heart muscle is thus deprived of its normal supply of blood and thereby asked to work overtime on cut rations. There are, then, two definite indications to be met in treating severe hemorrhage: the loss in volume of blood must be made good, and the asphyxia of the central nervous system and heart must be combatted. During the past decade the usual method of treatment has been to infuse into the veins physiological saline solution with or without adrenalin, to utilize the remaining corpuscular oxygen carriers to the greatest advantage by altering the posture of the patient and bandaging his extremities, to administer oxygen and to whip the underfed central nervous system and heart muscle into greater activity by the exhibition of stimulants, especially strychnine and digitalis. Such means are frequently effective and many lives have been saved by them, but Crile has shown that there are definite limitations to their successful employment in the severest cases — where hemorrhage has been excessive and considerable time has elapsed before treatment can be begun. In such cases the heart is extremely embarrassed, and increasing the volume of the circulating fluid is likely to increase this embarrassment if it does not actually cause an acute dilatation with accompanying collapse and death, while the exhibition of drugs, especially of digitalis, not only does not steady the heart, but actually further weakens its feeble action. As for the vasomotor center under these conditions, it is so far asphyxiated that it fails to respond, or responds at best but feebly and for a very short time. However, if blood be used, the anemia is relieved and the deadened functions recalled to activity to remain active. Recent animal experiments of Levin[2] have demonstrated the advantage of blood over salt solution.

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[1] Crile: Hemorrhage and Transfusion. D. Appleton & Co., 1909.

The chief difficulties in the performance of the operation of transfusion heretofore have been in the clogging of the conducting mechanism, and, secondarily, in sepsis. With the perfection of modern surgical technic the latter complication need hardly be considered, and Carrel has succeeded in overcoming the former difficulty. He finds that if the intima of two vessels is accurately approximated, clotting does not take place. In so doing, he makes use of sutures, a method which requires great refinement of technic to be successful. In order to simplify this technic, Crile devised his canula. This consists of a small and short hollow metal cylinder with a handle. The inner surface is smooth, while the outer surface presents two grooves. With this small instrument the anastomosis between artery and vein is made. Under ordinary circumstances experience teaches that the radial artery and one of the superficial veins of the arm near the elbow lend themselves best to the operation.

Under cocaine anesthesia the radial artery and the chosen superficial vein are exposed and freed from the surrounding tissues for a distance of one and a half to two inches. Several small branches are usually cut in so doing, and such should be caught and ligated and the wounds kept free from blood. The artery is then tied distally, and at the proximal end of the exposed vessel a "Crile" clamp applied — not so firmly as to endanger the integrity of the vessel wall, but merely tight enough to control the blood flow—and the artery cut squarely across near the ligature. The vein is similarly treated. The anastomosis is easier, if the adventitia of artery and vein be pulled over the cut end of the vessel and one-quarter inch cut squarely off. This coat then retracts and the ends with which the anastomosis is to be made are less thick. Everything is now ready for the canula. One of proper size is selected and the vein threaded through the inside of the cylinder and so folded over the edge that the intima of the vein now coats the outer surface of the canula, where it is held in place by a ligature. The artery is now slipped over the vein, which brings the intima of the two vessels in contact. The artery wall is likewise held in place by another ligature. The occluding clamp is first removed from the vein and then from the artery, when pulsation in the vein shows that the exchange of blood has begun. In making the anastomosis certain precautions are necessary: it is very essential that the long axis of the canula should accurately coincide with the long axis of the vessels. Otherwise the open end of the canula comes in contact with the wall of the vessel and stoppers the channel. A stream of hot salt solution should play over the anastomosis during the transfusion to prevent drying and subsequent shrinkage of the vessels, which would narrow the lumen, if it did not actually occlude the channel.

The amount of blood to be exchanged in any given case cannot be stated in terms of cubic centimeters or ounces, nor, could it be so stated, is it possible to directly measure the blood exchanged. It is a well-established experimental and clinical fact that in a given case of hemorrhage a much smaller quantity of blood than that lost suffices to restore the circulation to almost normal. Further, the donor of the blood must be considered as well as the recipient, and it is not right to endanger the life of the former in the effort to relieve or even save the life of the latter.

The donor, it is self evident, should be an individual in perfect health, and this point should be substantiated by a careful history and a thorough physical examination. The possibility of disease being transmitted from the recipient to the donor is very slight. An acceptable donor selected and the anastomosis made, both patients must be carefully observed. Blood, if passed too rapidy into the recipient's circulation, may, as was stated in the case of salt infusion, cause an acute cardiac dilatation. If all progresses favorably, the recipient's pulse-rate falls, the volume and tension increase, his breathing becomes slower, and there may even be a notable change in the color and appearance of his skin. Cyanosis, dyspnea, precordial pain or cough suggest cardiac distress, and every means must be taken to reduce the strain on his heart. The exchange of blood must be stopped, the patient's head elevated and regular massage of his heart through the chest wall begun. Such alarming symptoms may be of short duration, in which case more blood may be passed into the recipient's circulation, though the rate of flow must be controlled by pressure on the donor's artery. But if the alarming symptoms do not completely disappear, and disappear completely in a short time, the transfusion must be stopped for good, the patient put to bed with head elevated, nitro-glycerine given to insure dilatation of the superficial vessels, and, in very small doses, digitalin.

On the side of the donor, the most evident sign of blood loss will be the general appearance. The pulse-rate may not increase, though it generally does. Increasing respiration means stop the operation, for increase in the respiratory rate indicates beginning anemia of the respiratory center and of the central nervous system.

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[2] Ann. of Surg., March, 1909.

In addition to the danger to the recipient of acute cardiac dilatation is the danger that the plasma of the blood of the donor may be toxic and cause an hemolysis of the recipient's blood corpuscles. Hemolysis was a not infrequent phenomenon when animal blood was used as the transfusion medium. Of the cases transfused with human blood, two such accidents are known and one at least resulted fatally. Except in the traumatic cases, however, an emergency transfusion for acute hemorrhage is rarely necessary, and laboratory tests of the bloods of recipient and donor may be made and this accident thereby avoided. Should the donor's blood hemolyze that of the recipient, this donor should be rejected, but a reversed hemolysis has not the same significance.

From earliest days, the treatment of hemorrhage has been prophylactic. Prevention is better than cure. Before the use of ligatures the cautery was used. And in modern times surgery, in most instances, is relatively bloodless. But secondary hemorrhages do occur and hemophilia and jaundiced patients are as bad surgical risks to-day as at any earlier period, and hemorrhage is just as awful. It is in such cases which resist the usual methods of treatment that transfusion has shown its most brilliant results. In most such cases the bleeding has promptly stopped following transfusion. In some instances bleeding has recurred, to stop after a second transfusion.

One of the most striking results of the operation has been in the treatment of hemorrhage of the newborn, that dread disease of unknown etiology and fatal consequences. In one case reported, the bleeding had persisted for four days and death of the baby seemed certain when transfusion was done from father to infant. After the conclusion of the operation, not a drop more blood was lost and the baby was still well when the case was reported weeks later.

Since Crile introduced his canula, various modifications have been devised, though the principle in each case has been the same. The canula of Levin alone seems to possess any real advantage over the original of Crile. This instrument has the general shape of the ordinary hemostatic forcep, but the blades, instead of being serrated, are mounted each with a canula. The outer surface of each canula presents four longitudinal grooves into which fit, when the instrument is closed, four pin points set in the opposing edges of each canula. The artery is drawn through one canula and its walls held on the pin points. The vein is likewise treated by means of the other canula. The instrument is then closed and the intima of artery and intima of vein are brought in apposition, similar to the manner by which peritoneal surfaces of gut are apposed by closure of the Murphy button.

Hartwell, of New York,[3] reports forty-one instances in which a canula was used to make the anastomosis between artery and vein. Of the forty-one, twenty are called failures or partial successes, and of the twenty, there were twelve occasions on which no blood at all passed to the would-be recipient. This indicates that the operation of transfusion by canula is not a simple procedure, though the technic is far less complicated than by the suture method. Hartwell advocates direct invagination of the proximal end of the artery into the central end of the vein and holding the artery thus placed in position by sutures through the outer coats of the two vessels. This method of transfusion has been successfully used by its advocate in animal work and in one clinical transfusion.

Crile gives an account of thirty-nine transfusions for hemorrhage performed on thirty-seven patients, twenty-two done by him and seventeen done by other surgeons.

The following is a brief summary of the conditions for which resort was made to transfusion and the results of the operations.

Acute hemorrhage. — Transfusion to improve condition of patient sufficiently to warrant operation, 5; improvement and operation, 5; well, 5.

Typhoid hemorrhage, 13; improvement in general condition, 12; no improvement, 1; died, 7; well, 6.

Chronic hemorrhage from bowels, 6; improvement, 5; recurrence of hemorrhage, 2; well, 3.

Pathologic hemorrhage, 8; symptoms relieved, 7; hemolysis, 1; died, 2.

Secondary hemorrhage, 3; symptoms temporarily eliminated, 3; died, 3.

Post-partum hemorrhage, 1; well, 1.

Hemorrhage from stomach, 1; well, 1.

What conclusions may be drawn from these cases? Crile makes the following statement: "Transfusion furnishes the ideal treatment for acute uncomplicated hemorrhages when the source of the hemorrhage can be reached and controlled. In chronic hemorrhages from the bowels, of long duration, transfusion will not only replace the lost blood, but may prevent further hemorrhage and effect a cure after all other measures have failed. If it does not bring about a permanent cure, it usually gives a certain amount of relief. Certain cases of pathologic hemorrhage are cured."

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Reports of Societies.

NEW ENGLAND OTOLOGICAL AND LARYNGOLOGICAL SOCIETY.

Meeting, March 30, 1909, at the Boston City Hospital.

(Concluded from No. 3, p. 93.)

DISCUSSION.

Dr. Chenery: I have been interested very much, in the last three months, following out some experiments in the lactic acid bacilli put into the nose. The bacillus that I have used has been prepared in Tufts College laboratory by Dr. Merry. I have had the same effect as Dr. Goodale had with his cases. The class of cases that I have used it with have been atrophic rhinitis with crusts. We have tried to find out, if possible, the kind of bacilli present. I found the staphylococcus, the pneumococcus and occasionally the streptococcus, but in the main it was the staphylococcus.

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[3] Am. Jour. Surg., March, 1909.

First, the nose has been wiped out thoroughly of crusts, then we used the spray method, applying it at the dispensary every other day. This we followed out for some weeks without much result. Then we packed the nose with pledgets of cotton, leaving it packed in there from fifteen to twenty minutes. In this I got very little result. On the whole the results have not been satisfactory to me. I have not seen very much improvement in the class of atrophic rhinitis.

I have tried this in two or three sinus cases, one a sphenoidal, where I was able to spray the bacillus directly into the sinus, after cleaning it out first, and there has been no permanent result there. In all cases where the nose is thoroughly cleaned out they all say there is some improvement for a few days, but on the whole after following it up for 18 to 20 treatments the results have not been satisfactory to me.

Dr. Albert H. Miller read a paper on

ANESTHESIA FOR ADENOID AND TONSIL OPERATIONS.*

Dr. Chenery: I have been very interested lately in using the Fillebrown inhaler for adenoid cases. In about 100 cases it has worked very satisfactorily. The water bath is used, and a six-candle-power light, and we are able to keep the patient under it very nicely and do continuous work.

DISCUSSION.

Dr. Underhill: In this hospital there have been done in the last year, or in the last two or three years, a great many adenoid or tonsil or both operations. I fail to see the necessity for any such elaborate apparatus. It is our custom in this hospital — I speak now with the consent of the head of my department — to use a simple primary anesthesia, as that is all that is necessary with the time consumed. I do not know that any operation has been done on the back with the head extended, but it has been with the head strongly reflexed. I do not know of the side position having been used, and I believe we have no record of death in this hospital in the last fifteen years. I do not see any reason, though it may be the best way to do it, why we should use this method. If we did consume as much time as this method requires we could not possibly do the number of adenoid and tonsillar operations that are done in this hospital every year.

Dr. Richards: If it is a question of time I should omit the anesthesia altogether. If it is a question of what is best for the patient, let us give the anesthesia in the best way we can. I have been collecting information and have answers from all over the world. One of the gentlemen said (I will not give his name), where they could not afford to pay a good fee he did a very quick operation; if they could afford to pay a good fee, then he was more careful. That belittles medicine and surgery.

Dr. Miller: I intended to bring out in my paper the distinction between short and long operations. There are certainly very many surgeons who do not do short operations. And it seems to me that the majority of men throughout the country are favoring the long operation at the present day, and this method, I find, is suitable for those cases.

Dr. Underhill: So far as I know the Boston City Hospital has never had a death from the adenoid, tonsillar or adeno-tonsillar operations.

Dr. Charles R. C. Borden read a paper on

AURAL COMPLICATIONS IN THE EXANTHEMATA.†

Dr. McCollom: I am very much interested in Dr. Borden's paper, for I think he brought forward three very important points.

First, the great prevalence of ear disease in measles, a point that the general practitioner does not appreciate. The idea is that it is a mild disease, and it is in a good many cases, but in an adult it is a very serious matter. You will hardly believe it, but it is a fact, that in Glasgow, Edinburgh and London, more die from measles than from scarlet fever and diphtheria.

I was also interested in what Dr. Borden said about middle ear disease in diphtheria. Fifteen years ago, when nasal feeding was strongly advocated, — and I am perfectly willing to say that I was a very strong advocate for a while, — the number of cases was very much greater than since we have given it up. Another thing; formerly it was the custom to spray the nose and use a nasal douche. I gave it up several years ago because I found I was having altogether too many cases of middle ear disease following the use of the nasal douche in diphtheria.

Much had been said of the danger of doing mastoid operations in scarlet fever. I cannot remember just how many scarlet fever cases we have had in the South Department and we have not had a single death. I most strongly advocate the constant watching of the ear. A child may not have a local symptom, or any rise in temperature, and yet that ear may be bulging and rupture in twenty-four or forty-eight hours.

The diagnosis of middle ear disease in a child is not very easy. If a child is not seriously ill you can examine it, but if a child has a septic case of diphtheria it is very difficult to get a good look at the middle ear, and they eventually come to a mastoid operation.

There is one thing Dr. Borden did not allude to, and that is the persistence of bacillus of diphtheria in a child. The child seems to be perfectly well, with no discharge from the middle ear, and yet the length of time the bacillus will remain in the tube is surprising. It is a question what you can do. I do not know any treatment which causes the disappearance of these bacilli if they get into the antrum or the Eustachian tube. The perseverence of the presence of these bacilli is a great annoyance when they are quarantined at home, but much greater in the hospital. I am strongly of the opinion that the nasal douche should not be used in cases of diphtheria, and esophageal feeding should not be done. The child can take its food if given slowly by the nurse.

Dr. Leland: Marked emphasis should be made of the fact that aural complications in measles, scarlet fever and diphtheria (in that order) usually arise before we are aware of it, as mentioned by the reader, and therefore I would like to submit that if but one attendant is employed, the aurist is the best man to take care of exanthematous cases because aural complications are more far-reaching than almost any other which can come in these diseases. It has frequently obtained in the South Department if the ears were watched that we have been able to properly treat inflammations of the middle ear; but if they were not watched, then that complication was unobserved until fatal injury to the hearing had taken place. We all know that aural complications in childhood do not seem to be very important, at least to the laity, and I regret to add also to some physicians, but that the hearing becomes first impaired anywhere from five to forty years afterward. In the exanthemata is where we may have opportunity to stop that, and if the ears are watched and properly treated we are going to prevent deafness for the child in the future.

I want to emphasize it especially, therefore, here in this hospital, since I have been advocating for the last eight or ten years that an aural house officer should be established at the South Department. It should be his duty to examine every single ear every single day, and yet he cannot even then prevent all aural complications, for an ear looked at in the morning may light up during the day; but he would be able to prevent a good many which now slip by. I remember when Dr. Fuller was house officer, that a case was about ready to leave the hospital, and the first assistant said that the ears need not be examined as the case was going out that afternoon. I said, "It is your duty to examine the boy's ears as he is now in the hospital." His drumheads were found reddened and bulging. The consequent treatment saved the drumheads, and the boy stayed on a few days longer. That is one instance which showed the need of such an aural house officer, one who would look at the ears and would appreciate the changes taking place in them. It is not necessary that pain or a rise in temperature should be present, because these things happen even if the patient is unaware of it, except perhaps for a slight dullness of hearing which is usually unnoticed.

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* See previous number of this Journal, p. 87.

† See previous number of this Journal, p. 80.

Dr. Borden spoke of the necessity of posterior drainage. Now I contend (and this the use of the periosteal flap has taught me) that the mastoid process itself is the source of infection (of the exudate, serous, purulent, or whatever it may be), and hence if the mastoid process is obliterated we have no necessity for posterior drainage. The drum cavity is a very small cavity and only can contain a very few drops of fluid. The mastoid cavity, with all its ramifications, is a very large cavity. Dr. Blake once mentioned to me that the ordinary mucous membrane in the mastoid cavity would be sufficient in extent to cover the whole palm of the hand. One can imagine what an enormous amount of mucous secretion can come from such a wide area, as is sometimes brought home to us by an active coryza. Hence if we obliterate the whole mastoid cavity and shut off this source of infection from the middle ear, we shall not need posterior drainage, the middle ear itself draining sufficiently through the perforation in the drumhead, pathological or surgical. I must confess, however, that the infections of the exanthemata are as a rule so virulent, that I did not have much success with the flap at the South Department and so gave it up there, though my experience with it there was during my early experiments with its use. What I have just said, then, is in the line of the elucidation of general principles.

I have derived much pleasure and profit in hearing Dr. Borden's paper and I consider it a distinct contribution to the subject.

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Book Review.

Handbook for Attendants on the Insane. Fifth edition, revised and enlarged. Published by the authority of the Medico-Psychological Association. Pp. 390. Chicago: W. T. Keener & Co. 1909.

The object of this small handbook is to help attendants to an understanding of their work. To this end a considerable amount of anatomy, physiology and principles of nursing, with special reference to the mentally diseased, is given in succinct form. A new edition has been called for particularly because of the extension of the system of training and examination demanded in nursing the insane. The book contains much information in small space.

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REPORT OF CANCER LABORATORY, NEW YORK STATE DEPARTMENT OF HEALTH.

The eighth annual report of the Cancer Laboratory of the New York State Department of Health is not an imposing document regarded from the standpoint of length, but contains a number of papers which show the continued activity of this laboratory. The papers published in this report fall within the year 1907, and are fewer than usual because of the change in the period of publication of the annual report. The director of the laboratory, Dr. Harvey R. Gaylord, calls attention to the fact that the activity in cancer research is advancing and he is at least hopeful of definite results in the future.

In June, 1908, the New York State Cancer Laboratory, which was a pioneer in the study of cancer by laboratory methods in this country, completed its tenth year. It will be remembered that in the third report of the laboratory Dr. Gaylord and his associates definitely committed themselves to the parasitic theory in the belief that they had found a specific organism. In spite of much work during the intervening years, no conclusive proof of the parasitic nature of the supposed specific bodies has been forthcoming, and attention has rather been directed to the collection of evidence showing in a general way that cancer is an infectious disease.

In spite of much sporadic enthusiasm, this state laboratory for the special investigation of cancer has lived a somewhat precarious existence, largely because of the inconclusiveness of results which it was hoped might speedily be attained. In spite of discouragements inherent in such a department of research, the laboratory has grown and now has the exclusive use of a well-equipped building provided by public-spirited citizens of Buffalo. A plea is made for more liberal support by the legislature, which from the first has contributed a considerable amount toward the development of the work. The financial situation has been peculiarly difficult for those investigators who are dependent upon their salaries. The uncertainty of the continuance of the yearly appropriation has naturally had a demoralizing effect, which certainly should in some way be obviated. The sum of $25,000 is asked for the maintenance of the laboratory during the year succeeding that in which the report was written.

The situation at this laboratory is sufficiently characteristic to warrant a word of comment. Public education in scientific matters, as exemplified by a legislative body, is proverbially unwilling to grant money for purposes, the immediate practical results of which are not obvious. This spirit of conservatism is to a certain degree a valuable qualification in those who have more or less at their disposition the giving out of public money. It is, nevertheless, a matter of serious regret that public service of this character should fail or be handicapped through lack of sufficient support, simply because large practical results are not forthwith apparent. In general, it is to be hoped that private benefactions may sufficiently provide for work of this character, but it would, nevertheless, be unfortunate for the time to come when a state no longer felt due responsibility for the welfare of its citizens.

The director of the laboratory offers certain rather disquieting statistics regarding the prevalence of cancer in New York State. During the year 1907, 6,400 persons died, for the most part able-bodied except for their fatal disease. This number is an increase of 232 over the preceding year, and it is stated that in proportion to the population, cancer has increased nearly 25% during the last ten years, in striking contrast to tuberculosis, which has decreased, but not in the same degree. This is of course a serious situation and one which demands that every possible resource be applied to diminish such an appalling fatality. The difficulties in cancer research have apparently been peculiarly great, but our confidence should not, therefore, wane that positive and practical results will in time be forthcoming.

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THE COLLATERAL HELPFULNESS OF SANATORIA.

Ever since Bodington, in 1840, succumbed to the opposition to his sanatorium plans; and since Brehmer, in 1859, conquered opposition in the successful establishment of his sanatorium at Gœrbersdorf, the building of these institutions has oftentimes, though not always, been accomplished despite bitter protest, such as is most humiliating to those who would believe our race has really advanced in humane emotions. Yet demonstrably the properly conducted sanatorium for the tuberculous can hurt no one; on the contrary, from every rational viewpoint it is beneficent. The consumptive gets well therein under circumstances the best possible for his cure; while there he cannot infect his family, his fellow-workmen and his community; on leaving, he goes forth a missionary disseminating the ideas of sanitation and prophylaxis that have been instilled in him.

As to the danger of infection to the community in which the sanatorium is placed, we have but to cite the experiment made at Saranac Lake, where Trudeau established the first American institution upon the modern principles of phthisiotherapy. All the dust in a room in one of the cottages occupied by consumptives was gathered, and a culture made from this dust was, when injected, insufficient to cause tuberculosis in a small guinea pig. A scientifically ordered sanatorium is, rather than a menace to any community, a most decided influence for healthful living, in every possible meaning of the term.

Moreover, in the merely commercial sense, the sanatorium is a factor decidedly not to be ignored. The farmer, if he give some little thought to the matter, must consider how a sanatorium needs every day so many dozens of eggs, so many hundred quarts of milk, so many pounds of butter, so much cereals and other foodstuffs which are produced on farms; where or how, then, could the managers of such institutions get these staples better than from their neighbors? Thus it is that the prosperity of Gœrbersdorf, for example, has trebled since the beginning of Brehmer's activities.

Experience has, finally, shown that a tuberculosis sanatorium, instead of being prejudicial to the locality in which it is placed, not only results in its health improvement, but in point of fact, causes its real estate values to rise. The National Association for the Study and Prevention of Tuberculosis has gathered from twenty-two states, covering every section of our country, convincing data to this effect. We find in the *Survey* of June 19, 1909, a summary of these reports: Over 67% of the sanatoria have exerted a favorable influence on surrounding property, and in almost as many cases their effect in raising assessable valuations has been direct and measurable. In most of the other instances no differences were observable. In only three localities was it claimed that residents had been repelled. In the vicinity of a sanatorium at Portland, Ore., land has more than doubled in value in three years — the greater demand being close to the institution. At Aiken, S. C., land in the neighborhood of the sanatorium has quadrupled in value since it was built. In Hebron, Me., the advance has been 20%. Like results are reported from Luzerne, Pa.; Liberty and Saranac Lake, N. Y.; Pittsford, Vt.; Mt. Vernon, Mo., and Silver City, N. Mex. In these places the sanatoria form an important part of local business, and it would be hardly fair, perhaps, to make them criteria; nevertheless, the effects on values have been found the same in the big cities — New York, St. Louis, Philadelphia, Brooklyn, Boston, Pittsburg.

The mere fact that any given locality is selected as desirable for the establishment in it of a sanatorium is a guarantee and advertisement that it is a salubrious region. Would the Adirondacks, for example, ever have become so extensive and profitable a health resort had its destinies not been shaped in Saranac Lake?

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MEDICAL NOTES.

Prevention of Infant Mortality. — A meeting under the auspices of the American Academy of Medicine is to be held at New Haven, Conn., Nov. 11 and 12, 1909. This conference is an effort to bring together the best knowledge of the subject under consideration from most varied points of view. To this end the following sessions will be held: Medical Prevention, Philanthropic Prevention, Institutional Prevention and Educational Prevention. It will be seen from this general program that an effort toward complete co-operation between various medical and philanthropic agencies is to be made.

Inspection of Summer Resorts. — The New York State Health Department has now undertaken a reinspection of summer resorts, especially among the Adirondack and Catskill mountains, and along the shores of Long Island. Particular attention will naturally be paid to those hotels and boarding houses which have previously been reported to be lacking in sanitation. The inquiry will include an investigation of the water supply, the provisions for the disposal of domestic wastes and sewage, ventilation and the general sanitary condition of the establishment. There is already sufficient evidence in hand to show that the work of the department in this direction has not only brought about the correction of a number of glaring nuisances and abuses, but has raised the general level of sanitation in summer resorts by drawing the attention of proprietors to the rights of their patrons to adequate protection against preventable disease.

BOSTON AND NEW ENGLAND.

Acute Infectious Diseases in Boston. — For the week ending at noon, July 20, 1909, there were reported to the Board of Health of Boston the following cases of acute infectious diseases: Diphtheria 37, scarlatina 20, typhoid fever 6, measles 56, smallpox 0, tuberculosis 51.

The death-rate of the reported deaths for the week ending July 20, 1909, was 15.74.

Boston Mortality Statistics. — The total number of deaths reported to the Board of Health for the week ending Saturday noon, July 17, 1909, was 163, against 212 the corresponding week of last year, showing a decrease of 49 deaths and making the death-rate for the week 13.64. Of this number 91 were males and 72 were females; 157 were white and 6 colored; 100 were born in the United States, 55 in foreign countries and 8 unknown; 24 were of American parentage, 111 of foreign parentage and 28 unknown. The number of cases and deaths from infectious diseases reported this week is as follows: Diphtheria, 29 cases and 2 deaths; scarlatina, 25 cases and 1 death; typhoid fever, 8 cases and 1 death; measles, 51 cases and — death; tuberculosis, 54 cases and 25 deaths; smallpox, 0 cases and 0 deaths. The deaths from pneumonia were 9, whooping cough 0, heart disease 18, bronchitis 0 and marasmus 0. There were 19 deaths from violent causes. The number of children who died under one year was 38; the number under five years 44. The number of persons who died over sixty years of age was 37. The deaths in public institutions were 65.

Of the above the following were non-residents: Consumption, 2 cases and 3 deaths; diphtheria, 1 case and 1 death; typhoid fever, 1 death.

Deducting deaths of non-residents, the total is 135. The corrected death-rate is then 11.3.

Registration in Dentistry. — At the last examination, held by the Massachusetts Board of Registration in Dentistry, eighty men and four women were successful. This is an exceptionally large number, even for the examination held at this time of year which usually includes a greater number than at the other examinations held in March and October.

NEW YORK.

Order of Knight of St. Gregory for Dr. F. J. Quinlan. — The Pope has conferred the order of Knight of St. Gregory upon Dr. Francis J. Quinlan, laryngologist and otologist to St. Vincent's Hospital, who was for a number of years president of the Catholic Club of New York.

A Centenarian. — Mrs. Pauline Morris, the oldest negro woman in New Jersey, died on July 11 in the General Hospital, Elizabeth, N. J., at the alleged age of nearly one hundred and thirteen years. She is stated to have been well and strong up to the time of her last illness, which lasted but three weeks.

Vacation Schools and Playgrounds. — Vacation schools and playgrounds to the number of 139 have been opened by the Department of Education. Evening roof playgrounds and evening recreation centers in schools in the congested districts have also been opened, as well as thirty day nurseries for mothers and children.

Physicians, Honorary Masters of Arts. — Among those who received the honorary degree of Master of Arts from Yale University this year were Dr. Joseph A. Blake, the New York surgeon, and Dr. John Pierpont C. Foster, of New Haven, who has been prominent in antituberculosis work and is now a member of the Yale Medical School faculty.

Dr. C. L. Morehouse Still Active. — Dr. Charles Lewis Morehouse, a New York physician, eighty-seven years of age, who, it is said, is attested by the War Department to be the last surviving son of a man who fought in the Revolutionary War, took part, as usual, in the exercises at the flag raising at the old blockhouse at the northern end of Central Park at sunrise on the Fourth of July. His father was an aide-de-camp of General Washington, and the annual exercises at the blockhouse are conducted by the Washington Continental Guards, an organization which dates back to the time of Washington's second inauguration, and in which Dr. Morehouse has long been an officer.

Tuberculosis in Troy. — Good work has been accomplished in decreasing tuberculosis in the city of Troy during the past eighteen months, and the result is largely due to the efforts of the local Tuberculosis Relief Committee, under the general auspices of the State Charities Aid Association's Committee on the Prevention of Tuberculosis. The Board of Supervisors of Rensselaer County appropriated $25,000 for a tuberculosis hospital, while advanced cases of the disease have been treated at home. The latter class of patients, in addition to being under medical supervision, are visited three times a week by trained nurses, and, wherever possible, receive the benefit of outdoor treatment, the facilities for which are furnished *gratis* to those unable to pay for these. Milk and eggs are provided by the Department of Public Charities. In June, 1908, a tuberculosis dispensary was established, at which the attendance in six months was 264, and more recently a branch clinic has been opened in the northern part of the city. In 1908 the deaths from tuberculosis in Troy were 183, as against 243 in the year 1906.

Phipps Psychiatric Hospital. — Announcement has just been made that Grosvenor Atterbury, the New York architect, has completed the plans for the Phipps Psychiatric Hospital at the Johns Hopkins University, Baltimore, for which Henry Phipps donated the sum of $500,000. In order that all possible advantages should be secured for the construction of the hospital, Mr. Atterbury, accompanied by Dr. Adolph Meyer, head of the Pathological Institute of the New York State Hospitals for the Insane, who had been selected by the Johns Hopkins trustees as director of the new institution, went abroad to make a study of the most approved hospitals of the kind in Vienna, Munich and other European cities. The plans now completed are therefore the combined result of these studies, and embrace the most desirable features of the best psychiatric hospitals in the world.

Current Literature.

Medical Record.

June 19, 1909.

1. *Gorgas, W. C. *The Conquest of the Tropics for the White Race.*
2. *Starr, M. A. *Caisson Disease.*
3. Stein, A. *The Value of Cystoscopy in Gynecology.*
4. *Einhorn, M., and La Porte, G. L. *On the Amount of Pepsin in Various Disorders of the Stomach.*
5. Isaacs, A. E. *Calculus in the Lower Segment of the Ureter in the Female, with Special Reference to the Operative Treatment.*
6. Sallum, A. K. *The Etiology of Cancer.*

1. The author describes the method of coping with the malarial organism and the wonderful results of the antimalarial régime in Panama.

2. The author analyzes about three hundred cases of caisson disease and tabulates the prominent symptoms as follows: (1) myalgia; (2) affections of the ear, as rupture of the drum, or intense congestion of the inner ear, giving rise to symptoms of Ménière's disease; (3) pain in the joints; (4) paraplegia; (5) monoplegia; (6) symptoms of intense vertigo followed by paralysis of cranial nerves; (7) asphyxia, the patients showing all the signs of faintness with irregular heart; (8) aphasia. He finds that

there are many recoveries, even in those cases showing most severe cerebral disturbance. The treatment that has been most successful is to put the patient under an air pressure of several atmospheres, or when this is not possible, to stimulate the circulation by strychnine and increase the arterial tension by ergot.

4. Einhorn and LaPorte report a series of examinations of the amount of pepsin in the gastric contents in one hundred and ten cases, using the Jacoby-Solens' method of determining the amount of pepsin, and also Einhorn's modification of this method. [Their results seem to show that a determination of pepsin is of doubtful diagnostic value.] [W. B. R.]

New York Medical Journal.

July 3, 1909.

1. Swan, J. M. *Complications of Malarial Fever.*
2. Rogers, L. *Is Seven Day Fever of Indian Ports only Sporadic Dengue?*
3. Gordon, A. *Histological Changes of the Spinal Cord in Pernicious Anemia apropos of a Case with Diffuse Degeneration.*
4. Gottheil, W. S. *Solid Carbon Dioxide in Lupus Erythematosus: A New and Successful Method of Treatment.*
5. Gallie, W. E. *Treatment of High Dorsal Potts' Disease.*
6. Jenkins, N. B. *Bandages and Spectacles in Diseases of the Eye.*
7. *King, A. *Treatment of Diabetes as an Infectious Disease.*
8. Ballenger, E. G. *Vaccine Therapy in Genito-Urinary Infections.*

7. King has demonstrated the yeast fungus, saccharomyces cerevisiæ, in the blood of diabetics, and thinks that it may be the cause of the disease. At any rate yeast fungi produce certain enzymes (e. g., invertase, sucrase) which change certain foodstuffs into glucose. The opsonic index of diabetics for this organism in a dozen or more cases was found to be below normal — ranging from 0.56 to 0.99. The writer has used vaccines against saccharomyces cerevisiæ, and has observed after injection improvement in the patient's general condition and a notable rise in the opsonic index; there was no essential change in the urine. [L. D. C.]

The Archives of Internal Medicine.

May 15, 1909.

1. *Symmers, D. *The Occurrence of Fat in the Islands of Langerhans.*
2. *Epsteins, A. A., and Ottenberg, R. *A Method for Hemolysis and Agglutination Tests.*
3. Slaymaker, S. R., and Elias, F. *Papilloma of the Choroid Plexus with Hydrocephalus. Report of a Case.*
4. *Barringer, T. B., Jr. *The Incidence of Glycosuria and Diabetes in New York City between 1902 and 1907, with a Report of Two Cases of Essential Pentosuria.*
5. *Patterson, H. S. *The Moro and Von Pirquet Reactions in One Hundred and Seventy-one Cases.*
6. *Hamman, L., and Wolman, S. *The Cutaneous and Conjunctival Tuberculin Tests in the Diagnosis of Pulmonary Tuberculosis.*
7. Smith, H. L. *Buckwheat Poisoning. With Report of a Case in Man.*
8. *Wiggers, C. J. *Studies in Inaccessible Internal Hemorrhages. II. The Ineffectiveness of Adrenalin in Pulmonary Hemorrhage.*
9. Emerson, H. *Artificial Respiration in the Treatment of Edema of the Lungs. A Suggestion Based on Animal Experimentation.*
10. Barringer, T. B., Jr. *Pulmonary Edema Treated by Artificial Respiration. Report of a Case.*

1. Symmers has examined the islands of Langerhans in seventy-three autopsies, in subjects varying in age from still-born infants to the age of sixty-nine years. He believes that the presence of fat in appreciable amounts in the islands of Langerhans is invariably pathologic, and that the fat accumulates in these situations in individuals at or beyond middle life in response apparently to certain changes brought about in the cells by the prolonged use of alcohol. The islands may be completely devoid of fat in genuine diabetes mellitus; but he believes that the occurrence of fat in excessive quantities in the islands is a factor in the production both of the intolerance for sugar manifested by alcoholic subjects and of the alimentary glycosuria so frequently observed in individuals of this type.

2. The authors describe a method of doing the hemolysis and agglutination tests in small capillary pipettes similar to those used by Wright in his opsonic work. The method is simple and has given good results in the authors' hands.

4. The author analyzes the statistics of one of the large insurance companies of New York. Out of 71,729 cases examined between 1902 and 1907, the author finds that diabetes occurs in the ratio of 1,895 cases per 100,000 of population. Also that a large proportion of cases of transient glycosuria are harmless and do not develop into diabetes, and that diabetes generally begins as a slight, intermittently appearing glycosuria which gradually becomes more frequent and more marked, until finally it is constantly present.

5. Patterson reports his results with the Moro and Von Pirquet tuberculin reaction in 171 cases in persons of all ages, including non-suspicious individuals and patients suffering from the various forms of tuberculous disease in their different stages. He finds that the Moro test is absolutely harmless and simple to use; that it is better adapted to use among adult patients than the Von Pirquet test, because it does not produce a reaction so frequently in those clinically free from tuberculosis; that it produces a reaction about as frequently as the ocular reaction in the tuberculous and in the clinically free cases, but is devoid of the danger incident to the conjunctival test.

6. The authors report a series of very careful observations on the different forms of tuberculin tests. Their conclusions are based on the observation of a large number of cases. They discuss at length the current views on the subject and describe carefully their technic. Their opinions are that in adults the cutaneous tuberculin test is of value in diagnosis only when negative, and that the frequency of its occurrence runs roughly parallel with the subcutaneous test. The conjunctival test is of value principally on the positive side, a definite reaction indicating the presence of an active tuberculous lesion. The most satisfactory results are obtained by using both tests simultaneously. Both being negative speaks for the absence of any active tuberculous focus; both being positive for its presence; the conjunctival negative and the cutaneous positive is no information of value. The authors do not admit that the conjunctival or cutaneous reactions have any prognostic value. They believe that the same conjunctiva should never receive a second instillation, and the reaction so obtained is valueless in diagnosis and the procedure not without danger; that with proper precaution the conjunctival test may be used without danger of permanent injury to the eye. They have been unable to confirm in any particular the claims that Detre makes for his differential cutaneous reaction.

8. Wiggers finds in his experiments on the effect of adrenalin on pulmonary hemorrhage that it is not a satisfactory drug to use. [W. B. R.]

Bulletin of the Johns Hopkins Hospital.

June, 1909.

1. Gerster, A. G. *Life and Times of Gerhardt Van Swieten.*
2. Retzer, R. *The "Moderator Band" and Its Relation to the Papillary Muscles, with Observations on the Development and Structure of the Right Ventricle.*
3. *Davis, J. S. *The Effect of Scarlet Red, in Various Combinations, upon the Epitheliation of Granulating Surfaces.*
4. Berkley, H. J. *Disposal of the Waste of the Brain Tissues.*
5. *Gundrum, F. F. *Post-Anesthetic Acidosis.*

3. Davis has made a careful study, based on the treatment of sixty cases, of the effect of scarlet red in various combinations upon the epitheliation of granulated surfaces.

Scarlet red is a disulphonic acid derivative, first used for this purpose by Fischer, of Bonn, in 1906. The writer briefly describes the work which has previously been done along this line. In his experiments he has used 2, 4, 5, 8, 10 and 20% scarlet red ointments with a simple antiseptic vaseline base. On some smaller wounds he has used the dry powder. Clean, healthy granulations should be bathed with boric solution and dried. Unhealthy granulations should be treated with peroxide of hydrogen first. The skin surrounding the defect should be anointed with some bland ointment up to within 1 cm. of the edge. The scarlet red ointment is then spread on perforated linen cloth, which he prefers to the rubber protective, and placed over the ulcerating area, with a light dressing of sterile gauze, secured by a bandage to cover it. His patients varied from two to seventy-six years. Forty-six were white, fourteen colored. The duration of the lesions was from a few days to fifteen years. The general health of the patients seemed to have some bearing on the stimulating effect of the scarlet red. The effect of this ointment in the great majority of cases was to cause a marked stimulation of the epithelium. The exact strength and combination of the ointment to be used on different types of wounds cannot be dogmatically stated. As a general thing, the 8% ointment is used unless especially contraindicated. In some sluggish cases the 20% ointment is better. A number of large specific ulcers having a duration of from three months to five years, which had not responded to constitutional or local treatment, were stimulated markedly by scarlet red. Several tuberculous lesions which had hitherto refused to heal became covered with a healthy growth of epithelium after a few applications. He found it of value on skin grafts of various kinds. The scarlet red is absorbed and then excreted by the kidneys, the urine in some cases becoming bright scarlet twenty-four to forty-eight hours after the application of the ointment. In ten cases there was severe irritation by the ointment; some patients, however, experienced a marked cessation of pain.

5. Gundrum describes his experience in the examination of the urine of sixty-nine patients in the surgical wards of the hospital as regards the presence or absence of acetone or diacetic acid after anesthesia. He believes that the character and amount of the anesthesia used and the duration and character of the operation are of little, if any, importance in determining the appearance of a subsequent acidosis. Furthermore, he is of the opinion that starvation and digestive disturbance are not accountable for the condition. Emotional individuals are more prone to a post-operative acidosis than the more phlegmatic. This nervous element seems to be the most constant in relation to the acidosis. [J. B. H.]

The Lancet.

June 5, 1909.

1. Trotter, W. *A Clinical Lecture on Hypernephroma.*
2. White, W. H., and Eyre, J. W. *The Results of a Year's Use of Vaccines in General Medicine.*
3. Robertson, W. F. *Experimental Evidence of the Infective Origin of Carcinoma and of the Transmissibility of the Disease from the Human Subject to the Mouse.*
4. Southam, F. A. *A Note on the Recurrence of Vesical Calculi after Removal in a Series of One Hundred and Sixty Operations.*
5. Orr, T. *Pustule Simulating Anthrax Due to Organisms of the Proteus Group.*
6. Knox, R., and Morison, J. *Sudden Failure of Respiration Restored by Artificial Means occurring during the Course of Acute Pneumonia, Complicated by Coma of Uremic Origin.*
7. Ley, R. L. *A Tropical Form of Adenitis Apparently due to an as yet Unrecognized Organism.*
8. Shaw-Mackenzie, J. A. *An Investigation of the Action of Digestive Ferments and Tissue Extracts, Hypodermically Injected, on Malignant Tumors in Mice.*

June 12, 1909.

1. Lucas-Championniere. *Address on the Modern Treatment of Fractures.*
2. Mott, F. W. *Abstract of Address on the Diagnosis of Syphilitic Diseases of the Nervous System.*
3. Lane, W. A. *Address on the Operative Treatment of Fractures.*
4. *Semple, D. *Preliminary Note on the Vaccine-Therapy of Enteric Fever.*
5. Ballance, C. A. *Case of Facial Palsy Treated by Facio-Hypoglossal Anastomosis in which an Anastomosis was also made between the Spinal Accessory and the Distal Segment of the Divided Hypoglossal Nerve in Order to Prevent Permanent Lingual Paralysis and Atrophy.*
6. Heaton, G. *The Surgical Treatment of Colitis.*
7. Phillips, S. *Case of Fatal Hemorrhage into the Pons Varolii in a Young Infant.*
8. Handley, W. S. *Internal Hernia; Extensive Resection of Gangrenous Ileum; Recovery.*
9. Butler, H. O. *Case of Bacillary Infection of the Urinary Tract Treated by the Corresponding Serum and Vaccine.*

4. Semple has treated eleven cases of typhoid fever by vaccines grown from the patient's organism and records his results. He believes this is a practical method of increasing the bacteriotropic substances in the blood, as evidenced by an increase in the opsonic index of those treated; that when proper doses are given, the method is devoid of all risks and produces no apparent disturbance in the patient's condition. He is unable to say from these few cases whether or not there has been any distinct beneficial effect. [J. B. H.]

British Medical Journal.

June 5, 1909.

1. Rankin, G. *Clinical Lecture on the Neurotic Element in Disease.*
2. Little, E. G. *Lecture on the Treatment of Eczematous Patients.*
3. Gordon, W. *Distribution of Longevity in England and Wales.*
4. Melland, C. H. *Diagnosis and Treatment of Severe Anemia.*
5. Aitken, J. *Pernicious Anemia with Pigmentation of the Skin and Buccal Mucous Membrane.*
6. Jones, W. B. *Two Cases of Cardiac Disease.*
7. Boyd, W. *Case of General Paralysis of the Insane, with Extraordinary Lymphocytosis in the Cerebrospinal Fluid.*
8. Gardner, H. B. *Anesthetics in General Practice.*
9. Turner, G. G. *Resection of the Trachea for Cicatricial Stenosis.*
10. Marsh, F. *Treatment of Facial Paralysis due to Division of the Facial Nerve in the Mastoid Operation.*

June 12, 1909.

1. Lucas-Championniere, J. *Address on the Modern Treatment of Fractures.*
2. *Gowers, W. R. *Address on the Prodromas of Migraine.*
3. *Mott, F. W. *Address on the Diagnosis of Syphilitic Diseases of the Nervous System.*
4. Lane, A. *Address on Chronic Intestinal Stasis.*
5. Worsley, R. C. *Hypertrophic Osteo-Arthropathy of Hands without Visceral or Constitutional Disease.*
6. Cheatle, G. L. *Biotripsis, or Life Wear; Trophic Changes in Old Age.*
7. Cowburn, A. D. *Some Aspects of the Legal Responsibility of Medical Men.*
8. Penny, A. *Notes on a Thirty Days' Fast.*

2. Gowers, in an interesting article, takes up the various prodromas of migraine. Among these he mentions sensory disorders, such as the peculiar tingling commencing in the tips of the fingers, or as a zone of tingling around the wrist, which slowly ascends the arm in the course of ten to fifteen minutes, as it passes up leaving behind lessened sensibility, which gradually becomes normal. Still more frequently the premonition consists in an interference with sight. There may be impairment of one half of the field of vision, or other peculiar phenomena, such as luminous spectrum, commencing as a star, enlarging until it becomes a serrated or zigzag figure, often colored, sometimes double, which gradually becomes fainter and disappears. There is frequently a disturbance of speech in the form of an aphasia, often only a slight difficulty in the use of certain

words. These prodromas may accompany the migraine from its first appearance in early life, or they may only set in after the migraine has been present for years. In after life the prodromas may occur alone or may be followed by only the very slightest headache. In later life the occurrence of an unaccustomed premonition may give rise to much concern and may seem like a vascular lesion of the brain. The writer cites several interesting cases illustrating this condition.

3. Mott, in considering the diagnosis of syphilitic diseases of the nervous system, considers the diagnosis in relation to neurasthenia, pseudo-general paralysis, arterio-sclerosis (in which he believes syphilis is the most important factor, especially in cerebral arterio-sclerosis), chronic alcoholism and alcoholic polyneuritic psychosis, dementia precox, disseminated sclerosis, cerebral tumors and general paralysis. At the end of his article he briefly considers the various methods of examination of the cerebrospinal fluid: the Wassermann-Neisser Brück method, the Noguchi method and cyto-diagnosis. [J. B. H.]

Deutsche Medizinische Wochenschrift. No. 23.
June 10, 1909.

1. Westphal, A. *Further Observations on Pupil Phenomena Observed in Catatonic Stupor, with an Attempt to Explain the Catatonic Pupil Rigidity.*
2. *Aronsohn, O. *The Korsakow Symptom Complex after Cerebral Concussion.*
3. de la Fuente, M. *Pseudo Paralysis Agitans (Hysterical).*
4. Dibbelt, W. *The Theory of the Infectious Diseases.*
5. *Pickert, M. *Natural Tuberculin Resistance.*
6. Conradi, H. *A New Method of Sterilization.*
7. Boruttau, H. *Recent Advances in Physiology.*
8. Wessely, K. *The Effect of Adrenalin on the Enucleated Frog's Eye and on the Isolated Warm-blooded Iris.*
9. Focke. *Is the Powder of the Digitalis Leaves better than the Infusion?*
10. Cohn, H. *A Contrivance for the Re-establishment of the Vaginal Tampon.*

2. Aronsohn describes a case of an apparently healthy man of fifty years, with a few members of his family of nervous temperament, who was in a railroad accident and rendered unconscious for a time. Upon recovery no physical injury was present except a contusion over one eye and slight tenderness over the occipital region. From the time of the accident he developed a gradually increasing set of psychical symptoms and a steady loss of weight and strength. The man was not a drinking man and his psychoses showed the typical picture of Korsakow's disease as produced by alcohol, with the exception of the polyneuritis.

5. Pickert shows that the serum of many patients with tuberculosis contains antibodies to tuberculin. These patients are the ones who show practically no general symptoms to the toxins of the tubercle bacilli. His method of proving this is by mixing the serum from these patients with tuberculin, and after a short incubation trying out the tuberculin test with the product. He used proper controls and found that the serum from cases which showed few general symptoms to local tubercular lesions checked the tuberculin reaction. By large doses of tuberculin in these individuals the resistance which was naturally present could be increased. Thus he claims that Koch's tuberculin therapy is a rational form of treatment. [C. F., Jr.]

Münchener Medizinische Wochenschrift. No. 25.
June 22, 1909.

1. Hanck, L. *The Clinical Value of the Wassermann-Neisser-Bruck Serum Reaction for Syphilis.*
2. Janssen, P. *The Utilization of the Natural Protective Forces of the Peritoneum in the Treatment of Appendicitis and of General Peritonitis.* (To be concluded.)
3. Theilhaber, A. *The Origin of Tumors of the Uterus*
4. *Bettmann. *Internal Treatment of Skin Diseases with Calcium Salts.*
5. *Leick, B. *Serum Treatment of Epidemic Cerebro-Spinal Meningitis.*
6. Schener, O. *A Case of Masturbation in a Woman due to Pruritus.*
7. Borchardt, L. *A Case of Tumor of the Liver with Levulosuria.*
8. Liebermann, H. *Heligoland and Hay Fever.*
9. Muskat. *Flat-foot Shoes without Plates.*
10. Krummacker. *Care of the Navel in the Newborn.*
11. Mühlenkamp. *On the Diametrically Opposite Symptoms of Two Cases of Foreign Body in the Nose.*
12. Gebele. *Yearly Report of the Dispensary of the Surgical Clinic of Munich.*
13. Labhardt, A. *Contributions to the Treatment of Post-partum Hemorrhages.* (Conclusion.)

4. Bettmann states that in some cases of the so-called "toxic skin-diseases" he has obtained good results from the use of calcium lactate when careful treatment by the usual methods had failed. He makes the statement with caution, but believes himself justified in attributing the improvement to the drug. Being unable to single out in advance the particular cases it would help, the use of the lactate of calcium was necessarily tentative. Although no benefit resulted in some of the patients, cure followed administration of the drug in 2 cases of purpura and 2 of urticaria, 3 cases of prurigo (Hebra) and 1 case of herpes gestationis and 5 cases of pruritus senilis received great benefit. In eczema, lichen ruber, chronic herpes, pemphigus, no improvement followed.

5. The writer reports good results following the intraspinal administration of the Kolb-Wassermann serum to a considerable number of patients having cerebrospinal meningitis. The mortality under the serum was 20.7% against 67.7%, the previous mortality. [G. C. S.]

Berliner Klinische Wochenschrift. No. 26.
June 28, 1909.

1. Vossius, A. *The Results of the Operation for Myopia.*
2. Albu, A., and Rotter, J. *Report of the Joint Investigation by the Berlin Medical Society Regarding Inflammations of the Cecum in the Year 1907 in Greater Berlin.* (To be concluded.)
3. Bickel, A. *Observations on Dogs with Extirpated Duodenum.*
4. Meyer, F. *Contributions to the Serum Therapy of Diphtheria Intoxication.*
5. *Silbergleit, H. *The Influence of Radium Emanation on the Total Metabolism of Man.*
6. v. Jagic, N. *The Granulations of White Blood Corpuscles.*
7. Alexandroff, W. *The Question of the Complications in Typhus Recurrens (Pyopneumothorax Subphrenicus).*
8. Schlenzka, A. *Endoscopy of the Anterior Urethra with the Goldschmidt Irrigation Urethroscope.*
9. Weisz, F. *An Interesting Case of Urinary Retention.*
10. Witte, J. *The Biologic Diagnosis of Carcinoma, with Especial Consideration of Gastric Carcinoma.* (Conclusion.)

5. Continuing his experiments of a year ago (reported in No. 1 of this *Wochenschrift* for 1908), Silbergleit administered to two normal, healthy adolescents, free from gout or rheumatism, doses of from 10 to 20 ccm. of water containing from five to fifty thousand units of radium emanation, and determined the respiratory quotient before and after. Finding it increased, he concludes that radium emanations may increase the total metabolism of man. [R. M. G.]

Zeitschrift für Klinische Medizin. Bd. 67.
Hft. 5 and 6.

1. *Eppinger, H., and Hess, L. *Studies on the Innervation of the Internal Organs.* (First communication.)
2. *Grüner, O., and Schick, B. *Salt Metabolism and Body Weight in Scarlatina.*
3. *Eppinger, H., Falta, W., and Rudinger, C. *The Correlation of Glands with Internal Secretion.* (Second communication.)
4. Frank, H. *The Occurrence of Autolysins in the Blood in Infectious Diseases.*
5. Sternberg, W. *Appetite and Loss of Appetite.*
6. *Schabad, J. A. *The Use of Phosphorus in Rachitis*

and Its Effect on the Calcium Metabolism in Rachitic and Healthy Children.

7. *Nagayo, M. *Adams-Stokes' Disease.*
8. *Belski, A. *Auriculoventricular Automatism in the Course of Infectious Diseases.*
9. *Magnus-Levy, A. *Chyluria and Diabetes.*

1. Atropine and pilocarpine act upon the autonomous nervous system (chiefly the vagus nerves and pupil), while adrenalin acts only upon the sympathetic. Eppinger and Hess have made the interesting observation that those people who react strongly to atropine and pilocarpine injected subcutaneously do not respond to adrenalin, and that conversely those who show a marked reaction to adrenalin do not respond to pilocarpine and atropine. Thus it appears that in certain people the autonomous, in others the sympathetic nervous system is more readily acted upon.

2. This thorough study of the salt metabolism in scarlatina by Grüner and Schick brings out several interesting features. The children were put on a weighed diet poor in salt and the salt balance was exactly determined and compared with the fluctuations in the body weight. The authors found no constancy in the salt excretion except that there was a retention of sodium chloride during the period of fever. Later there were three types of excretion without any apparent reason: (1) There was salt equilibrium; (2) there was marked and prolonged salt retention, up to one third the total intake; or (3) the excretion of salt exceeded the intake. These different types could not be brought into relation either with the curve of the body weight or with the later occurrence of nephritis; the body weight might fall with salt retention or *vice versa*. In some cases a very pronounced retention of salt over a long period took place without the occurrence of edema or a corresponding increase in the body weight. This leads the authors to the conclusion that salt deposits of considerable size may be formed in the internal organs without the occurrence of edema. This would explain some of the paradoxical findings reported by other authors, such as edema without apparent salt retention, the salt deposits having been formed before the cases come under observation and furnishing the necessary sodium chloride for the edema fluid.

The cases with nephritis did not show anything new. The authors have treated all their cases of scarlatinal nephritis with salt-poor diet and with the most gratifying results, — the edema always yielded promptly. Several of the children with nephritis chose such a diet instinctively, refusing salt when it was offered to them. Curiously enough, some cases of nephritis which later went through an attack of scarlatina showed an improvement of the old nephritic process during the scarlatinal infection.

3. This second communication on the correlation of the glands with internal secretion deals chiefly with the effects on the carbohydrate metabolism of extirpation of the thyroid and parathyroid glands, separately and together. The authors prove that the alimentary glycosuria after thyroidectomy observed by other experimenters was due to the unintentional removal of the parathyroids at the same time. In their own experiments, Eppinger, Falta and Rudinger found always an *increased* tolerance for sugar and absence of glycosuria after adrenalin injection, if the thyroid alone was removed. After removal of both thyroid and parathyroids, on the other hand, an abundant amount of sugar was found in the urine after adrenal injection, and the tolerance for sugar was *diminished*. Extirpation of three of the four parathyroids, the thyroid gland being left intact, led to a marked decrease in the tolerance, which, however, was temporary, owing probably to compensatory hypertrophy of the remaining parathyroid. Simultaneous removal of the pancreas and three parathyroids was followed by an amount of glycosuria greater than that observed after simple pancreatectomy. The authors conclude from these facts that the secretion of the parathyroids has an influence on carbohydrate metabolism apparently antagonistic to that of the thyroid gland. They attempted to throw light upon the action of the secretion of the adrenal by injecting phloridzin shortly after extirpation of both adrenal glands. The animals lived a few days and showed a marked decrease in the amount of sugar in the urine as compared with normal animals after phloridzin injections. This they explain as due to failure of mobilization of carbohydrates owing to deficiency of adrenal secretion. Several patients with Addison's disease showed absence of glycosuria after very large doses of glucose, even with simultaneous injection of adrenalin. This is in accord with their theories, according to which the direct effect of loss of the adrenal secretion is a decrease in the mobilization of carbohydrates, in consequence of which the extra sugar ingested is stored in the form of glycogen instead of being thrown into the blood current; indirectly there is loss of the normal inhibition exerted on the pancreas by the adrenal, and hence increased activity of the pancreas, which enables the organism to consume the carbohydrates mobilized after adrenalin injection.

6. The use of phosphorus in rachitis has rested hitherto entirely on an empirical basis, and the remedy has fallen in this country into disrepute. Schabod's work, proving by exact metabolism studies that phosphorus has a very distinct action in rachitis, is therefore very welcome. He found the retention of calcium in rachitic children increased threefold under the influence of phosphorus, given in the form of a solution in cod-liver oil. The drug had no effect whatever on the calcium retention in healthy children. The effect of phosphorus was evident within a few days and persisted unenlarged so long as the drug was given. Two months after it was discontinued, the calcium retention was still higher than before. The action of phosphorus must consist in a specific irritation of the bone, for it is given in too small quantities to account directly by combination with calcium and deposit in the bone, for the increased retention of calcium. Since rachitic bones have been shown to contain much too little calcium, the indication for phosphorus is clear. It is to be hoped that these researches will bring about a renewed use of phosphorus in this country in the treatment of rachitis.

7. Nagayo reports two cases of Adams-Stokes syndrome, one due to destruction of the His bundle, the other to fibrin myocarditis. In the latter case the bundle and the two branches were intact, thus proving that the syndrome may occur without lesion of the bundle of His. He calls this the muscular type of the Adams-Stokes' syndrome. Partial heart-block with a 2 to 1 rhythm was present. The author points out that complete heart-block has never been found without a lesion of the auriculo-ventricular bundle of His, but that partial block may be due either to damage to this system of fibers or to myocardial changes. In addition there is a neurogenous form of Adams-Stokes' syndrome in which there is bradycardia without heart block, either complete or partial, with lesions in the medulla.

8. In the early days of acute articular rheumatism and of typhoid fever Belski has seen bradycardia associated with occasional very loud first sounds of the heart. These loud sounds are accompanied by a marked venous pulse, which on the phlebogram is seen to be due to a simultaneous contraction of the auricles and ventricles. The phenomenon differs from the extra systole in that the contraction of the ventricle comes at the normal interval or later. It could be produced artificially in these patients by pressure on the vagus nerve in the neck, and is therefore analogous to Hering's experiments on apes, in which irritation of the vagus produced a similar "auriculo-ventricular automatism." The author believes that the origin of the cardiac impulse in these cases is transferred to the auriculo-ventricular node of His. The phenomenon disappeared after a short period, and no permanent lesion of the heart remained.

9. Magnus-Levy calls attention to the frequency of diabetes in chyluria, which he explains as due to the loss of the pancreatic internal secretion which has been shown to be present in the contents of the thoracic duct. All the cases of chyluria in which a cystoscopic examination has been made have been shown to be unilateral, and therefore must be due to a communication between the thoracic duct and the urinary passages. Biedl, moreover, has shown that in dogs glycosuria may be induced by tying the thoracic duct or by causing its contents to escape through a fistula, and the glycosuria could be diminished if this chyle was collected and injected again into the animal. These animal experiments furnish almost precisely the conditions which maintain in chyluria. [W. T.]

RECORD OF MORTALITY

FOR THE WEEK ENDING SATURDAY, JULY 10, 1909.

CITIES.	Reported deaths in each.	Deaths under five years.	CITIES.	Reported deaths in each.	Deaths under five years.
New York	1,257	479	Waltham	8	2
Chicago	—	—	Pittsfield	8	—
Philadelphia	499	224	Brookline	1	—
St. Louis	—	—	Gloucester	2	—
Baltimore	201	86	North Adams	4	3
Cleveland	—	—	Northampton	6	1
Buffalo	—	—	Chicopee	10	6
Pittsburg	—	—	Medford	3	—
Cincinnati	—	—	Beverly	1	—
Milwaukee	—	—	Leominster	3	1
Washington	—	—	Hyde Park	0	—
Providence	—	—	Melrose	5	0
Boston	180	46	Newburyport	1	1
Worcester	28	12	Revere	4	2
Fall River	50	40	Westfield	4	2
Cambridge	23	7	Woburn	7	1
Lowell	24	6	Peabody	—	—
New Bedford	24	4	Marlboro	1	0
Lynn	19	4	Attleboro	9	3
Springfield	19	10	Adams	4	2
Lawrence	25	16	Clinton	[illegible]	0
Somerville	15	2	Gardner	3	—
Brockton	15	7	Milford	2	0
Holyoke	19	11	Watertown	3	0
Malden	8	2	Plymouth	—	—
Chelsea	3	0	Southbridge	1	—
Newton	6	1	Weymouth	2	1
Salem	7	—	Framingham	—	—
Haverhill	4	—	Wakefield	—	—
Fitchburg	11	5	Webster	—	—
Everett	2	1	Arlington	3	—
Quincy	2	—	Greenfield	1	—
Taunton	7	—			

LIST OF CHANGES OF STATIONS AND DUTIES OF COMMISSIONED AND OTHER OFFICERS OF THE PUBLIC HEALTH AND MARINE-HOSPITAL SERVICE FOR THE SEVEN DAYS ENDED JULY 14, 1909.

BAILHACHE, P. H., surgeon. Granted three months' leave of absence from Aug. 1, 1909.

GASSAWAY, J. M., surgeon. Directed to proceed to Tuckerton and Atlantic City, N. J., for the purpose of examining keepers and surfmen of the Life-Saving Service. July 12, 1909.

GUITERAS, G. M., surgeon. Directed to proceed to Austin and other points in Texas upon special temporary duty. July 3, 1909.

WICKES, H. W., passed assistant surgeon. Granted one month's leave of absence from Aug. 1, 1909.

CUMMING, HUGH S., passed assistant surgeon. Granted one month's leave of absence from Aug. 1, 1909.

CLARK, T., passed assistant surgeon. Granted thirty days' leave of absence from Aug. 16, 1909.

BAHRENBURG, L. P. H., passed assistant surgeon. Directed to proceed to Point Pleasant, N. J., for the purpose of examining keepers and surfmen of the Life-Saving Service. July 12, 1909. Granted fifteen days' leave of absence from Aug. 1, 1909.

WARREN, B. S., passed assistant surgeon. Granted three days' leave of absence from July 6, 1909.

EBERSOLE, R. E., passed assistant surgeon. Granted six days' leave of absence from March 6, 1909. Paragraph 191, Service Regulations.

ROBERTS, NORMAN, passed assistant surgeon. Directed to proceed to Ocean City, Md., and Chincoteague, Wachapreague, and Cape Charles City, Va., for the purpose of examining keepers and surfmen of the Life-Saving Service. July 12, 1909.

MULLAN, EUGENE H., passed assistant surgeon. Granted two days' leave of absence from July 12, 1909.

PREBLE, PAUL, assistant surgeon. Relieved from duty at Baltimore, Md., and directed to report at Bureau for duty. July 8, 1909. Assigned for duty in charge of the Miscellaneous Division. July 13, 1909.

HUNT, REID, chief division of pharmacology, hygienic laboratory. Detailed to attend the Twelfth International Congress on Alcoholism to be held in London, July 18–24, 1909, and the Sixteenth International Medical Congress to be held in Budapest, Hungary, Aug. 29 to Sept. 4, 1909. July 3, 1909.

EARL, F. D., acting assistant surgeon. Granted seven days' leave of absence from July 20, 1909.

SAFFORD, M. V., acting assistant surgeon. Granted seven days' leave of absence from July 7, 1909. Paragraph 210, Service Regulations. Granted three days' leave of absence from July 15, 1909.

SCHMITT, L. S., acting assistant surgeon. Granted thirty days' leave of absence from July 2, 1909, without pay.

STORRS, HENRY R., acting assistant surgeon. Granted four days' leave of absence from July 20, 1909.

TARBELL, B. C., acting assistant surgeon. Granted thirty days' leave of absence from Aug. 1, 1909, with pay, and fourteen days' leave of absence from Aug. 31, 1909, without pay.

WEEKS, ALANSON, acting assistant surgeon. Granted thirty days' leave of absence from July 10, 1909.

WELDON, WM. A., acting assistant surgeon. Granted one month's leave of absence from Aug. 15, 1909.

APPOINTMENTS.

Dr. Walter R. Brinckerhoff reinstated and appointed Assistant Director of the Leprosy Investigation Station at Molokai, T. H. July 7, 1909.

Dr. Harry T. Hollman appointed an Acting Assistant Surgeon for duty at the Leprosy Investigation Station at Molokai, T. H. July 7, 1909.

Dr. H. B. Ross appointed an Acting Assistant Surgeon for duty at Del Rio, Tex. July 9, 1909.

CHANGES IN THE MEDICAL CORPS U. S. NAVY FOR THE WEEK ENDING JULY 17, 1909.

SMITH, H. W., passed assistant surgeon. Detached from duty at the Naval Medical School Hospital, Washington, D. C., and ordered to temporary duty at the navy yard, Boston, Mass. July 9.

REEVES, I. S. K., passed assistant surgeon. Ordered to treatment at the Naval Medical School Hospital, Washington, D. C. July 14.

ODELL, H. E., surgeon. Detached from the Naval Hospital, Mare Island, Cal., and ordered to the Naval Hospital, Guam, M. I. July 15.

ANGENY, G. L., surgeon. Detached from the Naval Station, Guam, M. I., and ordered home to wait orders. July 15.

WINN, C. K., assistant surgeon. Detached from the Naval Hospital, Newport, R. I., and ordered to the Naval Station, Key West, Fla. July 15.

RECENT DEATH.

DR. ANDREW J. DOWER, of Brooklyn, N. Y., died on July 10, from pneumonia. He was a native of Ireland, fifty-seven years of age, and was graduated from Bellevue Hospital Medical College, New York, in 1878.

BOOKS AND PAMPHLETS RECEIVED.

Practical Gynæcology. A Manual for Nurses and Students. By Netta Stewart and James Young. M.B., F.R.C.S.E. Illustrated. New York: William Wood & Co. 1909.

New World Science Series. Human Physiology. By John W. Ritchie. Illustrated. Yonkers-on-Hudson, New York: World Book Co. 1909.

University of Buffalo. Medical Department. Report of the Laboratories. No. 3. 1909.

I. De l'emploi des courants électriques pour le rappel à la vie, dans les cas de mort apparente causée par le chloroforme ou par l'electrocution: Nécessité d'exclure du circuit la tête, pendant les excitations rhytmiques. II. Anesthésie électrique. III. Presentations d'instruments. By Dr. Louise G. Robinovitch. Reprint.

I. Methods of Resuscitating Electrocuted Animals. II. General and Cerebral Blood Pressure During an Attack of Electric Epilepsy. III. Electric Anesthesia. Its Use in Laboratory Work. IV. Methods of Resuscitating Animals in a Condition of Respiratory and Cardiac Syncope Caused by Chloroform. By Louise G. Robinovitch, B. ès L., M.D. Reprint.

Bibliographia Gymnastica Medica. Von Dr. Edgar F. Cyriax. London. 1909.

Treasury Department. Public Health and Marine-Hospital Service of the United States. Hygienic Laboratory. Bulletin No. 50. Further Studies upon the Phenomenon of Anaphylaxis. By M. J. Rosenau and John F. Anderson. Washington. 1909.

Address.

THE HISTOLOGICAL CLASSIFICATION OF TUMORS.* †

BY F. B. MALLORY, M.D.

Associate Professor of Pathology, Harvard Medical School.

Normal cells and tissues are classified according to striking morphological characters which distinguish different kinds of cells from one another. These characters, aside from size and shape of cells and nucleus, may lie within the cell (eosinophilic granules, axis cylinder processes) or be extracellular substances produced by the cells (collagen fibrils, osteoid substance). They represent the differentiation which the cells undergo in order to perform their different functions.

Tumor cells tend to differentiate like normal cells; hence tumors are usually classified histologically like normal tissues, that is, according to the microscopic structure of their cells and intercellular substances. In tumors which grow slowly, the differentiation of the cells is usually well marked; in those which grow rapidly, it may be slight or wanting. It is important, therefore, to study embryological as well as normal tissues so as to have a clear knowledge of how muscle and other cells look in the early stages of differentiation. A knowledge of embryology is also useful in explaining the location of certain tumors (a glioma over the coccyx) and the nature of such a tumor as the chordoma which arises from remains of the notochord, a fetal tissue.

In classifying tumors, it is important to ascertain what is the one essential cell in each type of simple tumor and to name the tumor accordingly, leaving out of consideration the blood vessels and connective tissue of the stroma. They are furnished by the tissues in the midst of which the tumor develops because there is a physiological demand made for them by the tumor cells. All tumors composed of one type of cell, at whatever rate of speed they are multiplying, should be considered under one heading, not separated into slowly and rapidly growing groups and described separately. Such a separation is artificial and misleading.

The essentials for the exact diagnosis of tumors, especially those which are growing rapidly, are perfectly fresh tissues obtained at the operating table if possible, immediate fixation in proper solutions which will preserve faithfully all the morphological characters on which an exact diagnosis depends, and special staining methods to render prominent the characteristic structures.

A limited number of characteristic cells will be described and some of the varieties of tumors composed of them will be demonstrated photomicrographically.

The ordinary connective tissue cell or fibroblast is an elongated, flattened cell with a flat, oval nucleus. It is characterized by the production of two kinds of fibrils (fibroglia and collagen fibrils) which can be stained in sharp contrast to each other. The fibroglia fibrils are in intimate contact with the cytoplasm of the cell; the collagen fibrils are entirely free from it; they both run parallel with the long axis of the cell. Cells of this type produce a series of tumors ranging from the dense fibroma to the soft rapidly-growing fibrosarcoma (so-called spindle cell sarcoma). Even in the most rapidly-growing tumors of this series both kinds of fibrils are produced, although they may be very delicate and few in number. Occasionally some of the cells contain multiple mitoses and others large lobulated or multiple nuclei with numerous centrosomes.

The myxoma and myxosarcoma differ from the tumors of this group only in having a certain amount of fluid, containing more or less mucin, between the collagen fibrils. They should not, therefore, be classed as a separate type of tumor.

The smooth muscle cell is a long spindle-shaped cell with a rod-shaped nucleus. It is characterized by a number of fine striations running longitudinally in the cuticle of its cytoplasm. Towards the tapering ends of the cell these striations, termed myoglia fibrils, coalesce more or less intimately to form what appear to be coarse fibrils. Slowly and rapidly-growing tumors composed of this type of cell (leiomyomata) occur most commonly in the uterus but may arise in other parts of the body. In one rapidly-growing malignant leiomyoma, in parts where the cells were proliferating most rapidly, they ceased forming fibrils and became more or less spherical in shape.

The neuroglia cell varies considerably in shape and size. It may be round or spindle shaped or of intermediate form. It is characterized by the production of fibrils of one kind only, the neuroglia fibrils, which run parallel with the spindle-shaped cell and in all directions around the spherical cells. These fibrils touch the cytoplasm of the cell to which they belong in some part of their course. From this type of cell quite a variety of gliomata arise, some of which grow slowly while others multiply rapidly and may invade the pia of brain or cord and grow along it. One glioma occurring over the coccyx and giving rise to metastases in both groins evidently arose from remains of the neural canal.

The endothelial cell is characterized by no production of fibrils, hence it stands out in marked contrast to the cells already described. It gives rise to two types of tumors, the hemangioendothelioma and the lymphangioendothelioma. The first type occurs in two varieties, the capillary and the cavernous.

The capillary hemangioendothelioma occurs in the form of small blood vessels which invade fat, muscle and nerve tissues, and occasionally grow within veins and arteries. The endothelial cells sometimes form several layers around the lumina of the vessels, giving the appearance of a perithelial growth, and rarely papillary masses of endothelial cells may project into the lumen of a vessel and more or less occlude it. If through rupture or pressure the lumina of the vessels become obliterated, the endothelial cells grow in masses and whirls. After a time collagen fibrils extend in between the endothelial cells from the connective tissue cells of the stroma and transform the tumor into what looks like a fibrosarcoma, but fibroglia fibrils are lacking.

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* A lecture under the auspices of the Cancer Commission of Harvard University.

† Synopsis of lecture which was illustrated by one hundred and twenty-seven lantern slides.

In four cases of gradually extending cavernous hemangioendothelioma the tumors were found to consist of endothelial cells, supported by thin layers of connective tissue cells and fibrils, growing within and along blood vessels. In places they distend or burst through the vessel walls so as to form tumor nodules composed of large blood spaces separated by thin septa of connective tissue covered on both sides with endothelial cells.

A neuroma of adrenal origin with widely distributed metastases was characterized by masses of delicate fibrils which reacted to a variety of stains like nerve fibrils.

The neuromata of the eye have been shown by Verhoeff to consist of nerve cells which tend to differentiate like the cells of the retina. The rosettes occurring in these tumors often show very definite rods and cones projecting through an external limiting membrane just as the normal rods and cones do.

In the rhabdomyoma the cells tend, by differentiation of the cytoplasm, to produce the sarcous elements of the normal fetal striated muscle cells.

In the chordoma occurring at the base of the skull the curious vacuolated cells of the notochord are faithfully reproduced.

Epitheliel cells occur in great variety; so also do the epithelial tumors of which the cells tend to differentiate like the normal cells. It is advisable, therefore, to study by themselves each type of normal epithelial cell and the group of tumors with cells differentiating like it. Only the names of a few can be mentioned here: The adenomata of the mammary and coil glands with the layer of smooth muscle cells surrounding the epithelial cells; the various types of carcinoma of the breast; the characteristic benign and malignant epithelial tumors of adrenal cell origin; the chorioepithelioma derived from fetal epithelium covering the chorionic villi; the ciliated epithelial tumors derived from remains of the Wolffian duct, and the adamantinoma derived from remains of the enamel organ.

The vague terms "spindle and round cell sarcoma" and "perithelial angiosarcoma" should be avoided so far as possible. A spindle cell sarcoma may be composed of connective tissue, smooth muscle, endothelial or neuroglia cells. A round cell sarcoma may in reality be a lymphoma, osteosarcoma, malignant leiomyoma or neuroma. A true perithelial angiosarcoma does not occur. The tumors which most frequently show such an appearance are the melanotic sarcoma and the neuroma of the eye; rarely even a carcinoma of the breast may exhibit this type of growth which is purely nutritional in origin. The cells at a distance from the blood vessels undergo necrosis and absorption, leaving the vessels isolated with a sheath of tumor cells around them.

Original Articles.

INJECTIONS OF SEA WATER IN SKIN DISEASES.

BY CHARLES J. WHITE, M.D.

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In October, 1908, Dr. Robert Simon,[1] of Paris, presented before the Boston Society of Medical Sciences a series of beautiful lantern slides illustrating the marvelous therapeutic results which he had obtained in the treatment of numerous dermatoses by the injection of isotonic sea water.

To repeat these experiments was my immediate wish, but the procuring and preparing of this new therapeutic agent offered certain difficulties in ways and means, but owing to the great kindness of Dr. T. J. Leary, Professor of Pathology in Tufts Medical School, who delivered the tubes of water ready for use, and the generosity of Dr. F. A. Washburn, Jr., Superintendent of the Massachusetts General Hospital, who made this kindness possible, the difficulties were overcome, and in January, 1909, Dr. E. Lawrence Oliver, Assistant to the Skin Department, began the present series of injections which were continued and concluded by Dr. Jaynes, House Officer, and to all of these gentlemen I now return my sincere thanks.

Sea water, according to A. G. Mayer,[2] contains the chlorides of sodium, magnesium, calcium and potassium, and the sulphate of magnesium. These salts have different and opposite effects, i. e., sodium chloride is a stimulant to nerves and muscles, while the magnesium, calcium and potassium salts are inhibitory in their actions, and Mayer describes these opposing forces in the case of one of the medusæ whose pulsations are produced by the electrical (?) energy generated, as in a battery, by the action of these various salts.

With this acknowledged phenomenon as a basis for the possible therapeutic power of sea water the following experiments were undertaken. The water was obtained from the ocean about thirty miles south of Woods Hole, Massachusetts, and from a depth of thirty feet, thus insuring a pure, uncontaminated supply. This water was placed in sterile jars and brought to Boston where it was purified by passing through a Chamberland filter and rendered isotonic with blood serum by the addition of sterile tap water in the proportion of ten parts of the former to twenty-three of the latter. This product was placed in sterile glass ampullæ holding 200 ccm. One end of these receptacles was bent in the form of a hook and the other drawn out into a straight line and both extremities were sealed.

The injections were made three times a week deep into the buttocks of the patient who lay on his side and allowed the fluid to run into the tissues by the force of gravity, the ampulla being suspended about three feet above the body and the water passing through a sterile rubber tube and long irido-platinum needle. The rapidity of the injections varied a great deal in the different patients, some requiring at least a half hour to take in 150 ccm. The pain and discomfort attend-

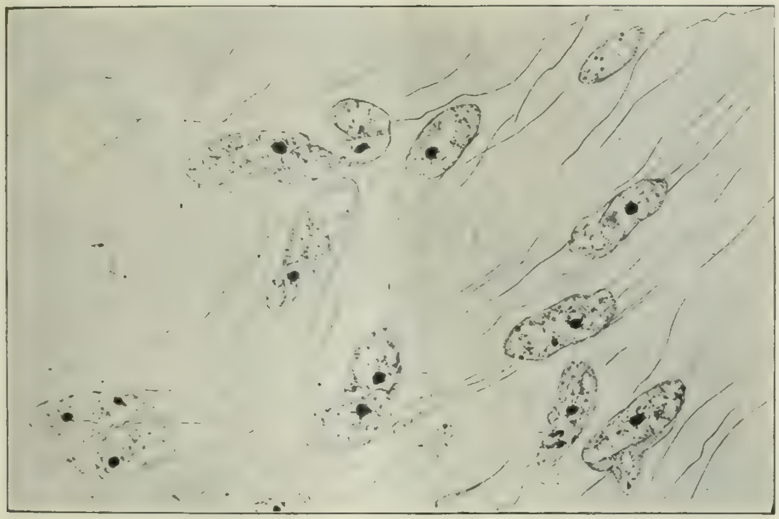

Fig. 1.
Fibrosarcoma: cells viewed flat-wise: fibroglia fibrils black: collagen fibrils barely visible.

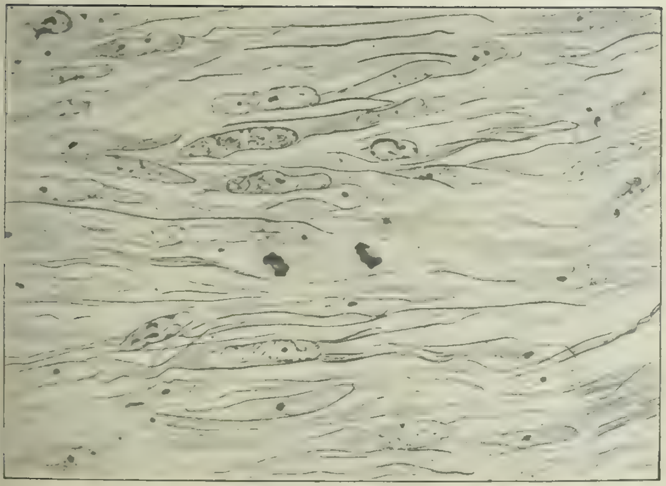

Fig. 2.
Malignant leiomyoma: one cell in mitosis. numerous myoglia fibrils present.

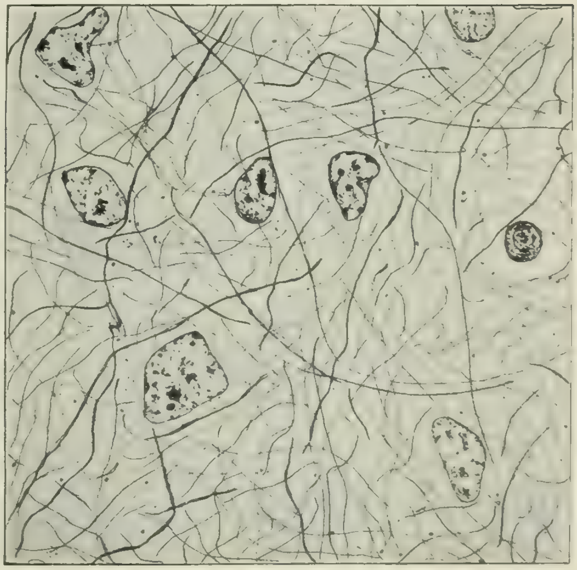

Fig. 3.
Glioma: numerous neuroglia fibrils surround the cells and run in all directions.

ing this maneuver was usually very slight and the only immediate effect was the desire to urinate; while the general after effects were practically nil, although one patient, No. IX, was obliged to take to her bed for twenty-four hours twice on account of chills, fever, lassitude and nausea.

Case I. *Pemphigus foliaceus.* — A typical example of this rare disease of two years' duration in a man of thirty-seven years of age. The patient had received in the skin ward of the Massachusetts General Hospital all sorts of internal medication, including thyroid extract, arsenic and injections of staphylococcus vaccine, and had received externally all the usual dermatological ointments, washes and baths, including cupric sulphate, besides exposure to x-rays and the high frequency current.

On Jan. 2 the sea-water treatment was begun and 50 ccm. were injected. On the following day the man said he felt better and "had more ambition," and walked about on the veranda of the ward. Jan. 4, 50 ccm. Jan. 6, 75 ccm., followed four hours later by a chill. The next day the oozing condition of the skin had ceased and more normal looking epidermis was apparently forming on the cheeks, hips and feet. Jan. 8, 100 ccm., and the man stated that he felt generally better, while a perceptibly harder skin was evident on the face. Jan. 11, 100 ccm. Jan. 12 the skin felt dry and there was a burning sensation on the hips and legs. The bowels were now more regular and the stools were somewhat watery. Jan. 13, 130 ccm. Jan. 15, 150 ccm. Skin appeared drier. Jan. 18, 20, 22 and 25, 150 ccm. On Jan. 26 the surface looked less red and less exfoliating, and the patient was apparently improved in his general condition and was up and about the ward daily. Jan. 27, 29, Feb. 1 and 3, 150 ccm.

After this the injections were stopped. The man had received fifteen injections in all and there was apparently a decided improvement locally as well as generally. Other forms of treatment were then instituted and the man gained more than fifteen pounds of weight, but in early April his health began to fail and he died in a few days, apparently of exhaustion. The autopsy revealed nothing which would throw any light on the etiology of the disease.

Case II. *Scrofuloderma.* — Severe and multiple ulcers over several joints and bones in a woman of twenty-two years. There was a focus at the apex of the left lung suspicious of tuberculosis, but radiographs revealed no osseous disease. The patient had lost ten pounds within the year and had a hemoglobin percentage of 85. A biopsy proved that the cutaneous ulcers were tuberculous, although no specific bacilli were found in the examination of a few sections. The treatment in the ward had consisted of the usual measures, including exposures to x-rays.

On Jan. 2 the injections of sea water were commenced and 25 ccm. were given. Jan. 4, 50 ccm. Jan. 6, 25 ccm. On Jan. 7 no change in the ulcers had been noted, but on this day a subcutaneous nodule on the back of the hand broke down. Jan. 8, 100 ccm. Jan. 11, 100 ccm. The ulcer at the wrist had lost its marked sluggishness and was oozing freely and looked healthier. Jan. 13, 100 ccm. Jan. 15, 150 ccm. Jan. 18, 85 ccm. Condition had improved and the edges of the ulcers were less flabby and less inflamed. Jan. 20, 150 ccm. Jan. 21, ionization with 5% chloride of zinc was instituted. Jan. 22, 150 ccm. Jan, 25, 100 ccm. Syrup of the iodide of iron internally. Condition slightly improved. Jan. 27, 100 ccm. Jan. 29, 100 ccm. All ulcers were distinctly healing. Feb. 1, 150 ccm. Feb. 3, 100 ccm. On Feb. 10 one ulcer of the wrist had closed up and the swelling had disappeared, while the ulcer of the elbow was level with the skin. The general condition was greatly improved and the woman had gained nearly three pounds.

In this case, also, fifteen injections were given, and it is fair to state that a distinctly favorable result had been obtained when the treatment was stopped because the patient left the hospital to live an out-of-door life.

Case III. *Chronic eczema.* — Villous arthritis of knees for nine years. Skin eruption on and off for a year and at the time of beginning the sea-water injections there were large, red, infiltrated and slightly-scaling, round or oval patches accompanied by burning and smarting sensations on arms, legs and hips. Chrysarobin, ichthyol and diachylon ointments and x-rays had been employed by us previously with but indifferent success and on Jan. 7 the patient received 50 ccm. of the water which was followed by a chill four hours later. Jan. 8 area on right wrist was noted to be larger in size and considerable pain was experienced in the left knee joint. Jan. 11, 75 ccm. Condition the same. Jan. 13, 120 ccm. Jan. 15, 150 ccm. No change in the cutaneous disease and the joint pains still present. Jan. 18, 75 ccm. Jan. 20, 150 ccm.

No signs of improvement were noted in this case and this form of treatment was suspended.

Case IV. *Psoriasis.* — Disease present at intervals for thirteen years despite the use of washes, ointments and medicines internally. One year previously, chrysarobin had been used for the first time and the eruption received a check, but at the time of entrance into the skin ward of the hospital there was a general widespread, small papular, scaling eruption. Under a week's treatment with Fowler's solution, Rainier soap, ichthyol and oil of cade to the body and white precipitate to the scalp, a perceptible amelioration was recorded and the sea-water cure was added to the older forms of treatment. Jan. 7, 50 ccm. Jan. 8, 11 and 12, no change in the condition of the eruption. Jan. 18, 50 ccm. Less scaling. Jan. 20, 22 and 25, 75 ccm. Jan. 26, steady improvement. No papules present, but skin is rough and still shows macules. Jan. 29, 100 ccm. Feb. 1, 150 ccm.

In this case there was a rapid and noteworthy improvement in the disease, but it was the type where one would naturally expect such a change, and in addition the patient was receiving the benefits of a time-honored form of treatment because time was pressing. The bowels became much more regular and easy with the addition of the sea-water injections.

Case V. *Eczema seborrhoicum.* — A most stubborn case which had persisted for six years and which had been treated by us twice before in the skin ward with every imaginable medication and with almost no success. A stricture of the urethra with cystitis complicated the cutaneous affection. On Jan. 13 sea-water injections began, 50 ccm. being the initial dose. Jan. 15, 75 ccm. Jan. 18, 150 ccm. Jan. 20, condition the same. Jan. 22 and 25, 100 ccm. Jan. 26, a slight improvement, eyelids less inflamed. Jan. 27, 29, Feb. 1 and 3, 100 ccm, Improvement slight, but no more marked than with other forms of treatment, and injections were stopped.

Nine injections were given in this case and the change in the skin was so slight that we decided to revert to our previous methods of treatment.

Case VI. *Malingering.* (?) Nervous prostration thirteen years ago and again two years ago. Woman is somewhat "senile." Loss of consciousness for six hours without subsequent paralysis in January, 1909. The patient was in the skin ward in July, 1908, with the same ulcerative condition at the same site on the wrist and occlusive dressings and splints almost produced a closure of the wound, but it was our belief at both of her visits under our care that complete and permanent healing of this wrist ulcer was not desired by the patient.

Sea-water injections were given partly with the idea of influencing the mind of this woman, who pretended that she wanted to be cured, and partly with the idea of improving the general physical condition. On Jan. 13 the ulcer was the size of a silver dollar, with raised edges and sluggish, uneven base and infiltrated and edematous periphery. There was burning micturition, but no cystitis, constipation and extreme nervousness, so that the patient would jump when touched unexpectedly.

Jan. 15, sealed dressing and 50 ccm. of sea water in the buttocks. Jan. 18, 50 ccm. Jan. 20, 22 and 25, 75 ccm. Jan. 26, an improvement in the general physical and mental condition was noted, but no alteration in the ulcer. Jan. 27, 50 ccm.

As an ulcerative condition was developing on the nates, at the site of the injections, similar to that on the wrist, this form of treatment was necessarily stopped and under susbequent high frequency exposures there was decided betterment in the wrist ulcer, but after all no greater than that obtained in the previous summer under a simple sealed dressing and a splint. In this case the bowels, which were constipated before and after the period of sea-water injections, became over active while the patient was receiving the water, moving two to five times in each twenty-four hours.

Case VII. *Varicose ulcers and general fibromatosis.* — Similar ulcerations about two years previously. This attack four months old, and at entrance to skin ward there were two ulcers more than an inch in diameter on left lower leg and a similar but single ulcer on the right. Jan. 15, 50 ccm. Jan. 18, 75 ccm. Ulcers improving and general health somewhat better. Jan. 20 and 22, 75 ccm. Jan. 25, 50 ccm. Jan. 26, great improvement in the ulcers which were healing rapidly and the patient felt much better. Jan. 27 and 29, 75 ccm. Ulcers practically closed in.

Here was a distinct benefit noted in all particulars, inclusive of a more regular movement of the bowels, but of course rest from laundry work plus continued horizontal position of the legs was undoubtedly a factor in the rapid convalescence. This patient is now again under our care and the ulcers are very sluggish and fail to respond to our usual form of treatment.

Case VIII. *Lupus vulgaris.* — An extensive case of nineteen years' duration involving nearly the whole face and neck in an Italian woman, aged fifty-five. Previously we had given the patient ten months of x-rays and three months of high frequency, followed by considerable improvement. The woman had then absented herself for eight months and the disease had made considerable progress in the interim. Then, over x-radiation, succeeded by general prostration and great swelling of the diseased areas which resulted later in marked improvement. Ethyl chloride was then used for six months on the right side with no distinct benefit. Finally, six months of vaccination with tuberculin.

On Feb. 9, 150 ccm. of sea water were injected. Feb. 12, 100 ccm. Feb. 16, 75 ccm. Feb. 19, 23 and 26, 150 ccm., and after these six injections the face looked less red, the lupous area seemed slightly less extensive and the woman said she felt better. March 2, 5 and 9, 150 ccm. No further change noted. March 12, 150 ccm. Face appeared lighter in color on both sides and a pale spot had appeared in the center of the left cheek. March 14, 16 and 19, 150 ccm. No change recorded. March 23 and 30, 150 ccm. No progress made and treatment stopped.

Some benefits had been derived from these fifteen injections, but like all our previous efforts the results were comparatively insignificant in the struggle with this obstinate case.

Case IX. *Erythema induratum and psoriasis.* — A very chronic, extensive, rebellious and recurrent case in a young woman of twenty-three, on whom we had previously used all manner of treatment, including constriction, x-rays and cod liver oil internally and externally. On Oct. 8 Koch's bacillary emulsion 1-2500 mmg. was injected. On Oct. 22, 1-2000 mmg. Nov. 5, 1-1500 mmg. Nov. 11, 1-1000 mmg., and the same amount on Dec. 3 and 12. Despite these injections there was but little change in the nodules, and on Jan. 18, 1909, we began the administrations of sea water. At this time two new ulcerations had developed in old scars near the ankle of each leg. The injection of 50 ccm. of sea water were accompanied by "terrific" pain when pressure was exerted on the tube. Jan. 21 there was a small nodule at the site of the previous injection. Seventy-five cubic centimeters were injected this time without any concomitant pain, and the ulcers, were distinctly smaller. Jan. 23, 75 ccm. Ulcers showed marked improvement with apparent healing at their edges. Jan. 26, 75 ccm. Ulcers still smaller. Jan. 28 and 30, 75 ccm. Feb. 2, 100 ccm. Feb. 6, no further improvement. Feb. 9 and 11, 100 ccm. Feb. 13 and 15, 150 ccm. At this later date ulcers were entirely healed, but there existed an area of redness on right leg with small central crust, and anteriorly two pigeon-egg-sized lumps. The psoriasis had not yielded to the influence of the sea water. The patient remarked that her ulcers had never healed before under three months and with the present form of treatment they had disappeared in less than a month, despite the fact that she was at her work daily.

Feb. 16 and 18, 150 ccm. After the last injection patient felt cold and went to bed. Feb. 20, 75 ccm. This dose provoked the same feeling of cold, accompanied by backache, headache, nausea and malaise, but after twenty-four hours in bed the patient felt well enough to work. There was a lump the size of a hen's egg at the site of injection. Feb. 23, 75 ccm. Nodules smaller and paler in color. Feb. 25, 130 ccm. Redness of indurated areas still decreasing and the general health has improved. Feb. 27, 150 ccm. March 2, 125 ccm. March 6, 75 ccm. March 9, 150 ccm. Nodules have diminished still further. March 11 and 16, 150 ccm. No after effects now, except slight pain in hip which disappears in about six hours. March 23, 26 and 30, 150 ccm. No nodules, ulcers or pain present in either leg and treatment ceased. On May 6 the patient was seen again and stated that new ulcers had developed.

In this case twenty-six injections were made and there was no doubt in our minds, or in the patient's mind, that the subcutaneous use of isotonic sea water had been more prompt and more efficacious than any other form of treatment which we had ever used in the many years we had treated her.

Case X. *Chronic eczema.* — A generally reddened, infiltrated, scaling skin, accompanied by villous formation (parakeratosis?) on dorsum of feet and by great itching of two and one half years' duration in a man aged sixty-three.

On Feb. 2 the sea-water injections were begun, with an initial dose of 75 ccm. Feb. 4, 6, 8, 150 ccm. No improvement. Feb. 10 and 12, 150 ccm. Feb. 13, slightly better, but pruritus was still intense. Feb. 15, 100 ccm. Feb. 16, excessive discomfort obliged us to add ichthyol ointment to our medication. Feb. 17 and 19, 150 ccm. Less itching and legs looked softer and general desquamation had ceased. Feb. 24, 150 ccm. Feb. 25, still further improvement in legs. Feb. 26, 100 ccm. March 1, 150 ccm. X-rays were employed to soften the hyperkeratotic palms. March 3, 100 ccm. March 5, 8 and 10, 150 ccm. No further improvement resulted and the injections were abandoned.

Despite seventeen doses of the sea water, the total benefit was so small, despite his general hospital care, that it seems proper to consider this case a failure.

Case XI. *Chronic eczema.* — This butcher, aged forty-four years, had suffered from this affection more or less for three years and at the time of entrance complained greatly of general pruritus and a dry squamous eruption with edema over the trunk and extremities.

An injection of 75 ccm. of sea water was given on Feb. 11. Feb. 13, 125 ccm. Feels much better and eats and sleeps better. Feb. 15, 100 ccm. Less scaling and less pruritus, but numerous pustules have developed on thighs (scratching?). Feb. 17, 75 ccm. Feb. 19, 100 ccm. Still further improvement in the amount of scaling and itching. Feb. 22, 150 ccm. Feb. 24, 150 ccm. Very little itching except at night. Feb. 26, 150 ccm.

Although there was a distinct and consistent improvement in this case with these eight injections, it seemed probable that a similar result could have been obtained by the more accepted forms of dermatological treatment.

Case XII. *Lupus vulgaris and scrofuloderma.* — This girl of fifteen had suffered from a tuberculous ankle and overlying scrofulodermatous skin since early childhood. Her lupus vulgaris had appeared on the cheek five years ago and the other lesions on the wrist and behind the ear had developed soon after. She had been treated by us previously several times with x-rays, operations and injections of tuberculin.

Sea-water injections were instituted on Feb. 9 and she received at first 50 ccm. Feb. 11, 75 ccm. Feb. 15, 100 ccm. Feb. 17 and 19, 150 ccm. No change in the general physical state, but the ulcer of the foot was healing rapidly. The injections were not immediately painful, but some hours afterward there was some discomfort. Immediately following the injections there was an intense desire to micturate. No change in the bowel movements. Feb. 22, 24, 26 and March 1, 150 ccm. March 2, lupus on cheek and wrist seemed lighter in color and less extensive in area and pale areas were present in the center of the plaques. March 3, 5, 8 and 10, 150 ccm. Condition improving but nodules still persisted in all the affected zones and it was decided to excise the disease by surgical procedure.

Following these thirteen injections there was a notable improvement in the less tubercular parts of the disease, but the disease itself, i. e., the papules, showed no tendency to yield to sea water and more drastic measures were decided upon.

Case XIII. *Lupus vulgaris.* — A rebellious case on the cheek of fourteen years' standing in a girl of sixteen whom we had previously treated with silver nitrate, ethyl chloride, curettage, skin grafting, x-rays and tuberculin. A tuberculous hip-joint complicated the case.

Sea water was injected to the amount of 50 ccm. on Feb. 9. The water ran slowly in and was painful. Feb. 11, 75 ccm. Feb. 13, 50 ccm. Feb. 15, 100 ccm. Condition unchanged. Feb. 17 and 19, 100 ccm. The water was absorbed more readily and caused no pain. The patch on the cheek seemed flatter, less red and less extensive. Immediate desire to urinate after each injection. Feb. 22 and 24, 150 ccm. Area of the disease still smaller. Feb. 26 and March 1, 150 ccm. March 2, still further improvement. Area less red and edges less tumefied. Scar contracting. March 3 and 5, 150 ccm. Injections again painful. Engorgement of plaque still less and diseased area contracting, especially in the center. March 8 and 10, 150 ccm.

After these thirteen treatments there was a distinct improvement up to a certain point, but beyond this limit we could not go by the aid of these injections and they were stopped.

Case XIV. *Scrofuloderma.* — A child of two years with a deep, sloughing ulcer in the popliteal space of six months' duration.

Feb. 15, 20 ccm. of sea water were injected without any difficulty and the child went to sleep immediately afterwards. Feb. 17, 25 ccm. Feb. 19, 50 ccm. An extraordinary change had taken place. The ulcer had diminished nearly one half in size, the base was clean instead of foul, and the edges were almost healthy looking.

Despite these unlooked-for results, the baby was removed from our care by an ignorant father.

Case XV. *Xeroderma.* — A marked case which appeared soon after the birth of the boy ten years previously.

Feb. 18, 50 ccm. of sea water were injected without difficulty. Feb. 20, 75 ccm. Feb. 24, 130 ccm. Feb. 26, March 1, 3, 5 and 8, 150 ccm.

In this case, after eight injections, there was absolutely no change in the cutaneous condition of the skin, and the patient left the ward to pursue other forms of treatment.

From the study of these fifteen cases treated by the injections of isotonic sea water, certain conclusions may be drawn:

1. This unusual therapeutic measure produces a certain amelioration of symptoms in widely various dermatoses.

2. This improved condition is most conspicuous in tuberculous processes, especially in tuberculous ulcers.
3. As a whole, this therapeutic agent in our hands is a great disappointment, judged from the standard of Dr. Simon's results.
4. Sea water can be injected in surprisingly large amounts, even into children, without causing much pain or other untoward symptoms.
5. Sea water injected into the buttocks causes immediate desire to micturate, a continued easy and sometimes increased number of daily movements of the bowels, as a rule a slight tendency toward increase of bodily weight, and at times a distinct improvement in the well-being of the recipient.

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A STUDY OF THE PSYCHOSES BEGINNING IN THE PUERPERAL STATES.

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In our present classification of mental diseases, puerperal insanity is not classed as an entity. The puerperium, pregnancy and lactation are considered by some authors as exciting causes, but none of the recent writers, with the exception of Kellogg, have attempted to separate a definite group of cases and call it puerperal insanity. Pregnancy and the puerperium are not uncommon happenings in the lives of most women, but they are given as the cause of insanity in only a few instances. Formerly many of the insanities occurring in women were ascribed to some defect in the generative organs, and even yet many gynecologists say that insanity in women is caused by reflex irritation of the uterus or some other poorly described and little known condition. Menstruation, pregnancy and lactation undoubtedly do have a marked influence on the nervous life of a woman, but that these factors of themselves can cause a psychosis is not entirely admitted to-day.

Donkin, in 1863, described two classes of puerperal mania on the distinctive features of which he strongly insisted:

Class 1. The mania is essentially acute and runs a brief course, it is always accompanied by a very rapid pulse, sthenic or asthenic, and generally a moist skin. The attack is usually ushered in and attended for some time by pain and heat of head, great intolerance to light, sound or any movement in the room, tinnitus aurium and pervigilium. There is a strong tendency to a fatal outcome, death taking place by way of coma or asthenia.

Class 2 is characterized by a complete absence of constitutional disorder, the pulse retains or occasionally exceeds very slightly its natural frequency. There is no danger to life, but the mental derangement is generally more or less chronic and frequently merges into a permanent, hopeless insanity.

The "non-constitutional group," which are dangerous only to reason and not to life, Donkin considers as merely cases of ordinary insanity, excited in females predisposed hereditarily or otherwise to the disease, by causes incident to parturition, such as nervous shock, hemorrhage, exhaustion and a variety of other causes. The acute "constitutional group" he endeavors to prove is caused by uremic poisoning and he cites several cases as examples. These observations have not been corroborated by later writers, and now the uremic poisoning theory is practically ignored. Various other writers have proposed theories for the causation of these psychoses, but they are yet only theories.

In the following series we have selected seventy cases in which the puerperium or the puerperal state was an exciting cause of the psychosis and have endeavored to determine which form of mental disturbance, according to our present classification, is most frequent, the most common age of onset, the time of onset and any other factors which might be determining agents in the disease. Three periods are used, the puerperium, pregnancy and lactation. The puerperium averages about six weeks from the completion of labor and extends through the chief part of uterine involution. Lactation extends from the puerperium up to the end of the nursing period.

Of these cases, 14.24% began during pregnancy, 61% during the puerperium and 24.6% during the lactation period. The form of disease and the time of onset is shown in the following table:

	Pregnancy.	Puerperium.	Lactation.	Total
Manic-depressive,	4	16	11	31
Dementia precox,	5	18	5	28
Amentia,	0	5	0	5
Infection delirium,	0	1	0	1
Epilepsy,	1	1	0	2
Neurasthenia,	0	0	1	1
General paralysis,	0	1	0	1
Unclassified,	0	1	0	1
	10	43	17	70

Pregnancy. — Ten of our cases, 14%, began during pregnancy. Aschaffenburg found 22%, Hoche 11.38% and Münzer 19% beginning in this period. In only 1 of these cases were there any toxic or uremic symptoms noted. This case, one of the depressed form of manic-depressive insanity, three weeks before term had an attack of blindness lasting one day. Labor was induced and the child died in convulsions three days afterwards. Six of these cases had an insane heredity. There was one abortion, the child being born dead. In 5 cases allowed to go to full term the child died soon after labor and in 3 cases the child was living several months after labor.

Two cases of manic-depressive insanity beginning in the later part of pregnancy were discharged as recovered and 2 remain in the house. One case of dementia precox was discharged as much improved, 2 cases improved, 1 unimproved and 1 case remains in the hospital. One case of epilepsy was discharged as improved.

Puerperium. — Forty-three of our cases began during the puerperium. There were 18 cases of dementia precox, 5 of amentia, 16 of manic-depressive insanity, 1 infection delirium, 1 case of epilepsy, 1 case of general paralysis and 1 unclassified case. Thirty-four of these cases had their onset within two weeks after labor. Eight cases of dementia precox and 11 cases of manic-depressive insanity had insane heredity. Two cases of amentia and the one case of epilepsy had near relatives insane. One woman suffering with dementia precox killed her child, this being the only homicide in the series. Three patients with dementia precox and 4 with manic-depressive insanity threatened suicide and 2 cases with manic-depressive insanity and 1 case with amentia attempted suicide. Homicide was threatened by 6 patients suffering with dementia precox.

Septicemia was given as a contributing cause in 5 cases, 2 cases of dementia precox, 2 of manic-depressive insanity and the case of infection delirium. One case with depression had severe vomiting throughout pregnancy and the psychosis began three weeks after childbirth. One manic-depressive case had mastitis. One girl of nineteen gave birth to an illegitimate child and became depressed three weeks afterwards. In 1 case of dementia precox uremia followed labor, and in 1 case there was eclampsia with version. The only case of general paralysis we have had attacks of vertigo with considerable vomiting during pregnancy, but the mental symptoms were not noticed until five weeks after labor.

Lactation. — In Aschaffenburg's series, 50% of the cases beginning in this period belonged to the manic-depressive group. In our series there were 11 cases of manic-depressive insanity, 5 maniacal and 6 depressed cases, 5 cases of dementia precox and 1 case of neurasthenia. One of our manic-depressive cases has been in the hospital four times with maniacal attacks each beginning in the second or third month of the lactation period.

One case of manic-depressive insanity was discharged as much improved, 1 improved, 1 unimproved and 7 cases remain in the hospital. One case of dementia precox was discharged as improved and 4 cases remain in the house. The case of neurasthenia began three months post-partum with some depression, muscular weakness and a sense of physical and mental fatigue and lack of ability to apply herself to any sort of work, and this was accompanied with a keen insight into her condition.

The condition on discharge of all three groups is as follows:

	Recovered.	Much Improved.	Improved.	Unimproved.	Died.	Remained.	Total.
Pregnancy,	2	1	3	1	0	3	10
Puerperium,	8	7	7	3	3	15	43
Lactation,	0	1	3	1	0	12	17
	10	9	13	5	3	30	70

Dementia precox. — There were 28 cases of dementia precox in our series, 5 beginning in pregnancy, 18 in the puerperium and 5 during the lactation period. Those cases beginning during pregnancy had their onset in the latter part. The majority of the cases beginning in the puerperium first showed mental symptoms within two weeks after labor and no case in this series began later than four months post-partum.

Pregnancy was normal in 24 cases. There was persistent vomiting in 1 case, uremia in 1 case, eclampsia and nervous irritability in 1 case each. In 3 cases there were noteworthy subsidiary causes, septicemia in 2 and neurotic tendency in 1. Fifteen cases were multiparæ and 13 primiparæ. Our tables show that age has little influence. Divided into periods of five years each, from nineteen to twenty-four years, there were 7 cases; from twenty-five to twenty-nine, 7 cases; from thirty to thirty-four, 7 cases; thirty-five to thirty-nine, 6 cases, and 1 case began at forty-three. Four cases began at twenty-nine and 4 at thirty years of age.

Heredity was noted in 13 cases. All these patients had insane relatives and some had also alcoholic, apoplectic or neurotic heredity. Only 25% were born in the United States, 25% were born in Nova Scotia, 25% were born in Ireland and the remaining 25% were born in England or Europe. Suicide was attempted in no case, but was threatened by 3 patients. Seven patients threatened homicide and one woman did kill her child, but her husband thought it was an accident.

Labor was normal in 16 cases, difficult in 2 and instrumental in 4. There was one miscarriage. The onset in almost all the cases was comparatively sudden and hallucinations of sight and hearing were frequently present. Fear was a prominent symptom in 4 cases and delusions of persecution were noted in 10 cases. Jealousy and ideas of infidelity on the part of the husband were noted in 4. Headache was relatively infrequent, occurring only in 2 cases. Three patients bore children after the onset of the disease and after the birth of each child there was an exacerbation of the acute symptoms. In one woman the disease began after the birth of her second child, and after each of the four succeeding childbirths she had a marked hallucinatory outburst with a period of restlessness and ideas of persecution and infidelity.

Manic-depressive insanity. — In this group there were 12 cases in the maniacal and 18 in the depressed phase. Heredity was noted in 14 cases. In these cases the heredity was not as near as in the group of dementia precox cases. In the latter it was common to have father, mother, brother or sister insane, while in this group comparatively few had near relatives insane, but would have uncles or aunts insane. Seven maniacal patients were multiparæ and 5 primiparæ, while 14 depressed patients were multiparæ and 4 were primiparæ.

Age seemed to have little to do with either phase of the disease. In the maniacal cases 6 began between nineteen and twenty-nine years and

6 between twenty-nine and thirty-nine. In the depressed phase 8 began between nineteen and twenty-nine, and 9 between thirty and thirty-seven. Ten cases had had other attacks of alienation. Of these, 6 had their first attack after the birth of the first child and 2 had had attacks after the birth of their second child. One had an attack after the first child, three succeeding attacks without childbirth and an attack after the birth of her second child. One woman had an attack after the birth of her first and sixth child and 1 had attacks after the first, second and fourth children. One had an attack after the birth of her third child and three subsequent attacks without any childbirths. One had attacks following the births of her third and fifth children. Two cases had had attacks before the birth of any children and following childbirth had subsequent attacks.

One case in the manic phase began in pregnancy while 3 cases in the depressed phase commenced in this period. One case beginning in the puerperium showed unusual irritability during pregnancy. One depressed case, who first showed mental symptoms three weeks after childbirth, suffered throughout pregnancy from severe vomiting attacks which ceased at labor. One depressed case showed symptoms of uremic poisoning.

All the cases beginning in the puerperium had their onset within one month after labor, and the majority commenced in the ten days following childbirth. The cases beginning in the lactation period commenced for the most part in the first three months after labor. Of the maniacal cases, 50% were born in the United States and 33% were born in Ireland. Of the depressed cases, 33% were native born and only 4% were born in Ireland.

Suicide was threatened by 1 maniacal and 3 depressed patients and attempted by the 3 depressed women. There is no record of any of the patients in this group attempting or threatening homicide.

Labor was instrumental in 5 maniacal and 4 depressed cases. Mastitis occurred in 1 maniacal and 1 depressed case. Two depressed women had septicemia following labor. Worry over an illegitimate child was a marked feature in a nineteen-year-old primiparæ with depression. Worry over domestic difficulties and financial affairs were given as contributing factors in 2 maniacal cases.

The symptoms of onset were more alike in the maniacal than in the depressed cases. Restlessness and talkativeness were early symptoms in 10 cases. Two maniacal cases had a short period of depression at the beginning of their attack. Auditory and visual hallucinations were noted in 4 maniacal cases. The hallucinations in these cases were fleeting, changeable, and as two of the patients said, very much like a dream. It is possible that there was a toxic element in these cases as all of them were instrumental deliveries. Hyper-religiosity was marked in 2 manic and 2 depressed cases. Fear and ideas of reference were marked in 5 depressed cases. Consciousness was markedly clouded in 3 depressed cases.

Amentia. — There were 5 cases of amentia, 7% of the total number. Three were multiparæ and 2 primiparæ. Two cases had insane heredity. In every case labor was normal though prolonged. Three cases recovered, 1 was discharged much improved and 1 case died of pulmonary tuberculosis. All the patients were between the ages of twenty-four and twenty-nine. Four of the cases had onset within two weeks after labor, and 1 first showed mental symptoms six weeks post-partum. Fear, restlessness and clouding of consciousness were the prominent symptoms of onset. Auditory and visual hallucinations were present in all the cases at some period. One case had severe attacks of headache following labor and 1 case showed marked emotional instability, laughing and crying with very slight cause. The onset in these cases is rather sudden, the psychosis is of comparatively short duration and, as far as our records show, there is no relapse.

Neurasthenia. — There was 1 case of neurasthenia, the patient being a woman of twenty-eight years of age. The trouble began three months after the birth of her first child, at which time she felt uncertain of herself, and fatigued easily. A month later she again became pregnant and for a short time her condition seemed to improve, but after the second child was born she began to worry about her work and could not sleep well because she worried about how she was going to feel the next day. She had a very good insight and said that while she realized she had no ground for her complaint, she felt unable to control herself and lacked the will power necessary to keep up with her responsibilities. After a three-months' stay in the hospital she was discharged as recovered and a letter from her husband received several months later said that she was as well as ever.

Epilepsy. — One of our 2 cases of epilepsy began when the patient was seven months pregnant and the other began immediately after labor. In the first case the convulsions were severe and led to a marked mental deterioration in a very short time. In the second case, after the first few severe convulsions which occurred immediately after labor, the convulsions were more the type of petit mal and these continued for sixteen years, at which time the patient had a marked hallucinatory outburst characterized by severe clouding of consciousness with grandiose ideas, the attack lasting for about a year and being followed by a mild dementia.

General paralysis. — There was only 1 case of general paralysis in this series. In this case as far as could be determined there was no luetic history. There were several attacks of vertigo during pregnancy, but no convulsive seizures. The mental symptoms appeared five weeks after the birth of the child and consisted of memory defects, restlessness, defects in judgment and some clouding of consciousness. It is doubtful if pregnancy and labor had any more than an accelerating action in this case. The woman would undoubtedly have become paretic at some later date, but under the strong influence of the changes in the organism caused by childbearing, the causes of paresis were aided and their action hastened.

The cause of the psychosis in these women is yet to be found. Heredity plays a part as in other cases of mental disorder, but these patients did not have a poorer heredity than many other women who did not have psychosis after childbirth or other patients in whom the psychosis did not begin after childbirth, but was initiated by some other cause. In very few cases were there abnormalities shown in the course of pregnacy of such moment as to call forth special attention. After childbirth and pregnancy there is an increased drain on the mother which must be considered, and when added to some psychic cause such as grief or worry and when there is a bad family history a definite reason for a psychosis can be established. In only 3 of our cases was there a special mental strain noted, and in these cases the family history was not especially bad. Infection after labor, with the consequent introduction of bacterial toxines into a system already loaded to the breaking point is a very good cause for mental trouble and was present in 7 of our cases, 10%. Worry over illegitimate children is a psychogenic factor which seems to be more common on the Continent than in this country. Only 2 of our cases bore illegitimate children and had this as a cause.

But as far as we can determine there is no definite reason why a psychosis should be initiated by pregnancy, labor or lactation and there is no way of determining why one woman develops one psychosis and another woman develops another, or why one woman is exhilerated and another depressed. The purperal state doubtless offers some exciting cause in a certain number of women, but how these women differ from other women and how the conditions in the same women differ at different periods are questions which are as yet unsolved.

CONCLUSIONS.

There is no psychosis which can be strictly called a puerperal psychosis, but there is no doubt that the puerperal states can act as an exciting cause of a psychosis in certain women under certain conditions, which conditions are at present unknown.

The mortality of children born of mothers who become insane during pregnancy is very great.

The puerperal states may be exciting causes of attacks of manic-depressive insanity in women who have never before been insane and in women who have had previous attacks of this disease childbearing is apt to be the exciting cause of another attack. In women suffering from dementia precox the puerperal states cause an exacerbation of the acute symptoms and cause the psychosis to become more active.

Homicide is comparatively rare among women becoming insane during this period and is more liable to occur in patients suffering from dementia precox than any other psychosis, while attempts at suicide are less numerous in these cases, but are more liable to occur in patients suffering from the depressed form of manic-depressive insanity.

Eclampsia and the toxic infections are not more frequent in women who become insane than in women who are normal mentally and these factors are of little moment in any but the toxic deliria.

Illegitimate children are not given as the cause of insanity as frequently in this country as in Europe. The reason for this is not determined.

Comparatively few women who later become insane show abnormalities in pregnancy and one cannot tell from the character of the pregnancy whether a woman will become insane after labor or during lactation.

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THE EDUCATION OF THE CHILD'S NERVOUS SYSTEM.*

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A PROPER appreciation of the nature of a child's nervous system is fast becoming of the greatest importance to the physician, parent and teacher. To the physician first, because upon him rests the responsibility of instructing parents and teachers as to the characteristics and limitations of the child's nervous system. To the parents next, because it is their duty to have an intimate knowledge of their children's physical and mental condition, and in spite of the fact that they so frequently turn over to the teacher all care in relation to the training of their child, nevertheless the responsibility is primarily their own and must not be avoided. Finally, to the teacher, because even when parents assume their own responsibility, there is still a large share which must fall upon her and she should not be ignorant as to what that responsibility demands from her.

The training of an infant is the first requisite in producing a normal nervous system. It would seem as if this subject had been emphasized sufficiently during the last decade to produce a lasting impression upon both physicians and parents, but in spite of the growing tendency for mothers to recognize this need, the majority are still ignorant as to the methods to follow, and a large number of physicians are still negligent concerning their responsibility in giving instructions to parents.

Mothers must be taught first the reason for such training, that it is much more far-reaching than the simple production of a good-natured, healthy baby, that it is more for the child's need than for the parents' comfort, that it is, above all, the building of a substantial foundation for a future normal, healthful and well-controlled nervous system. They must also be taught the necessity for beginning such training at birth, and that the first few months are the most important.

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* An elaboration of a paper read before the Clinical Club of Springfield, Feb. 10, 1909, and read as here given before a company of public school teachers at Springfield, Mass., March 16, 1909.

The formation of regular habits and an intimate acquaintance with the laws of obedience cannot be secured too early.

Owing to the plastic and rapidly-changing state of an infant's brain, the ever-increasing new sensations coming to the child's mind during the first year are bound to produce a condition of mental chaos unless we assist in developing good habit lines in the brain and demand an arbitrary routine method of living.

This is not a difficult thing to accomplish, for it is a natural sequence if started at birth. The trouble is that parents go out of their way to break up these habits of obedience and routine, in order to satisfy their own ideas of the pleasure received from the possession of children. Once make a mother realize that that pleasure is mulitiplied manyfold if postponed a few months until the infant has begun to form good habits, and she will always be grateful.

The greatest dangers to the nervous system are encountered during the school life of a child. This period, which we must consider from the standpoint of the actual number of years required by law, varies in different states, but, as a broad estimate, covers the time from five until fifteen years of age. During these years of a child's life, he is compelled by law to serve two masters, parents and teachers, a condition which we know to be untenable unless there is the closest harmony between both masters. There is no question concerning the necessity for mutual understanding and similar methods of procedure by both fathers and mothers in order to produce the best results in home training, and why does not this law equally apply to parents and teachers?

Owing to the increasing demand on men and women from outside sources, parents have gotten into the habit of turning over to the teacher all responsibility as to the physical and mental welfare of their children, and apparently feel that their duty ends with the clothing, feeding and housing of their child. Only when there comes an actual physical breakdown, or other disease, do they rouse up and recognize conditions, and then oftentimes lay heavy blame on the teacher, on the ground that she alone is responsible for maintaining a normal condition in the child. This may be a harsh picture, but unfortunately it is too often a true one, although I do think it is becoming less so each year.

The teachers, on the other hand, feel that they have just so much work to accomplish in a given time, and regardless of methods, the results must be secured. Also, as is usually the case, the number of children given to each teacher makes it impossible for her to devote her attention to any individual child, and hence she overlooks physical or mental deterioration until the damage has been done.

In considering the relation of school life to the child's nervous system, I shall divide this period into three ages, according to their physical and mental development.

1. The kindergarten age from the fourth or fifth to the sixth or seventh year.
2. The child age from the sixth or seventh to the tenth or eleventh year.
3. The adolescent age from the tenth or eleventh to the fourteenth or fifteenth year.

The kindergarten age has become a definite factor in education. It is a stepping-stone between infancy and childhood, between the passive acquisition of knowledge and the active and compulsory self-seeking for knowledge.

This kindergarten stage is supposed to cover about two years — between the ages of four and six or five and seven, according to individual cases, and to give a gradual transition from the individuality of the infantile point of view to the more arbitrary grouping of older children. It is a distinct advance in education to find the kindergarten becoming a part of the public school system.

This age is a vital period of education because it should give children their first right point of view toward the social world. Habits of selfishness or unselfishness are started at this period and the attitude the child takes at this time toward his playmates influences his attitude in later life toward his fellow-men. When children are sent to school at the age of five or six to mingle with a large number of playmates, the results are necessarily according to the law of survival of the fittest, and although this law is active to a great extent in human life, it should not be the predominant factor in a normal, well rounded and unselfish individual.

The only possible way in which a child can be properly started in his educational career is by treating him solely as an individual while he is surrounded with the influences of other playmates, and the only way this can be practically carried out is by limiting the number in a single school to an average of about fifteen children to each teacher. In this respect the private kindergarten has an advantage over the public kindergarten, because, from a financial standpoint, it is possible to limit the numbers or else secure extra teachers, so that the proportion of children to teacher is maintained at a proper ratio. In order to make the public kindergarten a permanent success, this element of numbers has got to be seriously considered, and the ratio of child to teacher kept at the smallest possible figure. If this is not done, the whole *raison d'être* of kindergarten work will be destroyed and the money expended be wasted. In Milwaukee this is being recognized, and whereas in 1881, when the first kindergarten was established, the apportionment to a kindergartner was from twenty-five to thirty-five children, now there are from fifteen to twenty-five to each teacher, and this with a tremendous increase in the number of children, from about three hundred in 1881 to over four thousand in 1903.

The chief criticism against the kindergarten has been the effect of the close work on the child's eyesight and nervous system. In many places there has been a reform along these lines, and the fine work has been replaced by larger material, and combinations of colors injurious to the eyes are being avoided. The kindergarten work is growing and improving each year, but as the methods change and the nature of the work is made more definite and perhaps exacting, there are two fundamentals which must be constantly kept in mind lest the school defeats its own end, and these fundamentals are first a generous amount of outdoor work, play and exercise, so that the physical condition of the child may reach the highest development possible; and secondly, the constant purpose of developing the individuality of the child into a proper relationship toward his playmates.

The next period of school life, which I have called the child age, should be distinctly the most normal period for the child, both physically and mentally. It is the best recognized period for compulsory school work. The child is growing less rapidly, is fond of outdoor life and should be a vigorous and sound young animal. If properly started, he is already developing generous instincts and has or should have become accustomed to the rights and demands of other children.

Mentally, he has reached a stage where it is necessary to begin a systematic training of his powers of observation and his memory. It is now necessary that he should be grouped with other children of his development, not necessarily of his age, and as a result competition is a natural sequence.

This opens up the chief danger during this child age. Competition is necessary in all phases of life, in children as well as in adults, but we must not lose sight of the fact that a child's sense of proportion has not been educated, that he cannot take stock of his own equipment and thus make light of his apparent failures. The slightest mistake or failure on his part assumes the magnitude of a mountain from his point of view and may start him thinking and then worrying until his whole nature suffers.

No two children are alike, and we find one showing evidence of superiority in geography, while another excels in arithmetic. Even at this early age, a kind of specialism has already taken root and should be encouraged. By this I mean that a child should not be held back and allowed to become discouraged because he does not readily master the elements of arithmetic, when on the other hand he shows a normal or perhaps an extra amount of keenness for some other subject. I believe that a well-rounded and generally basic education is necessary at this time, but I also believe that it cannot be secured at once, that years are required for its development, and in the meantime we must recognize that one year a child's mind will progress faster along a certain line and the next year make progress in another direction.

Thus by encouragement, I mean that a child's failures should not be made paramount, but that he should be made to feel that in another year these failures will be offset, and for the present he is to do the best he can with that subject and go on progressing with the other subjects which are more easily mastered by him. Unavoidable failure in one subject is often responsible for a general failure and consequent nervous breakdown.

I do not wish to imply that only subjects agreeable to a child should be given him, nor that the mental discipline of harder work in certain lines should be lost; but when one subject is made the basis for complete discouragement, it is no longer a question of discipline, but one of destruction. Encouragement, not discouragement, is the essential factor in the education of a child at this period.

All of this requires a more or less intimate knowledge of the individual, even at this age when it is almost impossible from the teacher's standpoint. But here is shown the necessity for the parents' mutual and fair-minded assistance. The father and mother can and should know of the mental peculiarities of their child, and should in a kindly spirit point out to the teacher the evidence of discouragement and the lack of natural ability along certain lines and then the teacher in the same spirit can make suitable changes, or at least make allowances for the child's failures.

Competition is good if controlled and if unconscious, but I think it is never wise for parents to find fault because the marks of their child do not equal those of their neighbor's child. Competition among school children should be of such a wholesome character that it unconsciously stimulates a child to do his best, without constantly calling to his attention the disgrace which results from having marks lower than his neighbor. A principal of a grammar school recently told me that he tried as far as he was able to promote a child according to his mental development rather than according to the sole evidence of marks. This seems to me a fair and broad-minded method and one which, if a principal of a large school with his manifold duties can adopt, surely the other teachers can give it due consideration.

The dangers during this period of school life are therefore: First, the neglect of the individuality of the child, a condition for which the parent has even a greater responsibility than the teacher; second, the failure to recognize early nervous symptoms oftentimes made evident simply by signs of discouragement, and not recognized because of the natural tendency to health and vigor in a child of this age; and third, the wrong conception of competition, making it a principle based on results as shown by marks, rather than a means to develop natural and healthful growth.

The third period, or the adolescent period of a child's education, is the most vital from a purely physical piont of view. In his " Psychology of Adolescence," Hall states that this is a much neglected period. His idea, as I remember it, is that the general practitioners tend to treat human beings from the standpoint of the adult, whereas the pediatrist is chiefly interested in infancy and the conditions and diseases relating to the first ten years of life. This leaves this important period of adolescence out of the field of thoughtful study and consideration. At no time in a human life is there such a complete mental and physical change taking place. The girl, especially, is going through a crisis in her physical growth, which she usually at the best only partially understands, and consequently either worries herself into a state of neurasthenia, melancholia and even insanity, or else, receiving some instruction from her mother, practically none from her teachers, and much from her schoolmates, runs the terrible risk of having her whole moral nature molded by mere chance.

The boy runs a similar risk, but his mental equilibrium is not upset to the extent that a girl's is, and hence he has a better chance to correct his point of view when more mature in his judgment.

It is impossible to conceive why the subject of adolescence should be such a bugbear in the schools. Not only do teachers neglect to give instruction and mental and moral assistance, but what is far worse, they neglect the mere physical side of the subject, and, regardless of the onset of menstruation, keep a girl at her studies and forced physical exercises even when she is menstruating.

A girl of thirteen was recently brought to me because she began to menstruate nine months ago, but had not menstruated for six months. She was anemic, constipated, nervous, irritable, did not sleep well, had practically no appetite and growing worse instead of better. It was her last six months in the grammar school, and she constantly feared that she would not be promoted with her class. She went to school in the morning after a hurried breakfast, was in school until four in the afternoon, then practiced on the piano, read and studied until nine in the evening. Forced out-of-door life after school made very little difference, and finally an interview with the principal of the school disclosed the fact that she stood high in her class, was practically sure of promotion at the present time, and by taking half sessions at school and omitting all outside work, she would easily be able to graduate. By mutual arrangement between parents and teacher this child's condition should have been corrected months ago.

Curiously enough the women, who are in the majority as teachers, are the most callous concerning a girl's physical condition at this age. Every teacher ought to know when any girl in her school is menstruating, and should regulate the work accordingly. It is the duty of mothers to notify teachers at such times, and the time taken to write a short note is well repaid by the benefit to the girl's physical condition.

The evils of competition are multiplied during this school period, because of the frequent unstable mental condition of the child. Furthermore, the frenzy for covering all the ground possible in the curriculum is greatest during the latter grammar school life.

A mother asked a teacher recently why it was necessary to teach so many subjects in preparation for the high school, and the teacher replied that it was for the benefit of the child who was not going to higher schools. In other words, a child who was to finish school work at the age of fourteen must have all the knowledge possible crammed in his mind whether it was to be of any use to him or not, and the child who was to take further school work must suffer the consequences for the sake of his schoolmate. What an ideal for the teacher to have! And yet the teacher is not to blame as much as the populace which demands that kind of an education.

It is absolutely essential that the physical condition of a boy or girl should receive closer attention during the adolescent period, not in the sense of mere increase of exercise, but in the broader sense of physical training which considers the need of proper proportion between work and recreation, the necessity for physical rest rather than violent exercise, thus demanding nine hours of quiet, healthful sleep, and finally the influence of the mind upon the body. These last two requisites are of tremendous importance because so vitally necessary.

If a child does not sleep well, something is the matter. In an infant it means oftentimes insufficient nourishment or a lack of training; in an older child it may be due to physical fatigue or excitement; but in the adolescent period it usually means a more serious condition directly traceable to the nervous system. Worry over physical changes, mental problems and moral questions, all produce an increasing fatigue of the nervous system at an age when, because of great susceptibility to all kinds of suggestions, and because of the lack of mental poise, the nervous system is in its most vulnerable state.

The emotional side of a child's organization is highly developed during these years, and requires careful supervision lest it become the dominating factor in the child's life. Through the months of pregnancy and the period during which the mother is nursing her infant, there is no question in the physician's mind as to the importance of restraining and wisely directing the emotional elements in the woman's life, and this at a time when she is supposed to have reached maturity and be more or less well poised. Why do we neglect this same element in the important educational period when a child is approaching maturity, but is still mentally and physically undeveloped?

The diseases of the nervous system might almost be considered as diseases of children, because so many of them either occur or begin to develop during childhood. Many of them are distinctly hereditary, but a greater number are acquired. Sachs claims that by more careful study into their origin we can more and more trace diseases like epilepsy, cerebral paralysis and even idiocy to injuries received at birth or during early childhood. The typical infectious diseases of children are often responsible for the later development of nervous diseases, because of the great vulnerability of a growing child's nervous system. Most of the so-called functional nervous diseases, as chorea, neurasthenia, hysteria and melancholia are distinctly traceable to the wear and tear of the nervous system during school life. Many of the headaches, which become more or less chronic in character, are the result of over work and too close confinement in school. The oculist is making systematic examinations of the eyes of school children in several states, and finding from 30 to 50% or even more of eye deformities. As a result, the general practitioner thinks first of the eyes when a child reports headache. We need the thorough examination by oculists, but we need also a broader point of view which will recognize the possibility of neurasthenic headaches, of anemic headaches and the various school conditions which cause these headaches, as well as the other symptoms of nervous irritability. If it is so easy to produce pathological conditions in the nervous system of a child, why do we not use our energies in preventing such conditions and in developing as far as possible a normal child?

In many ways the practice of medicine has been changing from the earlier aggressive methods to the broader and more far-reaching combination of aggressive and preventive methods, and education must do likewise. Her methods have been chiefly from the point of view of the educator, and naturally of an aggressive type, but it is time to consider the subject from the child's point of view and introduce the more necessary and permanently valuable preventive methods. How is this to be accomplished? First, by a proper understanding of the significance of the word "educate." The definition given in the Century Dictionary is taken first from the Latin verb, "educare, to bring up (a child, physically or mentally); rear, educate, train (a person in learning or art); nourish, support, or produce (plants or animals)." In general, "to impart knowledge and mental and moral training; to develop mentally and morally by instruction; cultivate; qualify by instruction and training for the business and duties of life."

A quotation in the dictionary from "self culture," by J. F. Clarke, is as follows: "But education, in the true sense, is not mere instruction in Latin, English, French or history. It is the unfolding of the whole human nature. It is growing up in all things to our highest possibility."

Such a broad and proper conception of education demands a close supervision of the physical, mental and moral nature during the growth of a child. The close relationship between the nervous system and the mental development requires an intimate knowledge of the nature of each, as well as their great interdependence. The schools are striving for this ideal and the people at heart are demanding it, but the difficulty is in making the methods practical enough to be of use.

It seems to me that we must begin with physicians and require them to give of their knowledge to those who can use it in the development of children. Medicine is constantly demanding that physicians shall be men of remarkable breadth and resource, thoroughly trained to educate the public along the lines of right living, and the public has a right to expect such instruction and assistance from physicians.

The immediate guardians of a child's development are the parents, and they must receive instruction from the physicians concerning the manifold sides of the child's nature, that he is not a mere machine, but a conscious individual with a growing intelligence and a very sensitive nervous system. They must know that sleeplessness, irritability, headache and lack of attention are not simply signs of laziness, but serious symptoms which must be investigated. Parents must realize that a teacher's work is difficult and oftentimes nerve racking, and they must cultivate a broader sympathy for the teacher and a disposition to assist her in every way possible. They must notify the teacher when they recognize signs of nervousness growing in their child, or when the child has certain peculiarities of temperament which must be considered in connection with his education. They must be taught the necessity for wise suggestion as a part of the training of the emotional element of the child's mind, and also the importance of rational instruction at the age of puberty. Altogether, they must learn at an early time the great responsibility which comes to them when they are entrusted with children.

The teacher must have a broad foundation for her work. She must know the elements of practical psychology and physiology before she is fitted to teach any subject to a child. She must know and be able to recognize the signs of nervous strain, as she watches over the children during school hours. She must have the broad sympathy and love for her work which is demanded by any profession. She must be willing to co-operate with parents in guiding and educating the individual characteristics of a child. Above all, she must be patient in anticipating results.

More or less frequent talks to the teachers and parents connected with an individual school, by a physician properly trained, would be a very practical and useful method of producing results beneficial to the child.

Another important start has been made in connection with medical inspection. Massachusetts requires medical inspection in all the public schools, and other states are considering it, but the system as inaugurated does not at present go far enough. The system is more one of medical examination rather than inspection. The inspector visits his school twice a week, or oftener if sent for, and examines children referred to him by the teacher. This leaves the responsibility for recognizing defects entirely upon the teacher, and the results depend upon her individual medical knowledge and her conscientious interest in the subject. It is needless to say that such a method at least leaves many of the nervous conditions unrecognized. The medical inspector should be an inspector in the true sense of the word, and should actually visit the schoolroom where he can see the children at work and observe for himself their mental and physical condition. In this way he will not only get better results, but by personal advice and example give the teacher much assistance in the methods of recognizing these defects.

It is said that the teacher often objects to his coming and makes his work, even at the present time, difficult and oftentimes obnoxious. This may be because the system is new and she thinks it is encroaching upon her field; but the right kind of a teacher must recognize its importance, welcome the doctor and be glad of his assistance.

The system of medical inspection must also be kept out of politics, even if it becomes necessary to demand civil service examinations, in order that the physicians may be qualified for the work.

In a recent address by Dr. Kerley, of New York, he advocates the organization of a department of hygiene to co-operate with the Board of Education, as suggested by the superintendent of schools in New York City. Such a board to consist of a skilled oculist, an orthopedist, a laryngologist, a pediatrist and a sanatarian who shall have power to supervise all questions of school hygiene and medical inspection. Such a system seems to me to be worthy of careful consideration, especially in cities large enough to demand and procure it. A department of that nature would lighten the work of the school committee, be of everlasting benefit to the children and run the least risk of ignorant interference from the public.

The problems of the education of a child are multiplying rapidly, and necessarily improvements and reforms must come slowly, but it is of the most vital importance that, first and last, the physical condition should receive the closest attention. No matter how much knowledge a child has stored in his mind, if with it he has secured a crippled nervous system he can never become the best type of citizen.

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VESTIBULAR NYSTAGMUS AND ITS RELATION TO THE SOUND PERCEIVING APPARATUS.*

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The sound perceiving apparatus is made up of terminal filaments of the auditory nerve in the labyrinth, the trunk of the auditory nerve and its central origin in the brain. Nystagmus may be defined as a vestibular reflex, such reflex being normal in duration when a labyrinth is properly functionating. A labyrinth is that part of the ear which consists of a membranous labyrinth enclosed by an osseous capsule, and which comprises the vestibule, the three semi-circular canals and the cochlea, which parts I will not herein attempt to detail in description.

The varieties of nystagmus are optical, occupational, intracranial and vestibular, but as this paper is confined to vestibular or aural nystagmus, will therefore say very little regarding the other forms. In optical, occupational and aural nystagmus there are no actual lesions of the brain, while in nystagmus of multiple sclerosis and other organic nervous diseases lesions have been found mainly in corpora quadrigemina, restiform bodies, cerebellum and medulla. Most frequent cause of optical nystagmus is amblyopia, intracranial nystagmus, cerebral affections. Occupational nystagmus quite common amongst laborers in coal mines owing to the way in which they work in drifts, causing them much annoyance owing to the fact it makes all objects appear in motion.

Vestibular nystagmus is a reflex action of the eye caused by irritation of the vestibular nerve, which occurs as follows: The origin of vestibular and motor oculi nerves takes place in a mass of ganglionic cells termed the neucles dietus located within the medulla; so when the vestibular nerve is irritated, this irritation is transmitted to the motor oculi and this in turn causes an oscillation of the eye. Such irritation can be produced by either the galvanic, turning or caloric reaction, providing the nerve is not paralyzed. Technic to carry out these reactions will be described later in this paper.

There are several kinds or varieties of aural nystagmus produced by the turning reaction, namely:

1. Horizontal nystagmus, meaning a horizontal oscillation of the eye.
2. Vertical nystagmus, producing a vertical oscillation of the eye.
3. Circular nystagmus, producing a rotary oscillation of the eye.
4. Mixed, consisting of both rotary and horizontal oscillation.
5. Oblique, causing an oblique oscillation of the eye. The kind depending upon the assumed position of the head during the turning reaction.

The vestibular apparatus consists of sacculus, utriculus and semi-circular canals. Function of the former two are unknown. The semi-circular canals are three in number, namely: Anterior vertical, posterior vertical and horizontal, and the positions of the canals within the petrous bone may be represented as follows: Take the left hand and bring all fingers to an angle of 90°, and then place the palm of the left hand to the palm of the right hand and then the palm of the right hand will represent the horizontal canal, while the fingers of the left hand represent the anterior verticle and the palm of the left hand represents the posterior vertical.

Each semi-circular canal has an ampulla and it is that part where the vestibular nerve ends and, therefore, where irritation takes place; each semi-circular canal has both a bony and membranous canal; perilymph is contained within the bony canal and endolymph within the membranous canal. There is absolutely no connection between the two canals; chemical analysis of the fluid, however, shows both to be the same, cerebrospinal fluid. Now by any movement of this endolymph which may be the ultimate result of either the turning or caloric reaction, it causes nystagmus, the physiology of which is as follows: As patient is turned, irritation of the nerve takes place, flow of endolymph starts toward the ampulla and nystagmus occurs. Nystagmus in the direction of the turning during the turning, but on arresting in the opposite direction. As the endolymph flows, the cupula at the same time is being moved on hair cells and traction of the nerve takes place and goes to the brain, thus resulting in an oscillation of the eye by reflex action and termed vestibular nystagmus. The method of procedure to produce same is the turning the caloric and galvanic reactions, the technic of which is as follows:

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Turning reaction.—Turn the patient on a revolving stool ten times, using opaque spectacles to offset any fixation of the eye, and during this turning nystagmus in the direction of the turning takes place, but on arresting, nystagmus occurs in the opposite direction; e. g., turn individual to the right and nystagmus is to the right while turning, but on arresting, to the left.

Caloric reaction. — If you irrigate the left ear with cold water, patient in the erect position, nystagmus should be rotary and to the right. If you irrigate the left ear with warm water, patient in the erect position, nystagmus should be rotary and to the left. The reason why nystagmus occurs on the same side that you irrigate with warm water and the opposite with cold water is not fully understood; authorities on this subject are inclined to believe that warm water induces the flow of endolymph toward the ampulla and cold water induces the flow away from the ampulla.

Galvanic reaction. — Put electrode in front or behind ear and with kathode in front of right ear you will produce nystagmus to the right side. Anode in front of the right ear and you will produce nystagmus to the left side.

The value of these various tests is to ascertain whether or not a patient with a chronic middle-ear condition has an acute or latent destruction of the labyrinth; also to ascertain whether or no there is a fistula in the horizontal canal, to differentiate from nystagmus with a brain lesion, e. g., brain abscess, or meningitis and optical nystagmus, and to learn whether or not there is a paralysis of the vestibular nerve.

Example. — In acute destruction of the right labyrinth there would be spontaneous nystagmus to the sound left side, and with the caloric reaction nystagmus would be negative to the diseased side, revealing a diseased or unfunctionating labyrinth. In latent destruction of the labyrinth caloric reaction would be negative and with turning reaction where right labyrinth is destroyed and you turn patient to the sound side you get little or no nystagmus to the destroyed side, but if you turn to the ill side you produce normal nystagmus to the sound side. Longest duration of nystagmus possible to produce to an affected side is twenty-five seconds, to sound side fifty seconds; however, nystagmus to an affected side is rarely more than ten seconds. If the vestibular nerve is paralyzed, or patient has a complete destruction of labyrinth, little or no nystagmus is produced by the caloric reaction. The matter I am endeavoring to make clear is the relative importance of the nystagmus reactions, the methods of procedure to carry out such reactions and the information revealed from such procedure. Let us suppose having a patient with chronic middle-ear suppuration. By chronic, I refer to an ear which has been discharging two years or more. Nystagmus reactions applied to such an individual will elicit whether or not the labyrinth is sound, a matter surely of great importance to both patient and physician, for with a destroyed labyrinth you must, in addition to doing a radical mastoid operation, free sinuses, look to see if the dura is normal, and then open the vestibule from behind the facial nerve. Such a procedure only will thoroughly drain the labyrinth, and one can readily see that a radical mastoid operation alone would do no good as brain infection would surely occur.

I will now take up the differential diagnosis of the following conditions:

Acute labyrinthitis and latent labyrinthitis. — With acute destruction of the right labyrinth there is a spontaneous nystagmus to the left or sound side. With caloric reaction, nystagmus to the right side is negative. Turning reaction: Turn patient to the sound or left side, and you get little, if any, nystagmus to the ill or right side. Latent destruction of the labyrinth: Caloric reaction nystagmus negative to ill side. No spontaneous nystagmus to sound side. Turning reaction: Turn to sound side and you get a little nystagmus to the ill side, but on turning to ill side normal nystagmus to sound side.

Intracranial nystagmus and nystagmus of labyrinthitis. — In a brain condition, for instance, either brain abscess or meningitis, you get a strong nystagmus to the diseased side on turning reaction, while in labyrinthitis you get little or no nystagmus to the diseased side with the turning reaction. Again, intracranial nystagmus is always a rotary oscillation; not so in labyrinthitis.

Optical nystagmus and vestibular nystagmus. — Optical nystagmus is the same as vestibular direct while turning, but when opaque spectacles are put on in optical nystagmus it decreases; not so in vestibular nystagmus. Vertigo on arresting never accompanies optical nystagmus, may in vestibular nystagmus. With optical nystagmus the oscillations are all equal while looking straight ahead, but such oscillations can be made to disappear by requesting patient to look to the extreme right or left without changing the position of the head; this is not so with vestibular nystagmus or intracranial nystagmus. We also have a nystagmus associated with trauma, say a fracture of the pyramid which will produce all the symptoms of acute labyrinthitis, and such symptoms generally last for about eight days. Patient has vertigo which ceases on turning of the head, vertigo on arising in bed, but vertigo absent while in lying position. Caloric reaction negative to ill side and deafness also present. Such a patient very often has a traumatic neurosis and these cases are oft times difficult for the physician to learn the exact condition as so many patients are desirous of becoming more nervous, especially so when they intend presenting a claim for injury sustained. But symptoms of neurosis can be as a rule detected with the turning reaction, as with same you get a decided trembling and little nystagmus; patient also perspires profusely and breathing is increased with traumatic neurosis.

The following are a list of condions which may be accompanied by little attacks of nystagmus: (1) Movements of the head; (2) nicotine poisoning; (3) neurasthenia; (4) traumatic neurosis with or without ear troubles; (5) arteriosclerosis; (6) nephritis.

But nystagmus accompanying the above conditions is of normal duration with turning or caloric reactions.

Little or nothing has been done in America on this subject, while in Austria it has received the attention of such men as Barany, Alexander, Neuman, Urbanstitch, Routine and others. No ear condition referred to any of the various clinics in Vienna is operated upon previous to applying the nystagmus reactions. The value of this research is of the utmost importance to aurists as we possess no exacting manner of differentiating a case of labyrinthitis from a cerebral abscess other than eliminating a chronic middle-ear condition from cerebral abscess. Again it reveals to us whether the labyrinth should and must be opened, which operation we possessed no way of knowing when indicated previous to this research unless it was to first do a radical mastoid and then explore. The tests are also of extreme value to the surgeon and physician, as cerebral abscess and meningitis are accompanied by an intracranial nystagmus; but unless we know it to surely be an intracranial nystagmus, then it is of little value as a diagnostic sign, and to learn that it is an intracranial nystagmus, a knowledge of the forms of nystagmus, the tests to reveal them, the technic to carry out such tests intelligently, and the significance of same after revealing are the all-essential factors.

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ISOLATION OF THE BACILLUS OF TYPHOID FEVER FROM THE BREAST MILK OF A WOMAN ILL WITH THE DISEASE.

BY CHARLES H. LAWRENCE, JR., M.D., BOSTON,
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AFTER a careful search through the literature, I have found no mention of the isolation of the bacillus of typhoid fever from the breast milk of women who have contracted the disease. The following case, therefore, seems worthy of report:

Mrs. N., twenty-three years old, was admitted to the Massachusetts General Hospital May 13 with the provisional diagnosis of typhoid fever. Three months before entrance she had been confined and was nursing her baby when she was taken sick.

Four days before coming to the hospital she began to feel ill; with fever, headache, chilly sensations and slight abdominal pain as her chief symptoms.

At entrance to the hospital her temperature was 101.8° F., her pulse 108, her respirations 26. The white count was 4,800, and a stained specimen of blood was negative except for the leukopenia. Physical examination showed an enlarged spleen and a few squeaking râles at the apices of both lungs. The breasts were tense and full of milk, but not reddened or tender. The examination was otherwise negative. The Widal reaction was negative, but became positive eighteen days later. Blood culture into bile medium gave an actively motile bacillus which was identified as bacillus typhosus.

A culture from the breast milk was taken in the following manner: The breast and nipple were carefully washed with soap and water and boric acid solution. About 5 ccm. of the milk was withdrawn into a clean breast pump, and transferred to a tube of sterile ox-bile. This was incubated for eighteen hours, and a transfer made to a blood serum slant. After six hours in the incubator, an actively motile bacillus was found in the water of condensation. The organism corresponded to the cultural characteristics of the bacillus of typhoid, and agglutinated with a known typhoid serum. There seems to be no reasonable doubt, therefore, that the patient's milk contained typhoid bacilli. The possibility of contamination is very slight, for special precautions were taken to prevent such an occurrance.

As the patient's baby has shown no signs of illness, the exact significance of the presence of the organism of typhoid fever in the milk of nursing women is not clear. The positive Widal reaction obtained with the serum of infants who have been nursed by mothers ill with typhoid may explain the failure of the child to contract the disease in the majority of cases. It seems equally possible, however, that in a few cases the protective reaction in the child may not be strong enough to resist the infection. At present the evidence on this point is too meager to suggest any deduction of value, but the case offers an explanation of the mode by which nursing infants may contract typhoid fever, and the matter seems worth further investigation.

I wish to thank Dr. F. C. Shattuck for his permission to report this case from his wards.

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Medical Progress.

PROGRESS IN PHARMACOLOGY AND EXPERIMENTAL THERAPEUTICS.

BY MAURICE VEJUX TYRODE, M.D.

ARSENIC AND ITS NEWER COMPOUNDS.

ARSENIC is found widely distributed throughout nature. Formerly it was believed that growing plants did not take up arsenic from the soil, but according to the works of Angell, Davy, Stoklasa, Collins and Stockberger, it is frequently present in articles of food such as beans, beets, cabbages, rhubarb, rye, etc., when grown on arsenical soils. No evidence has been adduced to show that arsenic is a constant constituent of all plants, yet Gautier has found it present regularly in the animal organism, distributed in the thyroid and mammary glands, in the skin and also in the menstrual blood of women. On account of the regularity of occurrence, he believes it to be a normal constituent of the organism and important in the metabolic processes; thus explaining the nutritional good effects of small medicinal doses of arsenic.

Undoubtedly, the human body may become tolerant to much larger quantities than it normally contains as is exemplified by the traditional resistance of Styrian peasants, a strong people, who have taken arsenic in large doses as a tonic for generations. The truth of these reports was definitely settled when Knapp gave to a Styrian peasant at Gratz 0.4 gm. or 7 gr. of arsenious oxide at one dose without poisonous symptoms. Much speculation and discussion has arisen concerning this tolerance which may be acquired by taking increasing doses of arsenic. Cloetta recently brought forward a theory supported by scientific experiments in which he claims that individuals become tolerant to this drug because the gastrointestinal tract gradually loses the power of absorbing it on account of the changes brought about by the same in the protoplasm of the intestinal mucosa. This is probably not the whole explanation, since arsenic is continually found in considerable quantities in the urine of the individuals eating it. Another theory of antitoxin formation has been suggested and based on the ground that the serum from a rabbit treated by arsenic when injected into another rabbit makes the latter more tolerant to the drug. A simple explanation may be that the chemical chain to which arsenic is usually linked in the mammalian body becomes less and less attractive by habituation.

Until recently, the principal indications for using arsenic in medicine have been as a tonic, to increase the body weight, to improve the blood, in nervous and skin diseases, in tuberculosis and malaria and in some new growths. Lately it has been introduced as a remedy for sleeping sickness and other diseases due to trypanosomata and also for syphilis.

What experimental evidence have we to sustain all these clinical uses? Already thirty years ago Gies showed that young animals receiving arsenic developed more rapidly, became fatter and stronger and that their bones became harder than those of the controls. Stockman and Greig, who denied the increase in weight, were obliged to admit the tremendous effect upon the growing bones analogous to that caused by phosphorus. Very lately, Lardelli, working with an arsenical mineral water, "Val sinestra," showed conclusively a tremendous power of growth in the treated animals by striking weight-tables.

Concerning the effect upon the blood, the work of Engel in pernicious anemia demonstrated a marked increase in the newly-formed red cells, but Bettman finds in subacute poisoning in rabbits a decrease in both hemaglobin and red globules, while Stockman and Grieg find no influence whatever. Biehler, using the arsenical, cacodylate of sodium, found in normal animals and men a marked increase in the gravity and hemoglobin of the blood, yet a diminution in the red and white corpusles. She nevertheless observed marked general amelioration of the nutrition. The discrepancy of opinion concerning the action on the blood is probably best explained by the work of Block who found that arsenic had no action on the blood in vitro, but that in vita it at first and very transciently increased the red blood corpuscles. Soon the latter become decreased, but as the organism becomes accustomed to the drug, a marked secondary increase in the red corpuscles takes place. These observations, with the established fact that arsenic increases the capacity of the bone marrow for forming blood cells, give us a very reasonable ground for the use of arsenicals in anemia. The work, showing the marked increase in weight and adipose tissue without augmented destruction of proteids, sanctions the use of arsenic in debilitated conditions as asthenia, general malnutrition, consumption, etc. It is also possible but unproved that it may increase nerve force and thus be of value in nervous exhaustion. The employment of arsenic in skin diseases draws its justification from the normal presence of arsenic in the skin where it may have a definite action on the local metabolism of this tissue.

It was used for a long time for the treatment of malaria and, curiously enough, the discoverer of the cause of malaria, Laveran, was the first to show the value of arsenic in other parasitic diseases as those due to trypanosomata. Following him, the Liverpool School of Tropical Medicine, with Nierenstein and also Robert Koch, brought forth the evidence showing the curative power on trypanosomatous diseases of *atoxyl*, a new organic compound of arsenic. This compound was claimed to be much more destructive to the parasites but much less toxic to the host than arsenious oxide. Later, Ehrlich, after objecting to the formula of atoxyl as given out by the British school, himself made a new acetyl derivative of atoxyl called *arsacetin* with much more toxic effects on the parasites, but from three to five times less toxic in warm-blooded animals than atoxyl.

All this work is of tremendous importance as it forms a basis for our modern specific therapeutics, and we have reason to hope that by changing the composition of different chemical agents to suit the circumstances a series of specifics may ultimately be found for the different infectious diseases and would naturally be invaluable in the many where it has been impossible to obtain powerful enough antitoxin or to vaccinate successfully.

An interesting recent discovery is the finding that the combination of trypanocidal agents is much more efficacious than equivalent larger doses of single ones. Thus, Laveran, and later Franke, showed that certain infections are not cured by either trypan-red or atoxyl alone, but yield readily to a combination of both. In the same manner the Liverpool School has found that mercury chloride has marked power in increasing the trypanocidal action of atoxyl. Likewise, antimony has also been shown to increase the action of the latter. As Ehrlich aptly points out, these new facts rather lend support to the older gunshot prescriptions where many ingredients were used, and he warmly recommends the combinatory treatment in man. "The complete sterilization of the body, i. e., the total destruction of every parasite, is often only to be accomplished by the administration of doses which come very close to the lethal dose. Such a procedure directly endangering life may be permissible in the animal experiments, but never in man. One is, however, justified in hoping that it might be possible to cure the disease without endangering life by the simultaneous administration of three, four or five substances chosen in such a manner that their actions are concentrated on the parasites, while in the organism of the vertebrate host they are distributed over several different organs."

All authors are not unanimous in lauding the virtues of arsenic and atoxyl in the treatment of different trypanosomatous diseases as Dourine, Tsetse, Mal de Cadras, etc. The variance of opinions probably depends upon the different normal resistance of the various parasites and also upon the ease with which they acquire resistance, as it has been shown by the modern workers on this subject that trypanosomata rapidly lose the power of being killed by arsenic and other trypanocidal substances in the animal organism. This immunity is not present in vitro since the resistant strains are much more susceptible to the trypanocidal agents in a test tube. This is interestingly explained by Ehrlich on the ground that these parasites lose some of their power of attracting the atoxyl, while the animal organism retains his; thus in the body the drug goes to the host but not to the parasite. Yet, in the test tube where there is no animal organism to take up the trypanocidal substance it is forced upon the parasite which because of hypersusceptibility (anaphylaxis) is more easily killed.

After Koch's work with atoxyl in syphilis, a considerable number of authors tried the remedy clinically, but with some variance of results. Most agreed on a less specific effect than from mercury. S. Flexner, nevertheless, was able to show experimentally on the ape, Macacus Rhesus, a protective action of atoxyl against syphilis.

UNTOWARD EFFECTS OF ATOXYL AND ARSACETIN.

One great drawback still exists against the widespread use of these newer forms of arsenic for the specific cure of certain parasitic diseases, and this is in the form of the frequent and serious untoward effects which follow their administration These consist in optic atrophy with partial or total blindness, parasthesias, vomiting, diarrhea and jaundice, etc. These symptoms are by no means seldom, since Spiethoft noticed untoward effects in eleven out of twenty-three cases in which he tried atoxyl in the treatment of syphilis. A score of other authors have reported such unfortunate happenings after both atoxyl or arsacetin. Birsch-Hirschfeld and also Igersheimer scientifically studied the pathology of atoxyl and found that in both dogs and rabbits after receiving small doses over a period of time there occurred destructive processes in the optic nerve, retina and cord, thus corroborating the clinical cases of blindness and partial paralysis of the rectum and bladder. These destructive processes after atoxyl and arsacetin are interesting in that they are much more common than after arsenious acid itself which, although more toxic, causing death in the unhabituated in far smaller quantities, is not very apt to produce such degenerative changes suddenly and without warning in small medicinal doses. Furthermore, if arsenious acid was as prone to produce amaurosis, most of the Styrian peasants would be blind.

Although these experiments in experimental therapeutics are of tremendous interest and show us a more or less new field for future practice, yet physicians should wait before making general use of these new organic arsenicals until they have been still further tested experimentally, and until some forms which do not cause the serious untoward effects have been elaborated, and in the meantime arsenious oxide itself still remains the safest for the reconstituent or tonic and blood building action of arsenic.

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Reports of Societies.

AMERICAN SURGICAL ASSOCIATION.

Meeting of 1909, Held at Philadelphia, Pa., June 3, 4 and 5.

The President, Dr. C. B. G. de Nancrede, of Ann Arbor, Mich., in the chair.

The association met in the Clover Room of the Bellevue-Stratford Hotel, and was called to order in scientific session at 10.30 A.M.

ADDRESS OF THE PRESIDENT.

Dr. C. B. G. de Nancrede, of Ann Arbor, Mich., said that the statistics dealing with extirpation of the scapula were misleading because cases which were primary in the scapula and secondary in the soft parts, those which were done in two stages, and those performed for benign growths, for caries, injury and tubercular disease, were all included in the statistics usually given. Indeed, in one paper an operation where the scapula was removed after death was included. There was no discrimination in any of the tables between operative recovery and the end results, investigation showing that a large number of those that were reported as having recovered had later died of recurrence of the trouble. The three-year rule had been ignored in like manner, for it was well known that this was utterly unreliable for any form of malignant disease. One case had an inoperative recidive at the end of five years, yet this was included by the reporter as a recovery. Recidives were often the source from which generalization took place. Careless examination of the patient and the expectation of finding marked difference between the physical signs in the two lungs often led to the opinion that pulmonary metastases had not occurred, the true explanation being that metastases were so numerous and so small and finely distributed that the physical examination was unreliable.

The death-rate probably was now lower with the new methods of operating, saving blood and preventing shock, and it was possible, therefore, that some of those who died in the past from shock and hemorrhage might have shown a few permanent cures if they had survived. It was a matter for future investigation to determine whether interscapulo-thoracic amputation would not give more permanent recovery. The usefulness of the upper extremity after the removal of the scapula was usually so good that of course hesitation was felt about doing the operation just mentioned where the whole upper extremity was ablated.

The details given in the tables seemed to warrant the above conclusions, which had proved to the author, of course, a surprise. There was only one case on record where the details were obtainable sufficiently long to prove that it was really a cure, being entirely well at the end of eight years. A few more were probably cured, although not reported long enough to be past the time that recidives had been noted.

A vast number of those that were claimed as cured had been observed from only a few weeks to a few months and then lost sight of.

Operation for pure enchondroma and other diseases demanding excision of the scapula present very favorable results.

CHRONIC INTESTINAL STASIS.

Mr. W. Arbuthnot Lane, of London, England, referred to his earlier communications on this subject, with special reference to the removal of the colon for chronic constipation, and described the technic of the operation.

In nine cases he had removed the colon, and of this number one patient died from the bursting of a small abscess in the original cavity. In a number of private cases division of the ileum at its junction with the large bowel was effected, with no death from the operation *per se*. Removal of the large bowel was a serious operation, but the danger attending its performance varied with the degree of toxemia. He did not, however, recommend or advise such a radical operation until all other measures, medicinal and hygienic, had been tried. The danger of the operation could be reduced very materially by the subcutaneous injection of a large quantity of normal salt solution immediately before operation.

DISCUSSION.

Dr. J. C. Bloodgood, of Baltimore, said that chronic constipation had, in some instances, an anatomical basis. He would call attention to the use of the x-ray and injection of bismuth as a method of diagnosis in these cases. He believed this method would be used more frequently in the future in the class of cases under discussion, as it was used now in cases of aneurysms, bone lesions, etc. A day or two ago he operated on a patient who for three years had had pain in the lower abdomen. On exposing the right side, some of the adhesions referred to by the essayist were found, and on exposing the left side the sigmoid could be lifted out of the abdomen as easily as one could lift out a loop of the small intestine. The anatomical lesion in this case was an enlarged sigmoid from fecal matter. The sigmoid itself was normal. The mesentery was normal. These adhesions were separated with good results. In another case the adhesions were more pronounced. In this case the bowel was not resected, the patient being relieved by medical treatment. There was no difficulty in resecting the intestine and performing lateral anastomosis, but if one could demonstrate early in the cases a band or adhesion or the anatomical condition, and medical treatment would relieve it, more good would be done than by resecting the sigmoid.

Dr. Thomas W. Huntington, of San Francisco, said that it had seemed to him for many years that very many of these cases of enteroptosis, bearing especially on the large bowel, could be avoided by two things: (1) Careful attention in early life to the emptying of the bowel. It was a fact that in a large number of people in the hands of the average general practitioner a more or less permanent accumulation of fecal matter in the large bowel had been overlooked. (2) He believed this accumulation of fecal matter was due to a definite cause. Take, for instance, an appendix which had not given rise to the ordinary symptoms; it had caused sufficient irritation to interrupt the peristaltic wave and to bring about a condition of the bowel which was extremely disastrous in the carrying of residual material. Careful attention in early life to the emptying of the bowel would obviate the possibility of the occurrence of prolapse of the sigmoid, and by loosening up the large bowel and changing its environment or its relation we might avoid early operation for a pathological condition which existed. Careful study and search for the pathological condition, as an obscure appendix, would enable us to escape from the later consequences which the author had portrayed.

Dr. Arthur Dean Bevan, of Chicago, said that, as he understood the essayist, he made a plea for operative intervention in cases of chronic constipation. He would insist upon intestinal obstruction before he would undertake such an operation as the removal of a part or the whole of the colon for chronic constipation. The large and small bowels performed their functions admirably, sometimes in spite of the presence of extensive adhesions. That was evident after many operations. We should discuss this as a sort of borderline subject in which in our cases we should call into consultation the internists. What would internists think of surgeons if they took the position of treating chronic constipation by resection of the large intestine or by anastomosis? Most of these cases could be very much better handled by our internists by exercise, by hygiene, etc., than by extensive surgical operation. Personally, he protested against advocating an operation so extensive as the removal of the colon for chronic constipation itself, and should insist upon reserving the operation for absolute intestinal obstruction.

Dr. John F. Binnie, of Kansas City, Mo., understood Mr. Lane as only advocating this operation for chronic intestinal stasis after all other measures of treatment had failed. Personally he had practiced cecostomy in a number of these cases with very fair temporary results, but had not observed them sufficiently long to determine whether the results would be permanent or not.

Dr. John B. Roberts, of Philadelphia, agreed partly with what Dr. Bevan had said, because of some recent experience he had had with intermittent obstruction of the bowel due to kinks and various other causes, but he realized that the essayist did not propose to open the abdomen of everybody for the relief of chronic constipation. After the internists had failed to afford relief to these patients by exercise, medical and dietetic measures, then surgical operations might do good the class of cases discussed. He was greatly pleased with the broad philosophical view which Mr. Lane had given of the whole question.

Dr. Maurice H. Richardson, of Boston, said that we must approach the surgery of the large intestine in cases of this kind, as Dr. Bevan had said, from the symptomatology of chronic intestinal obstruction. We all saw cases of complete chronic intestinal obstruction which demanded a most thorough radical operation. In one of his cases of complete volvulus of the sigmoid which threatened life the sigmoid filled the whole abdomen, producing an acute obstruction of the bowel which necessitated operation.

Dr. W. B. Coley, of New York, said that every severe case of acute intestinal obstruction required operation, and the operation was attended with great danger. Of nine cases operated on, death followed in all of them. He reported a case of volvulus of the sigmoid to the New York Surgical Society which was preceded by attacks of chronic intestinal obstruction, ending with an acute obstruction. He operated on the patient on the ninth day, when he was almost moribund, with great distention of the abdomen, high pulse, elevated temperature, etc. He opened his abdomen under cocaine anesthesia (as he could not stand a general anesthetic) over the sigmoid, relieved the obstruction, and the patient recovered.

Mr. Lane, in closing, wished to be distinctly understood that this form of operative treatment was suggested only after all other measures had failed.

THE FECAL ORIGIN OF SOME FORMS OF POST-OPERATIVE TETANUS (ANO-RECTAL, INTESTINAL, PUERPERAL, GENITAL AND LOWER PELVIC OPERATIONS), AND ITS PROPHYLAXIS BY PROPER DIETETIC OR CULINARY MEASURES.

Dr. Rudolph Matas, of New Orleans, in a paper on this subject, drew the following conclusions:

1. Notwithstanding the vast increase in our knowledge of the etiology, pathology and prophylaxis of tetanus since the discovery of the drumstick bacillus of Nicolaier, a certain, not fully determined, number of post-operative deaths from this infection occurs in seemingly clean surgical cases, which has not been satisfactorily accounted for.

2. Whilst it has been fully and irrefutably demonstrated that the regional liability of the exposed parts of the body to tetanus (feet, hands, legs, forearms, arms, face, neck, etc.) is directly proportional to the degree of surface contact with tetanus-bearing (tetaniferous) matter (earth, manure, dust), the origin and regional distribution of accidental and post-operative tetanus in the concealed parts of the body (protected from surface exposure) had not been sufficiently investigated or recognized, surely not sufficiently insisted upon, in accounting for post-operative deaths in which the rules of surgical asepsis have been apparently well observed

3. Abundant experience has shown that while the risk of tetanus infection can be absolutely eliminated in all operations upon sterile tissues in which a rigorous post-operative asepsis can be maintained until healing has occurred, this liability cannot be removed in those regions in which post-operative asepsis cannot be secured.

4. In order of importance, next to the feet and hands and other exposed parts of the extremities, the injuries and surgical operations in those regions of the body which are most exposed to fecal contamination are the most liable to tetanic infection. In this category we will place the ano-rectal region, perineum, female genito-urinary tract, male genitals, especially scrotum, lower pelvic region including buttocks, sacro-coccygeal region, groins, thigh, knee, upper leg, on their posterior surfaces especially; after operations on the intestines, artificial anus, etc., in all of which post-operative fecal contact is either constant or unavoidable, on account of proximity to the intestine. In considering this topographical distribution we are excluding the direct but unconscious transmission of fecal matter to distant parts of the body by the soiled fingers of the patient himself or of his attendants.

5. The careful attention to the sterilization of instruments and the disinfection of the hands compelled by the rules of modern surgical, obstetric and veterinary practice have enormously reduced the liability to tetanic infection, even when those parts of the body are involved which are most exposed to fecal contact by eliminating the direct inoculation of wounded surfaces with contaminated instruments and hands. However, the occasional post-operative deaths, which occur from time to time in the practice of competent and clean surgeons, clearly point to another source of danger which is not dependent upon defects of technic or contaminated material, e. g., imperfectly sterilized catgut, but to other sources of infection outside of, and apart from, the operative act itself which have not been adequately appreciated.

6. This hitherto unrecognized or disregarded factor in the causation of post-operative tetanus, at least in regions liable to fecal contact, is the direct contamination of the alimentary canal and its contents with living tetanus bacilli and their spores, swallowed in raw, uncooked vegetables, berries and other fruits which are cultivated in fertilized or manured, i. e., tetanized soil.

7. It may be a mere coincidence, but it is a fact, that in all the cases of post-operative tetanus occurring after operations in regions liable to fecal contact which have been investigated by the author (two in his own practice), the patients had eaten copiously of uncooked vegetables immediately before the operation. The vegetable menu in these cases correspond with the laboratory findings in regard to the vegetables found most frequently contaminated with tetanus germs and spores, viz., celery, lettuce, chicory, watercress, cabbage (cold slaw), radishes, turnips, carrots, tomatoes and other green vegetables, strawberries, blackberries and other

berries and fruits which are grown in the soil or brought in contact with it, and which are largely consumed raw in an unavoidable contaminated state.

8. The tetanus bacillus and its spores are known to survive the passage through the intestinal canal of the domesticated animals, especially the herbivorous horse and cow, and the dung of these animals is a perpetual culture medium for the tetanic bacillus, swallowed constantly with the grass of the pasture and the fodder of the stable; not only are the bacilli ejected alive, but their virulence and activity are probably intensified by their temporary residence in the favorable conditions of the lower intestinal tract. This survival of the tetanus germ in a virulent state is fully demonstrated by the experiments of Sormani, Sanchez Toledo, Veillon, Hoffman, etc., who demonstrated that the diluted excrement of the horse and cow, injected subcutaneously and otherwise, will kill rabbits in from five to six days with all the symptoms of this disease. These and other authors have fully demonstrated that the spores of the drumstick bacillus resist the action of the digestive juices. It has also been demonstrated that the tetanus-laden feces of the healthy horse and cow are capable of producing fatal tetanus when brought in contact with wounded surfaces in these animals.

9. In view also of the fact that five per cent of all normal men harbor the tetanus bacillus or its spores in an active state in the intestinal canal, and that the percentage of contaminated individuals is increased to twenty per cent in hostlers, stablemen, dairymen, drivers, etc., the possibility of tetanus from fecal contact must always be kept in mind, especially when operating upon the ano-rectal region, perineum and genito-urinary organs of both sexes in unprepared subjects.

10. The author fully recognizes that the normal defenses of the organism against intestinal infection are, in healthy individuals, usually sufficient to protect it, even if the living tetanus bacillus has been freely introduced into the alimentary canal with the ingested food. It is only through the salutary and preservative influence of the protective mechanism, which largely neutralizes the most virulent infections in the alimentary canal, that we can account for the great numbers who escape when operations are performed in the recognized tetanogenic regions. It is evident, however, that even if tetanus infection is a comparatively rare post-operative sequence, it is well worth the observance of the simple precautions required to avoid this deadly accident. Precautionary measures would be more than justified if only one in ten thousand operative cases could be saved from the almost certain death which follows when this form of inoculation occurs after operation.

11. In accordance with the preceding statements, and his own convictions, the author has taught and insisted in his own practice, since his last and second post-operative death from tetanus occurred five years ago (perineoplasty and hemorrhoids), that no patient should be brought to operation without antitetanic preparation, whenever an operation is to be performed upon parts in which fecal contamination is unavoidable (hemorrhoids, fissure, fistula, stricture, etc.).

12. This antitetanic preparation is very simple and consists of (*a*) purgation three days before the operation; (*b*) the suppression of all raw, uncooked food, especially green vegetables, berries and other fruit for the same period of time before the operation. In emergencies, when dietetic preparation is impossible, 10 ccm. of tetanus antitoxin are injected subcutaneously at the time of the operation, while the patient is still under the anesthetic.

DISCUSSION.

DR. JOHN E. OWENS, of Chicago, wished to mention the case of a woman he saw a few years ago, past middle age, suffering from tetanus. She had no appearance of a wound, but two or three days before she consulted him she had a tooth pulled. Before the attack of tetanus began she had been eating celery, of which she was very fond, and he had no doubt the attack resulted from eating the uncooked celery.

DR. NATHAN JACOBSON, of Syracuse, N. Y., recalled one case in which tetanus developed after an operation for hemorrhoids, which was performed by a so-called rectal specialist, the so-called injection method having been resorted to. It was thought the tetanus was due to carbolic acid or to the ligature material that was used. In other cases of tetanus he had seen following operations on the ano-rectal region trismus was a late manifestation.

DR. W. H. HUTCHINGS, of Detroit, Mich., had treated three cases of post-operative tetanus. In one the tetanus followed an abortion. In the other, tetanus followed injuries to the hand. In a third tetanus followed an apparently clean operation for suprapubic shortening of the round ligaments. It developed twelve days after operation, but the wound healed by primary intention. All three patients recovered.

DR. JOSEPH RANSOHOFF, of Cincinnati, Ohio, a few years ago did considerable ano-rectal work but never saw a case of post-operative tetanus, with one exception, and that was in the practice of a colleague. The patient had been curetted, and fuming nitric acid introduced into the uterus. Acute tetanus developed, but there was not trismus, but an open mouth, a symptom he had not seen before. In every case the alimentary tract should be thoroughly emptied.

DR. MAURICE H. RICHARDSON, of Boston, had never seen a case of post-operative tetanus. It must be very rare when we considered infections through the alimentary canal, as acute appendicitis cases, enterostomies and other operations by which the large intestine was opened.

DR. ARTHUR DEAN BEVAN, of Chicago, asked if it was not possible that tetanus varied considerably in different localities.

DR. ARPAD G. GERSTER, of New York, said that thirty-two years of surgical practice in two hospitals had failed to produce a single instance of post-operative tetanus to his knowledge.

DR. BEVERLY MACMONAGLE, of San Francisco, Cal., in an experience extending over thirty years, had seen but one case of tetanus following operation. In this case a trachelorrhaphy was done, catgut was used, and he had no doubt infection came from the catgut. He had operated in the houses of Italians and Spanish, where they had a horse or a pig or cow adjoining their rooms, yet he had not had a case of infection from the tetanus bacillus in any of those bad surroundings.

DR. EDMOND SOUCHON, of New Orleans, remembered distinctly losing a young girl upon whom he operated for hemorrhoids. She died on the eighth day after the operation from tetanus.

DR. F. H. GERRISH, of Portland, Me., some twenty-five years ago, had in close proximity to one another two cases of post-operative tetanus. One patient was a child in the teens, and tetanus followed an operation for necrosis of the tibia; in the other, tetanus developed after ligation of hemorrhoids. Tetanus seemed to come in waves. In the year these two cases occurred tetanus was quite prevalent. Three years ago they had in the hospital with which he was connected sixteen cases of tetanus in the course of eighteen months, and they were still in doubt as to the occasion for those cases.

DR. J. COLLINS WARREN, of Boston, thought it ought to be said in this discussion that tetanus was to a certain extent a tropical disease; that latitude had some influence upon the growth of the bacillus of tetanus, and that in the tropics it grew more luxuriantly than in temperate zones.

Dr. S. Stillman, of San Francisco, could see how there was danger of tetanus developing after ligature operations for hemorrhoids. That was the experience of Lane in the navy on the Pacific coast, at Panama and in the early days in San Francisco. The danger was a real one at that time, and his experience was extensive in those days, and it also happened in his own work a number of times, but no particular precautions were taken to guard against tetanus developing.

Dr. Albert Vander Veer, of Albany, N. Y., said that his experience did not bring to his mind a single case of tetanus in connection with operations upon the rectum. The cases of tetanus seen in army practice generally resulted from shell wounds in which there was a great deal of dirt carried into the wounds; the wounds were badly lacerated, and they saw many cases of tetanus.

Dr. George E. Brewer, of New York, saw no objection to using serum as a prophylactic in these cases. They used it at the Roosevelt Hospital in all cases of injuries to the hands and feet. Seven years ago they had sixteen cases of tetanus occur in about two months in the summer following injuries of the hands and feet, and after that they made a definite rule in such cases to give them an immunizing dose of antitoxin, and since they had adopted that practice they had never had a case of tetanus develop there.

Dr. Dudley P. Allen, of Cleveland, Ohio, said that they had had a number of cases of tetanus at the Lakeside Hospital in Cleveland from the use of toy pistols. In every case where the wound was opened early and packed, the patient recovered. The patients whose wounds were not opened early and packed, died.

Dr. C. B. G. De Nancrede, of Ann Arbor, said that there were certain sections of the country where tetanus was unknown, while in others, a few miles distant, the disease was rife; at least, the germs of the disease could be found in the soil. For the past eleven years in his lectures he had warned his students about the dangers of unripe fruit as a possible source of tetanus.

Dr. Robert G. Le Conte, of Philadelphia, said that some fifteen years ago tetanus developed in a case that was operated on by a colleague in Philadelphia. The disease developed on the eighth day following an operation on the perineum, and resulted in death. At the Pennsylvania Hospital they formerly had a number of cases of tetanus, but since they had made it a rule to give patients with injuries of the hands and feet, or patients with suspicious-looking wounds, an immunizing dose of the antitetanic serum, they had not had tetanus develop.

Dr. Matas, in closing, said that at the Charity Hospital, New Orleans, there was no case of railroad injury that was contaminated with dirt that was not given antitoxin or antitetanic serum. In answer to Dr. Bevan, as we approached the tropics the prevalence of tetanus was increased. It was less prevalent in northern than in southern latitudes.

THE PARATHYROID QUESTION.

Dr. Charles H. Mayo, of Rochester, Minn., said that for more than fifty years reference had been made by various authors to peculiar gland bodies that were quite regularly associated or connected with the thyroid bodies. As stated by careful observers, the glands were four in number, usually without the true capsule of the thyroid gland. They were 6 to 7 mm. long, 3 to 4 mm. wide, and 2.5 mm. thick. The pathological changes were of simple type, i. e., degenerations, hemorrhages, cysts and seldom tumors. In fact, there were but few tumors of the parathyroid reported, most of these being found at autopsy, and all were benign, mostly adenomas. From such reports it would appear that these glands as compared with other organs and lesions were singularly free from serious diseases, especially those of a surgical nature.

The association of function of the glands like the thyroid, parathyroid, thymus, suprarenal and others became more marked as continued investigation disclosed the various changes consequent on disease or removal of the various glands. It was quite possible that the human being with four parathyroids had some to spare, and that if those on one side were preserved, no untoward consequences would follow. This phenomenon had been noted in other double structures — the kidneys, ovaries, etc.

Operations upon cases of hyperthyroidism were usually confined to one side, and the blood supply being free, there was but little danger of subsequent hypothyroidism, the greatest danger occurring from operations on both sides and from secondary operations on the remaining side in single goiter.

Should tetany follow the removal of the parathyroids, the indications were to administer calcium salts to maintain life until parathyroid glands could be secured, transplanted and function obtained, as by this means it might be possible to tide the patient over into a chronic state which might later become a cure. In nearly 1,200 operations for goiter they had seen no tetany.

EXCISION OF THE LARYNX FOR MALIGNANT DISEASE.

Dr. James Bell, of Montreal, reported twelve laryngectomies. In his experience, partial operations on the larynx were not satisfactory. Excision of the larynx was a safe operative procedure. In seven of the twelve cases operations were done for intrinsic far-advanced cancer of the larynx; in five, for primary disease of the organ. Of the twelve cases operated on, seven recovered.

DISCUSSION.

Dr. W. W. Keen, of Philadelphia, in 1898, selected as the subject of his presidential address, "Total Laryngectomy," and in it he reported a case of excision of the larynx. The man was now perfectly well, it being eleven years since the operation was done. He recommended at that time that the patient be kept in the Trendelenburg position to prevent aspiration pneumonia.

Dr. George E. Brewer, of New York, said that the dangers from the operation of excision of the larynx were: (1) Aspiration pneumonia; (2) extension of the infection downward along the muscular and fascial planes of the neck toward the mediastinum; (3) too long deprivation of food in old people who were in a bad general state. He believed in early feeding. He introduced a nasal tube into the lower part of the esophagus, and began feeding as soon as the patient came out of the ether. He began the use of water in about six hours after operation, gave eggnogs and concentrated food from the start.

Dr. Roswell Park, of Buffalo, said that his first case of laryngectomy was operated on about twenty-four years ago, and the patient nearly died of iodoform poisoning. He was afraid to use iodoform after that, and in a later case employed subnitrate of bismuth. This patient died. An autopsy was made, and he found the lining of every bronchial tube smeared with bismuth, that formed a paste, so that the patient died of asphyxiation from the bismuth.

Dr. N. B. Carson, of St. Louis, after detailing five cases in which he had resorted to laryngectomy, said that rectal anesthesia added very much to the comfort of these patients.

Dr. George W. Crile, of Cleveland, wished to report twenty total laryngectomies. There were two immediate fatalities in the first eight, but none in the last twelve. The ultimate results were quite unsatisfactory. The oldest case was living between fifteen and sixteen years after operation; another, five years after operation; one was alive four years after operation; one, after three years, and the remainder had been operated on too recently to be considered at this time.

FURTHER OBSERVATIONS ON TRANSFUSION, WITH A NOTE ON HEMOLYSIS.

Dr. George W. Crile, of Cleveland, Ohio, said that in pernicious anemia, in toxemia, leukemia, Hodgkins' disease, carcinoma, uremia, etc., no benefit had occurred upon observation from transfusion. No cases of hyperthyroidism improved apparently by transfusion. In a case of pellagra, rapid convalescence was noted after transfusion from an immune donor. In suitable cases it was of great value in the prevention and relief of the circulatory phenomena of shock. They were encouraged by the results of transfusion in pulmonary tuberculosis. As influencing operative surgery, their further experience amply confirmed the earlier observations in grave surgical risks by preliminary and post-operative transfusion. There were two notable groups susceptible of results in contemporaneous transfusion, namely, those in which there had been internal hemorrhage, grave or continuous, demanding operation at the same time, and those in which the patients were reduced by long-continued disease, by starvation or otherwise to such a degree as to render them unsafe for the operation required. In those cases the donor was attached and a sufficient amount of blood was transferred until the recipient was sufficiently restored to take the anesthetic. All preparations having been made, the patient was then anesthetized, and in the course of operation the needed amount of blood might be transferred from time to time by the assistant in charge at the direction of the operating surgeon. At the close of the operation a sufficient additional amount of blood was transferred to insure the post-operative safety of the circulation.

As to hemolysis, it must be considered, first, as but one form of manifestation of the end action between the blood of one individual against the blood of another. Second, if there was hemolysis *in vitro*, it by no means necessarily followed that there would be hemolysis *in vivo*. Their agreement might be an exception. Hemolysis was a valuable aid in the diagnosis of active tuberculosis reaction, occurring more frequently than in carcinoma. In cancer, the reaction was largely dependent upon the stage of the disease at the time of observation. Hemolysis usually occurred in the early stages of cancer, and rarely occurred in its late stages.

THE PRESERVATION OF DISSECTIONS OF SURGICAL ANATOMY WITH PERMANENT COLOR OF MUSCLES, VESSELS, NERVES AND ORGANS, BY A NEW METHOD.

Dr. Edmond Souchon, of New Orleans, La., in a paper with this title, said that the details of this experimental work, extending over several years, were published in the *Journal of the American Medical Association* on Aug. 22, 1909, and he wished to recall only the most salient features of this new method.

The basic condition was a proper embalming formula which would assure color. The aim was not so much to obtain the real color of the living, as that color varied in the various subjects, but to secure a marked contrast between the fleshy parts of muscles and the tendons, bones and other white tissues, doing away with the uniform bleached appearance presented by so many otherwise beautiful preparations seen in the museums in this country and abroad.

After a number of trials, consuming over forty subjects, he had found that so far the following formula was the one that gave the best results for this work: Arsenic, 2½ gal.; formalin, 6 oz.; alcohol, 16 oz.; carbolic acid, 6 oz.; glycerine, 16 oz., and creosote, 2 oz.

Very lean subjects should be used.

A feature of some importance was to allow the parts to be dissected to drain for ten and fifteen days before dissecting them. Otherwise, the dissecting was rendered unsatisfactory by the infiltration of the tissues by the embalming fluid.

After the dissection was completed, it was placed in a glass jar filled with a solution of carbolic acid, 1 oz. to the gallon. This was changed as often as it was discolored by the blood.

We came now to the next important point, which was the placing of the dissected parts in an *empty* jar without any solution of any kind, but covered with a lid. He called this stage the curing process. It was second in importance to the embalming solution, as it developed or brought out again the color without darkening the tendons or other white tissues. It also smoothed the surfaces, which might be shreddy or ragged; it sharpened the edges of the muscles, thus giving better definition. It fixed the color so as to keep it from being perceptibly affected when the specimen was finally put up permanently in a weak solution of alcohol, 20 oz. to the gallon of water.

The arteries and veins must be painted with moist water-colors, as coloring matter used in the injecting material would not show when the preparations were preserved in solutions.

All solutions should be changed as soon as they became the least cloudy or discolored. This was essential to the permanent beauty. Otherwise the impurities in the cloudy or discolored solutions would settle on the white tissues, stain them and destroy their whiteness and brilliancy.

Some specimens were refractory in developing color. He estimated so far that 85 or 90% of the specimens turned out satisfactorily. The remainder were merely good, but not good enough to be placed in a museum, especially with one's name to it.

That uniformity of color and results did not invariably follow uniformity of procedures was due, he believed, to the fact that the chemical composition of the tissues varied with the subjects.

The great practical value of this new method was to give us the means of building study museums composed only of real dissections placed in very large glass jars, in spacious rooms flooded with light, on tables, so that students could come right to them and study them.

Thus the students could prepare for the dissecting room. They were assisted in their dissections by referring to the preparations in the museum. Their work in the dissecting room was completed by showing them the great number of things which they never saw in a dissecting room. They were also able to review and fix in their minds what they had really dissected themselves. Practitioners could in a few moments relearn much anatomy.

Such was the study museum he was now building for the Medical Department of Tulane University in New Orleans. The museum contained four hundred very large glass jars with dissections. He had now two hundred good ones, and there were two hundred to be made over, because they could now be made better, owing to the improvements in the method. It would take about two or three years to make over those two hundred.

(To be continued.)

Book Reviews.

Practical Diagnosis. The Use of Symptoms and Physical Signs in Diagnosis of Disease. By HOBART AMORY HARE, M.D., B.Sc., Professor of Therapeutics in the Jefferson Medical College of Philadelphia; Physician to the Jefferson Medical College Hospital, etc. Sixth edition, revised and enlarged. Lea Brothers & Co.

The aim of this volume is to discuss the diagnosis of disease from the symptoms presented by the patient rather than to describe laboratory methods of diagnosis, though the latter are given in some detail when of particular importance in connection with the diagnosis of certain conditions. The arrangement of the book is such that the symptoms observed in different parts of the body are grouped together, and in connection with these symptoms various conditions which might produce them are discussed. As an example, the third chapter deals with symptoms that affect the feet and legs, and here various peculiarities of gait are discussed, and such gaits as are characteristic of a given disease are described in connection with the more important signs and symptoms of that disease. The object of this arrangement is to permit the upbuilding of the diagnosis by grouping symptoms rather than to compel the physician to make a probable diagnosis and subsequently look up that disease to see whether other factors in the patient fit the diagnosis. In this way the book is a convenient reference book to be used in association with methods of physical diagnosis and history taking.

The book itself is well illustrated, part of the illustrations being original and others borrowed from various sources, the source always being acknowledged. The picture of Heberden's nodes on page 38 is labeled "Heberden's gouty nodes," the picture and possibly the legend being from Duckworth. It seems a little unfortunate, however, that these characteristic exostoses should be called "Heberden's gouty nodes," when Heberden himself says of them, "They have no connection with gout, being found in persons who never had it." The illustration on page 327 of the ova and embryos of uncinaria may be characterized as being too diagrammatic. The pictures there produced have very little resemblance to the objects as seen under the microscope, but represent rather an interpretation based on the study of many specimens. This is a fault not uncommon in illustrations in medical works. Fortunately, however, it occurs very infrequently in this particular work. The general makeup of the book needs no criticism, and Dr. Hare has produced a work of much usefulness to students and graduates, which compares favorably with others.

Practical Dietetics with Reference to Diet in Disease. By ALIDA FRANCES PATTEE. Fifth edition. New York: A. F. Pattee, Publisher.

This fifth edition has followed so quickly the third and fourth editions that no changes have been made in the text. The book has deservedly had a wide circulation.

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DISEASES DANGEROUS TO THE PUBLIC HEALTH.

THE growing tendency to consider the public health from a broad standpoint is exemplified by recent action of the Massachusetts State Board of Health with regard to the notification of diseases. After considerable legislation, the law as finally amended demands that householders and physicians must now give immediate notice to the local boards of health of the following diseases:

Actinomycosis, Asiatic cholera, cerebrospinal meningitis, diphtheria, glanders, leprosy, malignant pustule, measles, ophthalmia neonatorum, scarlet fever, smallpox, tetanus, trachoma, trichinosis, tuberculosis, typhoid fever, typhus fever, varicella, whooping cough, yellow fever.

It is furthermore required that cases of these various diseases must be reported by the local boards of health with the names and addresses of the patients to the State Board of Health within twenty-four hours.

Certain of the diseases mentioned in the foregoing list are clearly of more importance on account of their greater frequency and results than others. Among these ophthalmia neonatorum certainly takes a high place. The Revised Laws are very definite as to the duties of nurses and relatives in relation to inflammation of the eyes in young infants, but it is important, as a circular of the State Board of Health emphasizes, that there be a strict observance of the statutes by all concerned. The wide prevalence of this preventable disease is shown by the fact that 25% of new pupils admitted to the schools for the blind in 1907 in this country were blind as a result of ophthalmia neonatorum. The annual financial loss, due to the existence of this blindness, has been estimated to be at least $7,000,000. A committee of The Massachusetts Medical Society sometime ago undertook the investigation of this entire subject, and, in the hope of reducing the incidence of the disease, an admirable brief statement of the nature, prophylaxis and treatment of the affection is appended to the circular before us.

As in many other problems now before the medical profession, it is evident that concerted action and complete co-operation between the laity and physicians on the one hand, and between physicians and the State Board of Health on the other, is essential if definite results are to be obtained. This naturally is true, not only of ophthalmia neonatorum, but also of many other affections which the law now demands shall be reported, such, for example, as trachoma and various infectious diseases of children. At present, the law does not require the reporting of cases of infantile paralysis, although the Massachusetts Board of Health has requested that all cases be reported during the progress of an investigation of this somewhat prevalent disease. Here again complete co-operation is demanded, and if a sufficient number of cases can be carefully observed, there seems ample reason to believe that certain definite knowledge may be obtained of its etiology and prophylaxis. In our issue of last week, we published papers by Drs. R. W. Lovett, of Boston, and H. C. Emerson, of Springfield, which give an excellent idea of the prevalence of the disease and the possibilities of fruitful investigation into its cause.

In general, it is not too much to hope that many of the diseases which must now be reported will in time be removed as factors in the public health through improved hygiene and wider knowledge. We are, however, inclined to think that other affections might with profit be reported to a central authority in the interests of co-operative investigation.

THE PREVENTION OF INFANT MORTALITY.

The American Academy of Medicine plans to devote attention to studying the problems connected with the care and development of children, and next November will hold a conference at New Haven to discuss the prevention of infant mortality, as briefly stated in our issue of last week. This subject is one of notable importance, and has for some time engaged medical consideration. It has many aspects and involves many scientific and sociologic questions, besides the mere cure, control and prevention of infantile disease. Each year there is an immense sacrifice of infant life, especially in the large cities, and from modern economic as well as humanitarian standpoints it seems doubtful whether this waste is justifiable. Of course there are those who argue that it is merely an incident in the struggle for existence, in no way different from the prodigal destruction of life observed in the animal and vegetable orders. But, though nature may be "careless of the single life," man cannot always afford to be so. It is not necessarily the fittest who survive; or rather, those who perish might under better environment have evolved to a higher type than is possible to those who supplanted them. It seems certain that man may, by deliberate modification of his environment, aid and accelerate natural processes in the development of posterity. Intelligent effort to do this, in the interest of individual children as well as of the race, should be welcomed and encouraged as among the more benign and ideal activities of the medical profession.

THE SANITATION OF PUBLIC BATHING PLACES.

A recent epidemic of conjunctivitis and various infectious skin diseases among the children of a certain suburban district of Boston led the Board of Health to order an investigation to determine whether the condition of the water in a swimming pool frequented by many of them was responsible for the outbreak. The results of this investigation have not yet been learned, but the action of the board emphasizes the importance of the proper sanitation of public bathing places. The possibility and likelihood of an infected person transmitting his disease to others through such media is obvious. Especially is this true of indoor swimming tanks, where the proportion of users to the cubic foot is large and there is no opportunity for natural purification of the water by sunlight. In the public baths and pools in and about Boston, the frequent renewal of water is required by regulation, and the steam-sterilization of towels and bathing clothes is generally practised. These provisions doubtless reduce to a minimum the danger of spreading infection. It is a risk always present, however, and local boards of health should be watchful to safeguard the public health in this respect. Cleanliness is a valuable agent in building up the vigor and natural resistances of the body, but it should not be purchased at the expense of exposure to infection which might otherwise be avoided.

MEDICAL NOTES.

THE ISOLATION OF "TYPHOID MARY."— Mary Mallon, the cook who has attracted so much attention as a typhoid carrier, who has been detained since March, 1907, at Riverside Hospital, on North Brother Island, at the instance of the New York Health Department, has sued for a writ of habeas corpus. In her complaint, she denied that she was the means of communicating typhoid fever, and alleged that she was subjected to unnecessary hardship. Supreme Court Justice Erlanger has now rendered a decision in her case to the effect that she must remain in the custody of the Health Department, as her release would be dangerous to the community. In his opinion, the justice says: "While the court deeply sympathizes with this unfortunate woman, it must protect the community against a recurrence of spreading the disease. Every opportunity should, however, be afforded her to establish, if she can, that she has been fully cured, and she may, after further examination, renew the application, or, if she prefers, the matter may be sent to a referee." For the present, therefore, "Typhoid Mary," as she is commonly known, must remain in isolation.

BOSTON AND NEW ENGLAND.

ACUTE INFECTIOUS DISEASES IN BOSTON. — For the week ending at noon, July 27, 1909, there were reported to the Board of Health of Boston the following cases of acute infectious diseases: Diphtheria 38, scarlatina 10, typhoid fever 10, measles 24, smallpox 0, tuberculosis 43.

The death-rate of the reported deaths for the week ending July 27, 1909, was 15.57.

BOSTON MORTALITY STATISTICS. — The total number of deaths reported to the Board of Health for the week ending Saturday, noon, July 24, 1909, was 188, against 227 the corresponding week of last year, showing a decrease of 39 deaths and making the death-rate for the week 15.74. Of this number 105 were males and 83 were females; 182 were white and 6 colored; 116 were born in the United States, 69 in foreign countries and 3 unknown; 33 were of American parentage, 130 of foreign parentage and 25 unknown. The number of cases and deaths from infectious diseases reported this week is as follows: Diphtheria, 38 cases and 3 deaths; scarlatina, 13 cases and 1 death; typhoid fever, 8 cases and 1 death; measles, 26 cases and 1 death; tuberculosis, 47 cases and 15 deaths; smallpox, 0 cases and 0 deaths. The deaths from pneumonia were 11, whooping cough 2, heart disease 18, bronchitis 1 and marasmus 0. There were 15 deaths from violent causes. The number of children who died under one year was 37; the number under five years 56. The number of persons who died over sixty years of age was 44. The deaths in public institutions were 78.

Cerebrospinal meningitis, 4 cases and 2 deaths.

Of the above the following were non-residents: Consumption, 1 case and 1 death; diphtheria, 1 case and 2 deaths; typhoid fever, 1 case and 1 death.

Deducting deaths of non-residents, the total is 161. The corrected death-rate is then 13.48.

BEQUESTS. — By the will of the late Miss Carrie F. Abbott, the Cambridge, Mass., Hospital received $5,000.

By the will of Mrs. Agnes E. Rice, of Newport, R. I., the Children's Hospital of Boston will receive the returns from the sale of diamonds. Through the same will, the Boston Episcopal Mission receives $10,000, and the St. Luke's Home for Convalescents $5,000.

AN IMPORTANT HABEAS CORPUS PROCEEDING. — A curious petition has recently been made by an inmate of the Taunton, Mass., Insane Hospital. The patient petitioned to be allowed to remain in the asylum to avoid certain legal proceedings instituted against him in the State of Washington, from which he is a fugitive from justice. The petitioner maintains that he was insane when the offense with which he is charged was committed and that, therefore, no crime was done. This position the attorney-general's office opposed. The Supreme Court has ruled that the man must leave the asylum and that the governor of the state should determine whether the petitioner is sufficiently sane to be able to defend himself at a hearing in Washington. The presiding judge furthermore held that the governor had so found the petitioner.

QUARTERLY MEETING OF MASSACHUSETTS ASSOCIATION OF BOARDS OF HEALTH. — The quarterly meeting of the Massachusetts Association of Boards of Health was held last week at Gallups Island, Boston Harbor. Upwards of one hundred members were present who took active part in a discussion on typhoid fever. Dr. Henry P. Walcott, chairman of the Massachusetts State Board of Health, presided. Dr. Leslie H. Spooner read a paper on typhoid fever with reference to the disease as contracted at the Massachusetts General Hospital from the years 1899 to 1908 inclusive. Dr. M. W. Richardson discussed the question of specific prophylactic inoculation, and advocated the inoculation of nurses, hospital attendants, doctors and men in the army and navy. The work of inoculation has already been begun at the Massachusetts General Hospital and it is hoped thereby to prevent sporadic cases of typhoid among the hospital attendants.

NEW YORK.

A POSSIBLE SERUM AGAINST SLEEPING SICKNESS. — It is reported, though unofficially, that the experimental investigations in regard to the African sleeping sickness carried on during the past six months at the Rockefeller Institute for Medical Research have confirmed in all essential respects the results announced by Ehrlich nearly a year ago.

FERRY BOAT AS TUBERCULOSIS SANITARIUM. — Through the liberality of Miss Harriman, a daughter of E. L. Harriman, a disused ferry-boat of the Erie Railway Company has been purchased and fitted up as a tuberculosis sanitarium. It is designed for persons living in the borough of Brooklyn, and is to be under the management of the Brooklyn Bureau of Charities.

SEASIDE HOSPITAL OF ST. JOHN'S GUILD. — The Seaside Hospital of St. John's Guild at New Dock, Staten Island, was opened early in the season, and the floating hospital of the guild commenced its regular trips on July 6. This season the hospital boat takes up the mothers and children at landings on the east side of Manhattan on Mondays and Thursdays, at west-side landings on Tuesdays and Fridays, and on Wednesdays and Saturdays at Brooklyn landings.

ANTHRAX. — An outbreak of anthrax recently occurred at Middletown, Orange County, in which one man, four horses and forty cows fell victims to the disease. Acting Chief Veterinarian J. F. Devine, who was sent by the State Commissioner of Agriculture to Orange County to investigate and take active measures for the suppression of the disease, has now returned to Albany and reports the outbreak well under control. Thirteen farms have been quarantined, and applications have been received for vaccination of cattle from three other farms in the vicinity of the infected district.

VACATION SCHOOLS.— Dr. W. H. Maxwell, City Superintendent of Schools, reports that vacation schools are now being conducted in 29 buildings, with a registration of 21,316 and an average attendance of 19,052. In addition, there are 246 vacation playgrounds, 154 indoor and 9 outdoor playgrounds, 7 kindergarten centers, 65 playgrounds especially for mothers and babies, and 11 evening roof playgrounds. The average attendance at the playgrounds of all kinds for the week ending July 17 was 112,168, as against 76,200 for the corresponding week in 1908. Besides these vacation schools and playgrounds conducted by the Board of Education, there are many others under the direction of churches and various charitable agencies.

A UNIQUE MEMORIAL TO DR. ANDREW J. McCOSH. — The late Dr. Andrew J. McCosh was always deeply interested in Princeton University, where he was graduated, and of which his father was for many years president, and soon after his death a movement for a memorial in his honor was started among both the alumni and the undergraduates of the university. As it was known that Dr. McCosh had been a great admirer of Dr. Wilfred T. Grenfell, it was decided that the memorial should take the form of something which would be of substantial assistance to the latter in his heroic medical work along the Labrador Coast, and accordingly a fine auxiliary yawl was purchased and fitted up at City Island. This yawl, renamed the Andrew J. McCosh, sailed from New London on July 2, with a Gloucester skipper in charge and a crew of Princeton graduates, mainly recruited from the class of 1909. After the presentation to Dr. Grenfell, which is to take place at his headquarters at Battle Harbor, the crew will return by steamer.

INVESTIGATION OF TEETH OF SCHOOL CHILDREN. — It would appear that before the recent investigation of the condition of the teeth of the children in the public schools, under the auspices of the Bureau of Municipal Research and other agencies, the Health Department had been making an investigation of its own, and one which was much more extensive than the latter. On June 28 President Darlington of the department issued a statement to the effect that during seven months of the past season a number of his inspectors were engaged in this work, and that they had examined the mouths of no less than 386,744 children. While their examinations were, no doubt, less complete than in the case of the 500 recently examined by dentists, they reported that 290,167 of these were in need of dental treatment. As a result of this report, 500,000 circulars on the care of the teeth were distributed in the public schools just before the beginning of the summer vacation, and Commissioner Darlington urges the establishment of adequate dental clinics in which the pupils' teeth may be cared for.

Reception to Miss Catherine E. Holden. — On July 22, a reception at the Willard Parker Hospital was tendered Miss Catherine E. Holden on the occasion of her retirement after twenty-nine years of continuous service as a nurse in the employ of the Health Department. She is the first nurse to be retired on a pension by the department, and also the first to be honored by such a function, attended by physicians and graduated and undergraduate nurses. Miss Holden has been most faithful and assiduous in her attendance on the sick, and has nursed patients with typhus, smallpox, diphtheria, scarlet fever and measles. She particularly distinguished herself in an outbreak of typhus fever a few years ago, when as many as fourteen patients died on a single day in the hospital tents on North Brother Island, and when she herself at length was attacked with the disease. In attempting to move a very heavy man at this time, she ruptured some of the ligaments of the ankle-joint, and consequently has had a slight limp in her walk ever since. Typhus was the only contagious disease which she ever contracted in the course of her long service.

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Current Literature.

Medical Record.

June 26, 1909.

1. *Hurd, L. E., and Wright, J. *The Clinical Diagnosis of Tuberculosis of the Tonsil.*
2. *Rudisch, J. *On the Use of Atropine Sulphate and Atropine Methyl Bromide in Diabetes Mellitus.*
3. Stern, H. *Compensatory Albuminuria; a Contribution to the Study of Clinical Albuminurias.*
4. Ely, L. W. *The Treatment of Pott's Disease at the Sea Breeze Hospital.*
5. Harrigan, A. H. *The Combined Operation for the Radical Cure of Inguinal Hernia and Appendicitis.*
6. Manget, J. T. *Dermatobia Noxialis Infection; Report of a Case Contracted in Southern Mexico.*
7. Beek, E. C. *Some Practical Points Concerning the Treatment of Fracture of the Lower End of the Radius.*
8. Fernandez, F. M. *Contribution to the Study of Theosinamine in Otology.*

1. Hurd and Wright report a number of cases of cervical adenitis where infection by the tubercle bacillus was evident in either the tonsil or the glands through which the tonsil drains. The treatment by removal of the tonsil was most successful. They believe from their observation that infection of the tonsil with tubercle bacilli is much more common than frequently supposed.

2. The author believes that the administration of atropine in the form of the sulphate or the methyl bromide will reduce the amount of sugar excreted and increase the carbohydrate tolerance in diabetes mellitus. He bases his conclusions on clinical experience of the past two years and a half. [W. B. R.]

July 3, 1909.

1. *King, H. M. *The Tuberculo-Opsonic Index in Its Relation to the Temperature Curve in Active Tuberculosis and Its Value in Suspected and Arrested Cases.*
2. *Abrams, A. *Aneurysm of the Thoracic Aorta.*
3. Smith, O. C., and Waterman, P. H. *Atresia of the Vagina. With Report of a Case Complicated by Hematotrachelos Operation.*
4. Roberts, D. *Habitual Constipation.*
5. Baumann, F. *Science and Medicine, with Special Reference to the Treatment of Syphilis and Gonorrhea.*

1. The authors cite a number of cases where the opsonic index was of value in the diagnosis of early tuberculosis, and as a means of determining the fitness of the patient for discharge from treatment.

2. The article contains an account of the effect of manipulation of spinal vertebræ to produce certain reflexes. The author believes that he can vary the size of the dullness on percussion caused by an aortic aneurysm by alternately striking the lower dorsal vertebra and the seventh cervical vetrebra, producing by this concussion a reflex dilatation and contraction of the dilated aorta. [W. B. R.]

The Journal of the American Medical Association.

July 10, 1909.

1. Bryant, W. S. *Preventable Deafness. Chairman's Address before the Section on Laryngology and Otology of the American Medical Association.*
2. Parker, W. R. *The Visual Fields in Hysteria. A Clinical Study of Fifty Cases.*
3. *Church, A. *Pituitary Tumor in Its Surgical Relations.*
4. Ruhräh, J. *Food Intoxications in Childhood.*
5. *Morse, J. L. *The Treatment of Anemia in Infancy with Citrate of Iron Administered Subcutaneously.*
6. Fox, L. W. *Amethyst-Tinted Lenses.* (A preliminary communication.)
7. Theobald, S. *Reflex Aural Neuroses Caused by Eye-Strain.*
8. Duane, A. *Discussion on Accommodation and Donders' Curve.*

3. Church points out that pituitary tumor may be present with or without acromegaly and may also have associated with it (1) simple adiposity; (2) adiposity with genital atrophy; (3) simple genital atrophy or acromegaly; (4) general retardation of physical and especially sexual development without impairment of mental qualities. Vision is sooner or later impaired and optic atrophy develops. Diagnosis of enlarged hypophysis is made by x-rays, which show corresponding enlargement of the sella turcica. In the operative treatment the body is reached by a temporal bone flap and the temporosphenoidal lobe is lifted up and the tumor reached from its lateral aspect, or by the nasal route preferred by most operators, in which an incision is made down the middle of the brow and lateral aspect of the nose, the nasal bones divided, the septum severed, the turbinate bodies removed and the tumor approached from the thin floor of the sphenoid bone. Church cites six cases and their operative results and concludes with saying that we should recognize that a pituitary tumor may be present without acromegaly, that its removal is indicated in both groups of cases, as operation furnishes the only cure for the associated blindness, and holds out some hope of cure from the acromegaly and prolongs life.

5. Morse advises the use of iron in the anemias of infancy, especially as milk which makes up so large a part of the food at this age contains a relatively small amount of iron, and as it is difficult to get infants to take sufficient amounts of iron by mouth, and because it is likely to interfere with digestion, he suggests the subcutaneous use of the aqueous citrate given in ¾-gr. doses every other day. He has had very satisfactory results in a series of cases. [E. H. R.]

July 17, 1909.

1. Starr, M. A. *Vasomotor and Trophic Neuroses. Chairman's Address, Section on Nervous and Mental Diseases, American Medical Association, Atlantic City.*
2. *Tomlinson, H. A., and Freeman, G. H. *The Clinical Study of a Series of Cases of Insanity.*

3. Gaver, E. E. *Traumatic Neurosis, with Report of a Case.*
4. *Wenlius, A. *Experimental Pressure Atrophy of the Thyroid, with Brief Summary of Knowledge of the Gland.*
5. *Blair, V. P. *Underdeveloped Lower Jaw, with Limited Excursion. Report of Two Cases, with Operation.*
6. *Ziegler, S. L. *Galvanocautery Puncture in Ectropion.*
7. Howe, L. *Tenotomy or Advancement.*
8. Verhoeff, F. H. *Neuropathic Keratitis and Some Allied Conditions, with Special Reference to Treatment.*

2. Tomlinson and Freeman, in a careful study of a series of cases of insanity, believe that somatic conditions which interfere with the general physical welfare of the patient are the determining causes of the deterioration that resulted in the insanity, and the extent and permanence of these changes the factor on which the result in each case depended. The processes of katabolism dominate after a while under unfavorable conditions the processes of anabolism. The interference with the vegetative functions is antecedent to the mental disorder. The brain, therefore, is not only poorly nourished, but there is chronic intoxication also.

4. Wenlius summarizes his work on pressure atrophy of the thyroid in brief as follows: Thyroid is essential to the well-being of the organism, but not to life. The gland contains iodin. Tetany is not due to removal of the thyroid. There is possibly an internal secretion or a detoxicating function. It may have relation to other ductless glands. It is seemingly functionally independent of the parathyroid. Wenlius also describes his purse-string operation to reduce thyroid secretion and reports a successful case in the human. The operation consists of introducing one or more purse strings along the periphery of the gland, with subsequent tightening of these ligatures. No. 3 chromic gut is used. The gland shrinks in size markedly, and the opposite side shrinks to a certain degree. Gangrene has never followed, and a diminution in the secretion as evidenced clinically results.

5. Blair describes his plastic operation on the rami of the lower jaw for underdeveloped jaw, with limited excursion, and reports two cases in detail. He claims originality in employment of this method.

6. Ziegler has had marked success in the use of the galvanocautery in ectropion and entropion. He illustrates his methods by citing numerous cases. [E. H. R.]

Archives of Internal Medicine.

June, 1909.

1. *Dickson, E. C. *A Report on the Experimental Production of Chronic Nephritis in Animals by the Use of Uranium Nitrate.*
2. *White, B., and Avery, O. T. *The Treponema Pallidum. Observations on Its Recurrence and Demonstration in Syphilitic Lesions.*
3. *Pearce, R. M. *The Production of Edema. An Experimental Study of the Relative Etiological Importance of Renal Injury, Vascular Injury, and Plethoric Hydremia.*
4. *Wolf, G. L., and Thacher, H. C. *Protein Metabolism in Addison's Disease.*
5. *Bass, C. C. *Mild Uncinaria Infections.*
6. Hoisholt, A. W. *Current Ideas on Aphasia, with Studies of an Interesting Case.*
7. *Ottenberg, R., and Epstein, A. A. *The Diagnostic Value of Hemolysis in Cases of Cancer.*
8. *Janeway, T. C. *The Influence of the Soft Tissues of the Arm on Clinical Blood Pressure Determinations.*
9. *Miller, J. L., and Mathews, S. A. *Effect on the Heart of Experimental Obstruction of the Left Coronary Artery.*
10. *Weaver, G. H. *Serum Disease.*
11. *Gordon, A. *Diseases of the Optic Nerve as an Early or Earliest Symptom of Multiple Sclerosis.*
12. *Anderson, J. F., and Rosenau, M. J. *Anaphylaxis.*

1. The author reports a large series of experiments with protocols and many pictures of the lesions and references to the literature on chronic nephritis in animals. He finds that it is possible to produce in animals lesions which closely resemble those found in subacute and chronic diffuse nephritis in man. By a long-continued mild intoxication with this drug he was able to produce a chronic interstitial nephritis which was apparently progressive. After a series of several attacks of subacute uranium nephritis, extensive fibrotic changes appear in the kidney, which in some cases go on to complete granular atrophy. In a certain number of his cases this condition was associated with polyuria. A single severe attack of acute parenchymatous nephritis may be followed after some weeks by a more or less severe fibrosis, which in some cases goes on to extreme granular atrophy. In other cases, however, the recuperative power of the kidney is such that only a moderate fibrosis results.

2. The authors recommend the method of staining described by Schereschewsky for the detection of the treponema pallidum (spirocheta pallida). They describe the appearance of the organism and the method of obtaining the organism from the lesion.

3. Pearce reports a series of experiments, using renal irritants, as uranium nitrate and potassium chromate and arsenic (both renal and vascular); vascular irritants, as ricin and venom, and the combination with these of the production of hydremic plethora by the introduction of large amounts of water through the stomach tube. His experiments are controlled by the different combinations of these substances. He concludes that in uranium nephritis the ease with which edema is produced when an excess of water is administered illustrates the importance of hydremia in the causation of edema. The influence of vascular injury is not very plain in the uranium experiments, but it is conclusively shown in those in which ricin, venum and arsenic were administered in the course of a chromate nephritis; in all of these the influence of hydremia is also evident. The author believes that a consideration of all the results appears to demonstrate conclusively that, under the conditions of these experiments, plethoric hydremia and vascular injury have equal value with nephritis in the production of edema, and that no one of these three factors acting alone, and no combination of two acting together, is sufficient to cause edema. He also reports on some experiments with a nephrotoxic immune serum which point to the possibility that substances, presumably endotheliotoxic and capable by vascular injury of aiding in the production of edema, may be contained in serum.

4. The authors find in their case of Addison's disease that the desamidating capacity of the patient and his capacity to transform the sulphur of the cystin group into sulphuric acid were absolutely comparable to that of normal persons. A considerable degree of acidosis was observed. The endogenous metabolism of the patient, as represented by the kreatinin and uric acid output, was below that of normal subjects.

5. The author describes a method of finding the eggs of the uncinaria in feces which is very simple and effective.

7. As a result of their work, the chief object of which has been to determine the value of isohemolytic reactions in diagnosis, the authors are forced to the conclusion that the method is not at persent to be relied on for diagnosis. While it is true that in a majority of cases of malignant tumors this property of the blood is shown, it is also shown in a considerable proportion of other diseases. The most that can be said is that in a given case, if tuberculosis can be excluded, a strongly hemolytic serum is rather suspicious of carcinoma.

8. The author reports two cases which apparently demonstrate that the soft parts of the arm do not influence blood pressure readings.

9. The article contains a report of some experiments made on the heart of dogs in ligating different parts of the left coronary artery. They show that either main trunk of this artery may be ligated without seriously disturbing the heart, that ligation of the descendens 25 mm. or less from its orifice, after previous ligation of the circumflex, always caused cardiac standstill. The left ventricle stopped beating first. That when either of the two main branches of the descendens is ligated and the animal allowed to recover, no evidence of cardiac disturbance is apparent for a period varying from one to three months, when very acute symptoms of cardiac insufficiency develop which rapidly prove fatal. They find that the

previous administration of strophanthus permits much more extensive ligation of the coronary arteries without serious consequences.

10. Weaver discusses at length the subject of serum disease. His work is based on observations of a large number of cases in the Cook County Hospital, Chicago, receiving antitoxin for one cause or another. He goes at length into the history of the subject and the different theories brought forward to explain the phenomena. Among other important points brought out are the following precautions to avoid intoxications by therapeutic sera in man: (1) The required amount of antibodies should be administered in as small a quantity of serum as possible. (2) Except in urgent cases, a small quantity of serum (0.5 ccm.) should be injected at the initial dose, waiting a few hours before giving more. (3) In all persons who have had serum previously, and in those in whom this possibility cannot certainly be excluded, a small dose of 0.5 ccm. should first be given. (4) It is important to give all the serum required in a case as rapidly as possible, so as to avoid injections after hypersusceptibility has developed. (5) Avoid injection directly into the circulation. (6) Extreme precautions are necessary in the use of sera in persons who have been the subjects of hay fever, asthma and urticaria.

11. Gordon reports at length five cases where optic neuritis and atrophy were the earliest or the only sign of multiple sclerosis.

12. Anderson and Rosenau give a complete account of the subject of anaphylaxis, from the first observation up to the latest work on the subject. [W. B. R.]

Bulletin of the Johns Hopkins Hospital.

July, 1909.

1. *Thayer, W. S. *Note on Pellagra in Maryland.*
2. Blumer, G. *Report of Two Cases of Osteoplastic Carcinoma of the Prostate, with a Review of the Literature.*
3. *Anders, J. M. *Relative Aortic Incompetency of Muscular Origin.*
4. Walsh, J. M. *Old-time Medical Education.*

1. Thayer, in a most interesting and complete article with numerous excellent illustrations, describes some cases of pellagra occurring in Maryland, with a discussion of this disease. He believes that it is far more widespread in this country than is generally known. The first case reported in America was in 1902, since which time it has been growing more and more frequent. The symptoms of this disease are in three groups: (1) Those relating to the alimentary tract and consisting of nausea, vomiting, and especially diarrhea more marked in the morning hours and often very obstinate; (2) the cutaneous manifestations on the backs of the hands and in some cases the dorsa of the feet; (3) mental symptoms, consisting of vertigo, and graver symptoms referable to the spinal cord pointing to varied and combined lesions. The reflexes are usually increased; well-marked spastic symptoms may occur, with disturbances of sensation and paralysis of the sphincters. The disease occurs either as an acute typhoidal condition running its course to a fatal ending in a few weeks, or a milder, chronic and commonly recurrent malady in which each occurrence is progressively more severe than the last, finally leading to a fatal ending. The etiology is uncertain, although it is generally supposed to have a definite relation to the ingestion of moldy corn. In Italy the disease is strictly limited to the poor; it is unknown among the well-to-do, who exclude corn from their diet. There are numerous observers, however, who do not accept this relationship. Two cases are reported in detail.

3. Anders believes that relative aortic incompetency of muscular origin is not so infrequent as one is led to suppose from an examination of the literature. He discusses the work which has previously been done on this subject and reports three cases of his own. He believes that muscular relative incompetency at the aortic orifice may be placed in three well-defined divisions: (1) Cases of muscular and nervous origin that supervene in the course of fibrous myocarditis and other less serious conditions of the myocardium, independently of valvulitis or advanced organic changes in the aorta; (2) cases secondary to chronic valvulitis affecting the mitral segments with failure of the left ventricle; (3) cases occurring in the course of or following acute infective diseases due to the action of the toxins upon the myocardium. Cases of purely nervous origin may also be met with occasionally. As cases of this last class usually result in complete recovery, a careful consideration of this condition should be made in making what would otherwise be an unfavorable prognosis. [J. B. H.]

The Journal of Infectious Diseases.

December, 1908.

1. *Wherry, W. B. *Plague among the Ground Squirrels of California.*
2. *Wherry, W. B. *Further Notes on Rat Leprosy and on the Fate of Human and Rat Lepra Bacilli in Flies.*
3. Wherry, W. B. *Streptococci Occurring as Diplococci in Rats.*
4. *Wherry, W. B. *Experiments on the Use of Bacillus Pestis Caviæ as a Rat Virus.*
5. *Heinemann, P. G., and Glenn, T. H. *Experiments on the Germicidal Action of Cows' Milk.*
6. *Waite, H. H. *Contribution to the Study of Pyocyaneus Infection, with a Report of Two Rare Cases.*
7. Harris, D. L. *A Method for the Staining of Negri Bodies.*
8. Hamilton, A. *On the Occurrence of Thermostable and Simple Bactericidal and Opsonic Substances.*
9. Weaver, G. H., and Tunnicliff, R. *Effects of Injection of Homologous Streptococci Killed by Heat in Streptococcus Complications in Contagious Diseases.*
10. Weaver, G. H., and Tunnicliff, R. *A Study of Streptococcus Immunization.*
11. *Weaver, G. H., and Boughton, G. H. *The Injection of Heterologous Streptococci, Killed by Galactose, in Erysipelas and in Scarlet Fever.*
12. Dolt, M. L. *Simple Synthetic Media for the Growth of B. Coli and for Its Isolation in Water.*

1. The author shows the important part played by ground squirrels in the dissemination of the plague. These squirrels can be found which show characteristic lesions of the plague, and their association with rats is shown by the finding of squirrel fleas on rats and *vice versa.*

2. The result of the author's work seems to show that lepra bacilli do not persist and multiply to any extent within the fly.

4. The author finds that this bacillus when ingested by rats is acutely pathogenic to young rats and mice, but many adult rats are immune to infection through the gastro-intestinal tract.

5. The authors find that milk has distinct germicidal action for several hours after milking.

6. The author presents a thorough article on the subject of pyocyaneus infection. He finds that primary infections may be caused by this organism; that these infections are not always mild, but may be so severe as to cause death; that lesions of the skin caused by this organism are at times only a local manifestation of a general infection; that some infections with symptoms resembling those of typhoid fever, which do not respond to the agglutination reaction for either typhoid or paratyphoid, may be due to B. pyocyaneus; that the middle ear and intestines are most frequent foci of infection; that a general septicemia may arise from any primary focus, but most frequently arises from an infection of the intestinal tract; that B. pyocyaneus may be the specific cause of both sporadic and epidemic diarrheas and dysenteries. A complete bibliography is appended.

11. The authors find very favorable results in injecting streptococci killed by chemically indifferent agents, as a 25% solution of galactose, in the septic complications of scarlet fever and erysipelas. [W. B. R.]

The Lancet.

June 19, 1909.

1. Claye-Shaw, T. *Address on a Prominent Motive in Murder.*
2. *Ewart, W. *Note on Some of the Theories as to the Mode of Production of Grocco's Paravertebral Triangle of Dullness.*

3. Cammidge, P. J. *Pancreatic Glycosuria Ten Years after Typhoid Fever.*
4. Beddard, A. P., Pembrey, M. S., and Spriggs, E. I. *Relation of Acidosis to the Carbon Dioxide of the Blood in Diabetic Coma.*
5. *Poynton, F. J., and Trotter, W. *On the Operation of Cardiolysis. Illustrated by a Case.*
6. Houghton, E. M. *Proposed International Standard for the Physiological Assay of the Heart Tonics of the Digitalis Series.*
7. Lukis, T. S. *Rupture of the Spleen; Removal; Recovery.*
8. Donelan, J. *Treatment of Chronic Suppuration of the Maxillary Antrum; an Operation and New Instruments.*
9. Alexander, W. *Aphasia Succeeded by Jacksonian Epilepsy; Operation; Recovery.*
10. Core, D. E. *Case of Catalepsy Occurring in a Boy aged Fifteen Years.*
11. Pirie, A. H. *Removal of Superfluous Hairs by Improved Methods.*
12. MacNab, A. *Simple Method of Diagnosis in Paralyses of the Extrinsic Muscles of the Eye.*

2. Ewart discusses the various theories as to the mode of production of Grocco's paravertebral triangle of dullness. Among these he mentions, first, his own theory in which the pleural effusion acts as a mute and prevents the vertebral column from conducting the pulmonary resonance; second, the direct fluid dullness theory, according to which the pleural sac bulges into the sound half of the chest; third, the pulmonary collapse theory, and fourth, the posterior mediastinal mesentery theory. He believes that this triangle of dullness may be produced by fluid collections in the abdomen as well as in the pleural cavity. In bilateral cases of pleural effusion a triangle can be made out on both sides. This at once does away with the direct fluid dullness theory. All the evidence, according to the writer, points to the action of the fluid in preventing the vertebral column from conducting the pulmonary resonance as the real explanation of this triangle of dullness.

5. Poynton and Trotter discuss in brief the development of the operation of cardiolysis, and report in detail a case which came under their observation, in which this operation was performed. [J. B. H.]

JUNE 26, 1909.

1. Lazarus-Barlow, W. S. *Croonian Lectures on Radio-Activity and Carcinoma. An Experimental Inquiry.*
2. *Sutherland, G. A. *Gastro-Intestinal Crises from Effusion into the Bowel Wall.*
3. Parry, L. A. *Case of Acute Mastoiditis, with Lateral Sinus Suppuration and Cerebellar Abscess as Complications of the Operation for the Removal of Tonsils and Adenoids.*
4. Stewart, G. I. *Oral Sepsis in Its Connection with Throat Disease.*
5. MacKenzie, H. M. *Case of Primary Sarcoma of the Duodenum.*
6. *Kirkland, J. *Case of Inherited Tachycardia.*
7. Banks, A. G. *Effect of Diphtheria Antitoxin on the Tuberculo-Opsonic Index.*
8. McEwan, P. *Case of Missed Labor.*
9. Ward, E. *Hydroa Gestationis.*
10. Lake, R. *Difficulties, Direct and Indirect, in the Diagnosis, and Remarks on the Treatment of Certain Forms of Deafness.*
11. Wherry, G. E. *Medico-Legal Evidence in a Case of Sudden Death.*
12. Hirsch, C. T. W. *Motoring Notes.*

2. Sutherland discusses gastro-intestinal crises from effusion into the bowel wall. This condition, not rare, is generally associated with Henoch's purpura. The clinical symptoms at first consist of those of an acute abdominal attack, vomiting, pain, passage of blood and mucus and occasional diarrhea. The pain is of the nature of colic, but intermittent, and is very intense. Later another stage is reached, when the condition becomes one of intestinal obstruction, partial or complete; the whole aspect of the patient changes and one recognizes the typical appearance of acute obstruction of the intestine. He describes twenty-three cases, some of his own and others from the literature on the subject. The special site of election to this form of hemorrhage is that of the ileo-cecal region. Seventy per cent of cases of intussusception in infants occurred in this region also. He believes that there is a relation between these two conditions. The differential diagnosis between the two is often extremely difficult.

6. Kirkland reports a case of inherited tachycardia in which the normal pulse of the patient, fifty-seven years old, was about 120, going up to 240 during the attacks. In this case both grandmothers, the father, the mother, the aunt, four out of six daughters, three sons and at least one niece were or are victims to heart lesions. In most of these cases the trouble did not show itself until early adult life. [J. B. H.]

BRITISH MEDICAL JOURNAL.

JUNE 19, 1909.

1. *Lazarus-Barlow, W. S. *Croonian Lectures on Radio-Activity and Carcinoma. An Experimental Inquiry.*
2. Bland-Sutton, J. *Lecture on the Red Degeneration of Uterine Fibroids Complicating Pregnancy.*
3. Briggs, H. *On the Spontaneous Rupture of Cyst-Adenomatous Ovarian Tumors.*
4. Ivens, F. *Incidence of Gonorrhea in Gynecological Hospital Practice.*
5. Hellier, J. B. *Cæsarean Hysterectomy in Pregnancy Complicated by Myoma Uteri.*
6. Gordon, A. K. *Successful Case of Hysterectomy for Puerperal Infection.*
7. Gregson, A. H. *" Clean Midwifery " in General Practice.*

1. Lazarus-Barlow in the first two Croonian lectures discusses radio-activity and carcinoma. He has found by various experiments, which he describes, that certain of the tissues of the human body show skotographic action, i. e., they have an ability to act on photographic plates in the dark in the same way that radium does. The liver and kidney have this power, while the spleen and lung do not. There is more of this property in the female tissues than in the male. The amount increases from infancy to the age of fifty-five. He has shown that carcinomatous material possesses this power, whether it be primary or secondary, more in the female than in the male, and that the existence of a mass of carcinomata in a tissue modifies its normal skotographic value. The paper is illustrated by numerous plates showing the result of the action of these substances on photographic plates. [J. B. H.]

JUNE 26, 1909.

1. Semon, F. *Remarks on a Case of Pneumococcus Invasion of the Throat upon which Laryngeal and Pulmonary Tuberculosis Supervened.*
2. Elliott, J. *Remarks on Acute Pneumococcus Infection of the Pharynx.*
3. *Harris, A. B. *Observations on the Therapeutic Value of the Pneumococcus Vaccine in the Treatment of Pneumonia and Some of Its Complications.*
4. *Lazarus-Barlow, W. S. *Croonian Lectures on Radioactivity and Carcinoma. An Experimental Inquiry.*

3. Harris discusses the therapeutic value of pueumococcus vaccine in the treatment of pneumonia and some of its complications. Hedes cribes his method of preparation of autogenous pneumococcic vaccine, and gives numerous cases illustrated by charts. He believes that successful inoculation for pneumonia is possible; that it does no harm, and that the vaccine from one or a number of virulent strains should be used as early as possible. The estimation of the opsonic index is not necessary, the observation of the temperature and physical signs being a sufficient guide in gauging the repetition of the dose.

4. Lazarus-Barlow in the third and fourth Croonian lectures discusses the electrical properties of recognized radio-active substances, of non-malignant tissues, of carcinomatous material, and of certain substances commonly supposed to bear a causal relation to carcinoma. He then concludes with remarks on the influence of recognized radio-activity and of certain skotographic non-malignant materials upon the division of animal cells and the relation of this to the cancer problem in general. [J. B. H.]

Deutsche Medizinische Wochenschrift. No. 24.

June 17, 1909.

1. *Klingmüller. *The Treatment of Itching Diseases of the Skin.*
2. Wilms. *Is the Distinction Justifiable between an Obturation and Strangulated Ileus on the One Hand and an Obturation caused by an Adhesion Band on the Other?*
3. Kayser. *The Changes in Our Tasks and Views in Regard to War Surgery.*
4. Koeppe, H. *The Present Stand in Regard to Buttermilk Nourishment for Healthy and Sick Children.*
5. Stuhl, C. *Natural Difficulties with Nursing.*
6. Schmidt, H. E. *The Question of the Interruption of Pregnancy with the Roentgen Ray.*
7. Montenbruck. *A Case of Acute Hydrops of the Gall Bladder with Scarlet Fever.*
8. Lehmann, R. *Perforation Peritonitis following Appendicitis Observed in the Author.*

1. In a clinical essay Klingmüller takes up the different groups of diseases which cause an itching of the skin, and gives a short description of the treatment suited to each which can be employed by the general practitioner. In general the treatment consists in removing the cause of the itching when such can be found. He groups the pruritusses under animal parasites, injuries to the nervous apparatus, senility, and dermatitides from different origins. Besides removing the cause when possible, he mentions the possibilities of relief through internal medication, such as narcotics. Then he gives a long list of lotions and salves. The latest additions to the means of treatment are the Roentgen rays and ultraviolet rays. [C. F., Jr.]

Münchener Medizinische Wochenschrift. No. 26.

June 29, 1909.

1. Lüdke, H. *The Practical Value of the Complement-binding Reaction.*
2. *Conradi, H. *The Germ Content of Normal Organs.*
3. Aberst. *Injuries by the Electric Current.*
4. Gutzeit. *Significance of Intra-Peritoneal Hemorrhage in Penetrating Wounds of the Intestine.*
5. Bullinger. *The Salve Reaction of Moro.*
6. Bingel, A. *Effect of Intra-Cutaneous Injection of Diphtheria Antitoxin and the Antitoxin Content of Human Serum.*
7. Schott. *Cardiac Dilatation or Cardiac Tumor.*
8. Lischki, O. *A New Permanent Compression Bandage for Ulcer of the Leg.*
9. Lehmann. *A Few Useful Adhesive Plaster Bandages.*
10. Brüning. *A Simple Machine for Rolling Plaster Bandages.*
11. Kroilecki. *A Modification of Esbach's Test for Albumen.*
12. *Janssen, P. *Utilization of the Natural Protective Powers of the Peritoneal Cavity in the Treatment of Appendicitis and of Diffuse Perforative Peritonitis.* (Concluded.)

2. Conradi, by methods not described in detail, but which he is confident exclude the possibility of contamination, took cultures from 162 organs of slaughtered cattle. Of 63 cultures from the liver, 42 showed a growth; of 59 from pieces of muscle, 18; of 19 from kidneys, 6; of 5 from the lungs, 4; of 4 from lymph glands, 1; and of 11 from spleens, 1 was positive. The bacilli of swine pest were found deep in the undecomposed muscle of two pigs and of one beef, and in the kidneys of one pig. From a few cases alkali producers not further identified were grown. Anaërobes numbered 30 out of 72 positive cultures. They belonged for the most part to the group of lactic-acid bacteria. The high percentage of positive cultures is attributed by the writer to the technic by which a much larger quantity of material was used for the cultures than is usual. He thinks that the majority of the anaërobes were normal inhabitants of the alimentary tract, which may have been absorbed with the food, or more probably passed the walls of the capillaries, thus entering the portal circulation, or perhaps may have been carried in by invading leucocytes. That his findings may throw light on the origin of various cryptogenetic infections following trauma, exposure and the like, and that the bacteria possibly play a part in the normal fermentations of the body, are theories suggested by the writer.

12. Janssen describes the principles and technic of the treatment of general peritonitis in Witzel's clinic, where a remarkably high percentage of recoveries results. The underlying principle is to use to the full extent the natural protective forces of the peritoneum. The treatment is described under four heads: (1) Supporting the heart; (2) stimulation of intestinal activity; (3) application of heat; (4) auto-irrigation of the peritoneal cavity. For the first of these purposes camphor and digalen are used especially. Intestinal activity is stimulated by copious warm irrigations. Heat is applied to the abdomen externally by ordinary means and internally by hot irrigations, the theory being that a beneficial hyperemia follows the application of heat. Auto-irrigation is promoted by the use as drains of glass tubes tipped with perforated bulbs, by keeping the patient upon the right side to promote the flow through the tubes and by giving three to four quarts of salt solution daily under the skin. All gauze used during the operation for walling off or for sponging is first moistened in warm salt solution. [G. B. S.]

Berliner Klinische Wochenschrift. No. 27.

July 5, 1909.

1. Goebel. *The Pathologic Anatomy of Bilharzia Disease.*
2. *Ruckert, A. *A Frontal Brain Tumor, with the Clinical Picture of a Tumor of the Posterior Cranial Fossa.*
3. van der Bergh, A. A. *Investigations on Hemolysis in Paroxysmal Hemoglobinuria.*
4. Schütz, E. *The Pathology of the Gastric Mucous Secretion.*
5. Rothschild, A. *Etiology of Prostatic Hypertrophy.*
6. Waelsch, L. *Erotic and Sympathetic Epididymitis.*
7. *Puppel. *Modern Obstetrics in Hospital and Home.*
8. Albu, A., and Rotter, J. *Report of the Joint Investigation of the Berlin Medical Association Regarding Inflammations of the Cecum in the Year 1907 in Greater Berlin.*

2. Ruckert reports a case which clinically presented symptoms and signs strongly suggesting a tumor of the cerebellum or cerebello-pontine angle (headache, tinnitus, vomiting, vertigo, choked disk, nystagmus, progressive loss of hearing, staggering gait, diminished patellar reflex, finally complete ataxia, blindness and deafness), but which at autopsy showed an extensive round-cell sarcoma of the right frontal lobe. The deceptive sign which principally led to this erroneous diagnosis was the central deafness, which in this instance he regards, like the optic atrophy, as a result of the general increased intracranial pressure, and quotes a similar case reported by Souques.[1]

7. In an exceedingly pertinent paper, Puppel discusses the ethical and economic relations of lying-in hospitals to the private practice of obstetrics, and of the obstetric specialist to the general practitioner. In opposition to the contention that all labor cases should be sent to a hospital, he points out that with the telephone and the automobile a private practitioner may reach his patient as promptly as a hospital resident, provided the nurse, with whom rests the primary responsibility, be equal to her duty. Her efficient training he regards as the key to the modern obstetric problem. On the other hand, he doubts whether the general practitioner, with the many other demands on his time, ought to do obstetrics, or whether asepsis can ever be as rigorously carried out in a home as in a hospital. Certainly no one should undertake private obstetrics without adequate equipment of instruments, sterile dry goods, and, above all, thorough technical training. Unnecessary operating is as much a temptation in private as in hospital practice, though from different motives. As a matter of fact, certain cases belong in the clinic, others in their homes, and the decision depends in each instance on individual, local and circumstantial factors. Puppel believes that Cesarian section, a procedure which he considers always safer than hebosteotomy, should never be attempted outside a hospital. Likewise he regards impending eclampsia as an indication for hospital treatment. In general his desideratum is an equitable

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[1] Rev. neurol., 1904, p. 727.

distribution of obstetric cases between hospitals and competent private practitioners, with simultaneous regard to the best interests of the patient, of the physician and of medical education. [R. M. G.]

Revue de Médecine.

June, 1909.

1. **Londe, P.** *The Digestive Origin of Diseases of the Respiratory Apparatus.*
2. ***Sézary, A.** *The Microscopic Characteristics of the Suprarenal Glands in Health and Disease.*
3. ***Guillain, G., and Troisier, J.** *The Formation of Biliary Pigments by the Hemolysis in the Serous Cavities.*
4. **Bousquet, L., and Roger, H.** *Contribution to the Therapeutic Study of the Colloid Metals and Their Action on Local Infections and Diseases of Nutrition.*

2. The suprarenal glands can be found easily by evisceration of the cadaver and searching posteriorly while all the organs are still in proper relation. The rapid decomposition of the organs can be overcome by the injection at the costovertebral angles, deep into the tissue, of a few hundred cubic centimeters of 10% formalin. This preserves not only the shape and consistency of the glands, but also their color. With these precautions a more careful study of the gross appearances of the suprarenals has been carried out by Sézary than has been done previously. Whereas most pathologists have contented themselves with the observance of gross hemorrhages, tuberculosis and adenomata of the suprarenals, he has shown the ease with which hypertrophies and atrophies of the glandular tissue can be noted. The cortex is the chief element in this determination. On cut section it is thickened and reddish-yellow in color in hyperepinephritis, and presents in the medulla whitish points, which are in reality parts of the cortex that have been thrust into the central part by the overgrowth. The white cortical tissue about the veins is also greatly increased. In atrophy the cortex is dull gray and darker than the medulla, and the perivascular cortical tissue is not visible to the naked eye. Sclerosis of the organ is evidenced by its increased consistency and the loss of power of dissociation of the bands of cortical tissue. The weight of the gland and its total bulk and the ease with which the capsule is stripped are far less definite factors than those noted above. By this simple procedure it is possible to note hypertrophy and atrophy and even sclerosis of this gland, which is such an important factor in metabolism.

3. The study of hemorrhagic cerebrospinal fluids in three cases shows that the fluid prevents no great hemolytic action, since it refused to hemolyze rabbit corpuscles even after the addition of normal rabbit serum (alexine) in two of the three cases. But in spite of this there was local hemolysis, with a diminution of resistance of the red blood cells, liberating bile pigments, urobilin and methemoglobin. The cells were found to be basophilic to a large degree, but not granular. Similar results were found in two hemorrhagic traumatic pleurisies, two slightly bloody infectious pleurisies, one case of ascites and in one aseptic hematoma. All fluids showed a molecular hyperconcentration. From these results Guillain and Troisier conclude that there is an almost exact analogy with the conditions found in hemolytic jaundice, where the process is general instead of local, as noted above. [L. H. S.]

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Obituaries.

EDGAR HOLDEN, M.D.

Dr. Edgar Holden, well known as a laryngologist, and one of the leading physicians of Newark, N. J., died at his summer home at Chatham, N. J., on July 18. He was a lineal descendant of John Holden, an officer in the Continental Army, who was promoted for bravery at the Battle of Bunker Hill and who was one of the founders of the American Society of Cincinnati. Dr. Holden was born at Hingham, Mass., on Nov. 3, 1838. He was graduated from Princeton College in 1859, and from the College of Physicians and Surgeons, New York, in 1861. He then entered the medical service of the United States Navy and remained in this until the close of the Civil War. He was a member of the American Laryngological Society and various other medical societies, and also a hereditary member of the Society of Cincinnati.

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CHARLES O. HUNT, M.D.

Dr. Charles O. Hunt, for nearly thirty years superintendent of the Maine General Hospital, in Portland, died suddenly, July 24, of heart disease, at the age of seventy years. Dr. Hunt served in the Civil War, enlisting in the First Maine Battery at the beginning of the war. He saw active service and was wounded, but was able to serve until he was discharged. Following the war, he attended the University of Pennsylvania, and thereafter began the practice of medicine. He removed from Gorham to Portland and became well known as a practitioner of distinction. In 1874 he was made superintendent and physician of the Maine General Hospital, a position from which he retired in 1902. He was a teacher in the Maine Medical School for forty years.

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Correspondence.

INFRAPUBIC CYSTOTOMY.

Boston, July 24, 1909.

Mr. Editor: In the April 22, 1909, issue of the Journal, appears an interesting article from the pen of Dr. Benjamin Tenney, in which he reports a case of infrapubic cystotomy for a malignant tumor in a female.

Dr. Tenney says that "the infrapubic incision was suggested by Langenbuch in 1887 from some studies which he made on the cadaver. It has not been used because the other incisions are more familiar and give better access in all male and most female cases," etc.

The infrapubic incision, however, dates back to Celsus, and in his *De re medic., Lib.* vii, *caput* xxiv, he says: "In women, one should introduce the fingers into the vagina; the calculus is pushed down to the neck of the bladder, and the incision is made between the urethral orifice and the pubic bone."

This technic appears to have been forgotten until 1823, when Lisfranc again proposed the infrapubic route for gaining entrance into the bladder. In 1863, Voillemier resorted to infrapubic puncture of the bladder. Then came Langenbuch who, in 1887, again proposed the infrapubic incision, although I believe he never resorted to it on the living.

Of late years the operation has been done in a number of instances at the Necker Hospital by Legueu and Cathelin, and a very interesting paper on this question by Dr. W. Stoeckel, entitled "*Die infrasymphysare Blasendrainage,*" appeared in the seventeenth volume of the *Monatschrift fuer Geburtshilfe und Gynaekologie.*

I call attention to these facts because I believe that this operation has its distinct indications, not only for the removal of vesical neoplasms and foreign bodies in the bladder, but that drainage of the viscus may be accomplished satisfactorily by this route when the urethra requires rest for a certain length of time. It is also indicated for draining collections of pus in the prevesical space.

Very truly yours,
Charles G. Cumston, M.D.

RECORD OF MORTALITY

For the Week ending Saturday, July 17, 1909.

Cities.	Reported deaths in each.	Deaths under five years.	Cities.	Reported deaths in each.	Deaths under five years.
New York	—	—	Waltham	5	—
Chicago	482	121	Pittsfield	3	—
Philadelphia	—	—	Brookline	2	—
St. Louis	—	—	Gloucester	8	3
Baltimore	252	117	North Adams	9	5
Cleveland	—	—	Northampton	5	2
Buffalo	—	—	Chicopee	6	5
Pittsburg	—	—	Medford	7	2
Cincinnati	—	—	Beverly	2	—
Milwaukee	—	—	Leominster	3	—
Washington	—	—	Hyde Park	2	—
Providence	—	—	Melrose	5	0
Boston	163	44	Newburyport	1	—
Worcester	36	14	Revere	3	1
Fall River	55	39	Westfield	—	—
Cambridge	18	2	Woburn	5	3
Lowell	42	16	Peabody	—	—
New Bedford	20	7	Marlboro	2	0
Lynn	17	4	Attleboro	2	1
Springfield	28	10	Adams	—	—
Lawrence	35	21	Clinton	6	0
Somerville	9	3	Gardner	3	0
Brockton	12	5	Milford	5	2
Holyoke	22	10	Watertown	2	0
Malden	14	5	Plymouth	—	—
Chelsea	16	7	Southbridge	3	—
Newton	8	1	Weymouth	3	0
Salem	18	7	Framingham	—	—
Haverhill	5	—	Wakefield	—	—
Fitchburg	8	2	Webster	—	—
Everett	8	2	Arlington	2	—
Quincy	—	—	Greenfield	5	—
Taunton	9	2			

LIST OF CHANGES OF STATIONS AND DUTIES OF COMMISSIONED AND OTHER OFFICERS OF THE PUBLIC HEALTH AND MARINE-HOSPITAL SERVICE FOR THE SEVEN DAYS ENDED JULY 21, 1909.

Glennan, A. H., assistant surgeon-general. Granted twenty-eight days' leave of absence from July 20, 1909.

Cofer, L. E., assistant surgeon-general. Directed to proceed to Reedy Island Quarantine Station upon special temporary duty. July 15, 1909.

Austin, H. W., surgeon. Upon being relieved by Surgeon James M. Gassaway, directed to proceed to Stapleton, N. Y., and assume command. July 20, 1909.

Gassaway, James M., surgeon. Upon being relieved by Surgeon H. R. Carter, directed to proceed to San Francisco, Cal., and assume command. July 20, 1909.

Carter, H. R., surgeon. Upon being relieved from duty with the Isthmian Canal Commission, about Aug. 1, 1909, directed to proceed to Philadelphia, Pa., and assume charge. July 20, 1909.

McClintic, T. B., passed assistant surgeon. Directed to proceed to Norfolk, Va., upon special temporary duty. July 13, 1909.

Trotter, F. E., passed assistant surgeon. Granted fifteen days' leave of absence from July 21, 1909.

Sweet, Ernest A., passed assistant surgeon. Granted seven days' leave of absence from July 15, 1909, under paragraph 191, Service Regulations.

Porter, Joseph Y., quarantine inspector. Directed to inspect Florida quarantine stations from time to time during present season. July 20, 1909.

Foster, J. P. C., acting assistant surgeon. Granted twenty-six days' leave of absence from July 17, 1909.

O'Reilly, W. J., acting assistant surgeon. Granted ten days' leave of absence from July 27, 1909.

Van Ness, George I., Jr., pharmacist. Leave of absence granted June 3, 1909, for thirty days from June 10, 1909, without pay, amended to read twenty-seven days without pay.

Crolly, Theodore A., pharmacist. Directed to report to the Medical Officer in Command at New York for duty and assignment to quarters. July 15, 1909.

Wolfe, J. Albert, pharmacist. Directed to proceed to Cairo, Ill., and report to the Medical Officer in Command for temporary duty and assignment to quarters. July 15, 1909.

APPOINTMENTS.

Dr. Bruno L. Schuster appointed an Acting Assistant Surgeon for duty at Port Huron, Mich. July 19, 1909.

Theodore A. Crolly appointed a Pharmacist of the Third Class. July 14, 1909.

J. Albert Wolfe appointed a Pharmacist of the Third Class. July 14, 1909.

BOARD CONVENED.

Board of medical officers convened to meet at the Marine Hospital, San Francisco, Cal., July 26, 1909, to determine the fitness of Pharmacist W. H. Keen for promotion to the grade of Pharmacist of Class Two. Detail for the board: Surgeon H. W. Austin, chairman; Passed Assistant Surgeon J. D. Long, recorder. July 15, 1909.

CHANGES IN THE MEDICAL CORPS U. S. NAVY FOR THE WEEK ENDING JULY 24, 1909.

McMahon, J., pharmacist. Transferred to the retired list from July 19, 1909. July 22.

Henry, H., pharmacist. Detached from the Bureau of Medicine and Surgery, Navy Department, and ordered to duty at the Naval Hospital, Yokohama, Japan. July 22.

Phillips, T. W. K., pharmacist. Detached from duty at the Naval Hospital, Yokohama, Japan, and ordered home to wait orders. July 22.

Allen, D. G., assistant surgeon. Detached from the "Chattanooga," and ordered to the Naval Hospital, Canacao, P. I., July 22.

BOOKS AND PAMPHLETS RECEIVED.

Writer's Cramp and Its Treatment. By Douglas Graham, M.D. Reprint.

Obsessions, impulsions et tics chez un dégénéré (Présentation de malade). Par M. Fillassier. Reprint.

Dégénerescence mentale avec épilepsie; actes inconscients, fugues et impulsions (Présentation de malade). Par M. le Dr. Fillassier. Reprint.

Treasury Department. Public Health and Marine-Hospital Service of the United States. Campaign against Ground Squirrels in Contra Costa County, California. By Rupert Blue. Colored Antituberculosis League. Proposed Plan of Organization. By C. P. Wertenbaker.

A Little Abdominal Surgery by the Family Physician. By William H. Dukeman, M.D. Reprint.

Surgical Technique without the Use of Antiseptics; with Report of Forty-one Consecutive Successful Abdominal Operations. By William H. Dukeman, M.D. Reprint.

The Pupil in Extra-Ocular Disease. By Herbert C. De V. Cornwell, M.D. Reprint.

A Study of the Urinary Acidity and Its Relations. By Henry R. Harrower, M.D. Reprint.

Physician and Nurse. An Idealization. By Joseph McFarland, M.D. Reprint.

The Imbecile with Criminal Instincts. By Walter E. Fernald, M.D. Reprint.

The Practical Medicine Series. Under the general editorial charge of Gustavus P. Head, M.D. Vol. V. Obstetrics. Series 1909. Chicago: The Year Book Publishers.

Sommeil Électrique. Épilepsie Électrique et Électrocution. By Dr. Louise G. Robinovitch. Nantes: A. Dugas & Cie. 1906.

The Genesis of Genius. By Louise G. Robinovitch, B. ès L., M.D. Reprint.

The Genesis of Epilepsy. By Louise G. Robinovitch, B. ès L. (Paris), M.D. Reprint.

Jeremiah Barker, M.D., Gorham and Falmouth, Me., 1752-1835. By James Alfred Spalding, M.D. Reprint.

Myxœdema: Report of a Case. By Samuel E. Simmons, A.B., M.D. Reprint.

The Unknown Life and Works of Dr. Francis Joseph Gall. By Bernard Hollander, M.D. London: Siegle, Hill & Co. 1909.

Address.

THE ETIOLOGY OF TUMORS CONSIDERED FROM THE STANDPOINTS OF CONGENITAL TUMORS AND TUMORS FOLLOWING REPEATED INJURIES.*

BY S. B. WOLBACH, M.D., ALBANY, N. Y.,
Director of the Bender Laboratory.

Up to the present time, four important hypotheses of tumor origin have been advanced: those of Cohnheim, Ribbert and von Hansemann, and that of the parasitic origin of tumors. These hypotheses are important because each one has stimulated investigation and so has indirectly contributed to the advancement of knowledge in this great subject.

The hypothesis of parasitic origin of tumors has had its day, because, subject to direct experimental test, it has been found incapable of proof and inadequate to explain many facts disclosed in recent investigations.

I shall state briefly and in broad terms the hypotheses of Cohnheim, Ribbert and von Hansemann because the contents of this paper deal with each one and because each one has a basis founded upon established biological facts and principles.

Cohnheim's hypothesis is that tumors take origin from cells "which in the course of development have been displaced from their normal relationship, or have failed to undergo a normal atrophy." The existence of groups of such cells or "embryonal rests" in the infant and adult bodies is not a rare occurrence, as I shall show below. This hypothesis did not attempt to explain why the isolated cells take on aberrant growth, or why so few out of the many that are constantly encountered in pathological work become malignant.

Ribbert's hypothesis at first was essentially an expansion of Cohnheim's and included, as starting points for tumors, post-natal displacements of cells. Recently he has further extended his hypothesis to the effect that mechanical isolation of cells is not necessary, and gives as the essential feature the physiological isolation of cells through changed function. His hypothesis thus is broadened to include the origin of tumors from cells once a part of normal structures. He explains the origin of carcinoma by the physiological isolation of epithelial cells brought about by primary changes in the supporting connective tissue; and has applied this explanation to the origin of cancer from embryonal rests as well as from normal structures.

Von Hansemann's hypothesis states that the tumor cell is one that has suffered modification characterized by a loss of the power of differentiation and the acquisition of increased powers of growth. This condition he calls anaplasia. The hypothesis does not explain why this change should occur.

CONGENITAL TUMORS.

The most important feature in the consideration of congenital tumors is the fact of their occurrence. There are now hundreds of cases on record, including nearly every kind of malignant growth, while less than fifty years ago Virchow wrote in his book, "Die Krankhaften Geschwulste," that "hardly any cases of congenital sarcoma are known."

The congenital tumors may be divided into four classes: (1) the teratomata; (2) the mixed tumors; (3) malignant tumors of specific structures, which closely resemble normal tissues, and (4) true, simple tumors, including carcinoma and sarcoma.

The facts known about the origin of the congenital tumors apply to the first three classes and support the hypothesis of Cohnheim.

Teratomata, which group includes those cases of an imperfect fetus developing in the body of a more or less perfect fetus, are known to take origin from cells of a very early embryonic period, i. e., the blastomeres, which are cells capable of giving rise to all types of tissues. Misplacement of blastomeres has been observed and may be produced experimentally in the lower animals, causing the production of monstrosities. In this way the occurrence of teratomata, containing representatives of every tissue in the body, in such places as the mediastinum and cranium, as well as in the ovaries and testicles, may be accounted for.

The origin of the simpler mixed tumors, such as those of the kidney and parotid gland, may be traced to isolation of cells at a later period of growth. For example, the kidney develops by a very complicated process, as follows: The Wolffian body, or primitive kidney region, gives rise first to the myotome, from which at a later period the nephrotome, or matrix for the kidney tissues, arises. The myotome also gives rise to the sclerotome, from which develop striated muscle, bone and connective tissue. The finding of tumors in the kidney containing bone, muscle and primitive kidney tissues can only be explained by the assumption that cells capable of giving rise to these various tissues, i. e., those of the myotome, have been isolated and carried along in the developing kidney. A similar explanation is offered for the origin of the mixed tumors of the parotid to the effect that cells of the primitive epiblast, whence develop bone, cartilage and gland structures, have become isolated and included in the region of the developing parotid gland.

In the human, isolated groups of cells, or embryonal rests, have been found in many regions. In the skin, rests occur as pigmented nevi, or moles. Malignant tumors frequently take origin in these moles. In the female genitalia, rests are of very frequent occurrence, and, according to their location, may be referred back to the Wolffian ducts or to Müller's ducts. Teratomata of the ovaries in infants have been described, and sarcoma of the vagina is most frequent in infancy and early childhood, and have been found at birth. These "sarcomata" of the vagina may contain nests of epithelium and striped muscle. Recurrence after removal is common. Invasion of surrounding tissue is the rule, while metastases are rare.

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* A lecture under the auspices of the Cancer Commission of Harvard University, March 4, 1909.

Malignant tumors in infants in the region of the sacrum and coccyx are relatively frequent. Many of them contain tissue of nervous origin and hence must arise from remains of the neural canal. Such remains have been demonstrated in otherwise normal fetuses by Dr. Mallory.

It is not rare to find at autopsy small inclusions of adrenal tissue in the kidney, and this furnishes another instance of demonstrable rests of tissue in an organ where malignant tumors of similar tissue are of frequent occurrence.

It is almost certain that the multiple chondromata take origin in rests of cartilage tissue, rests of which have been demonstrated.

In addition to the evidence supporting Cohnheim's hypothesis, to be found in the occurrence of rests of tissue of a type in organs where malignant tumors representing a similar type of tissue are frequently found, we have the further evidence of the association of congenital tumors with anatomical defects of development.

Twenty-five cases of mixed tumors of the kidney have been associated with congenital defects of the brain (" hypertrophic tuberous cerebral-sclerosis "). Congenital tumors of heart muscle are usually associated with other congenital defects such as spina bifida and cerebral sclerosis. One case which I reported was associated with spina bifida and multiple nests of neuroglia tissue in the meninges of the spinal cord. A large proportion of supernumerary and accessory ovaries have been the seat of tumors. One case of a congenital heart lesion (an imperfect interventricular septum) in a young adult, autopsied at the Boston City Hospital, had a myoma of the intestine.

Certain tumors are more common in infants and children than in adults. These are the tumors of the eye (retinal glioma) and the mixed tumors of the kidney. They are also by far the commonest tumor of infants, which, considering the complicated development of these organs on the basis of Cohnheim's hypothesis, is to be expected.

True sarcoma and carcinoma are rare in infants. Malignant tumors in infants are generally reported as sarcomata, probably simply because the cells are of indeterminate type, representing as they do cells of an early period of development. A fact of interest is that many cases of carcinoma of the appendix have occurred during, or before, the adolescent period, and the majority before the age of forty. As the appendix is a rudimentary organ, it seems rational that the epithelial tumors occurring there should make their appearance in early life.

The above cursory treatment of the subject of congenital tumors is sufficient to show that Cohnheim's hypothesis is strongly supported. The most frequent occurrence of tumors in early life in organs of very complicated development, as the eye and kidney; the association of congenital tumors with anatomical malformations or vice versa; and, finally, the frequently demonstrated presence of remains of embryonal structures in many locations, all urge the belief that the tumors of early life develop from embryonal rests. But so far nothing has been offered in explanation why these isolated cells and structures take on malignant properties. Ribbert has suggested that the products of metabolism of such isolated cells may influence the surrounding connective tissue in a deleterious manner and thus excite a series of changes which by their reaction upon the cells of the rest may, after months or years, bring about malignant properties. Some support for Ribbert's suggestion may possibly be found in the matter presented in the second part of this paper.

TUMORS FOLLOWING REPEATED INJURIES.

The term " injuries " is used here in a very broad sense. Under this title I shall discuss the association of carcinoma with well-known pathological processes and those carcinomata associated with unusual occupations and peculiar practices. For the purposes of approach and introduction, it is now necessary to consider some of the effects upon epithelium of pathological processes of long duration.

METAPLASIA OF EPITHELIUM.

The so-called metaplasia of epithelium as a result of pathological processes consists chiefly in the change from the mucous variety of epithelium to the stratified squamous type and in the production of exuberant growth with altered structural and cell characteristics.

The simplest example of the change from the mucous to the squamous type is seen in eversion of the uterus where the mucous membrane after a time changes from the columnar type to a stratified squamous epithelium of which the outer layers may show a definite horny change like that found in the normal epidermis.

In ordinary chronic inflammatory processes, including suppuration, a similar change may occur in certain organs. The conjunctiva may become thick and stratified in chronic conjunctivitis. The mucous membrane of the turbinate bones and of the accessory sinuses of the nose, particularly in the antrum of Highmore, may undergo a similar change in chronic inflammations. In the middle ear, in chronic suppurative proccesses with granulation tissue, the production of horny squamous epithelium may be so great as to give rise to solid tumor-like masses composed of horny desquamated epithelium, the so-called pearl tumors, or cholesteatomata. Similar accumulations of horny epithelium have been found in the ureters in the presence of calculi. In the gall bladder, in chronic inflammation, with or without the presence of calculi, the mucous membrane may become transformed to the squamous type and there may also be small pendulous outgrowths (condyloma).

In chronic inflammations of the larynx, trachea and bronchi, patches of squamous epithelium are often found, and in a few instances where such patches in the larynx could be observed, papillomata and carcinoma have been found to arise in these areas. At autopsy, cases of benign and malignant epithelial growths of the respiratory tract have been found associated with multiple patches of squamous epithelium.

The change from squamous epithelium to the columnar type has been found in the bladder and in the membranous and prostatic urethra, often attended with papillary outgrowths. In the bladder these papillary epithelial growths are quite common following chronic cystitis of many years' duration, and not rarely they are associated with malignant epithelial growths.

Experimentally, the mucous membrane of the stomach in rabbits has been made to undergo the change from the normal into stratified squamous epithelium.

HETEROTROPHIC PROLIFERATION OF EPITHELIUM IN CHRONIC INFLAMMATORY PROCESSES.

The facts presented under this heading are taken from a paper by Lubarsch, who defines the term " heterotrophic proliferation " as meaning the occurrence of epithelium where it positively does not belong. In speaking of the intestinal tract, he limits the application of the term to those cases where the epithelium is found between the bundles of the muscularis mucosæ or completely beneath it.

Every pathologist is familiar with this condition and with the difficulty of distinguishing microscopically between this inflammatory growth and carcinoma. Usually the history of the case and the macroscopic appearance make the diagnosis easy. The occurrence of heterotrophic growths is most common in the aged and is always the result of deep-seated chronic inflammatory processes. Usually gland-like structures are reproduced in the down growths. There may be separation of the down growth from the surface epithelium, and the cells may or may not show evidences of growth.

In the series of cases presented by Lubarsch, there were fifty-two cases of heterotrophic proliferation of the stomach epithelium, attended either by hypertrophy or atrophy of the mucosa as a whole; the average age was sixty-two to sixty-four years. From the intestinal tract there were 32 cases, all associated with deep-seated inflammatory processes, such as tuberculosis and dysentery. The average age was fifty years.

From the gall bladder there were 36 cases, with an average of fifty-six years. Nine of these cases showed such extreme thickening and down growth that the condition was a difficult one to distinguish from tumor, except for the obvious association with chronic inflammatory processes.

These results were carefully controlled by Lubarsch, who excluded the possibility of embryonal rests being mistaken for islands of heterotrophic proliferation by a thorough search for embryonal rests in normal organs. The results were practically negative for the organs examined, which were the gall bladder, stomach, appendix, cecum, anus and rectum.

THE ASSOCIATION OF METAPLASIA AND HETEROTROPHIC PROLIFERATION OF EPITHELIUM WITH CARCINOMA.

There is a fairly well-established association of carcinoma of the respiratory passages and of the urinary bladder with processes attended by metaplasia of the epithelium.

In Lubarsch's series, 59% of the cases showing heterotrophic proliferation had carcinoma in some organ. There were 9 cases of carcinoma of the esophagus, 7 of the stomach, 4 of the intestines, 3 of the uterus, 2 of the gall bladder and 1 each of the pharynx, bile ducts and lung. In 17 cases heterotrophic proliferation in an organ was associated with carcinoma of the same organ.

Since heterotrophic proliferation is a condition found in old age, and carcinoma is essentially a disease of old age, Lubarsch expresses the opinion that the one precedes the other.

From the pathological side there is a fairly well-established association between epithelial changes produced by long-standing] inflammatory processes and the occurrence of carcinoma. I shall now take up the consideration of cases in which the association is clinical, though in some instances corroborated by pathological investigation.

CARCINOMA FOLLOWING WELL-KNOWN PATHOLOGICAL PROCESSES.

Tumors of all varieties have repeatedly been referred back to traumatism as an exciting cause. It is needless to consider seriously any of the single published cases, of which there are a great number, attributing the cause of a malignant growth to a single traumatism. However, there is among clinicians a firm belief that certain pathological conditions are responsible for tumor production. The very superficial investigation I have made into the foundations for this belief indicate that the question is an important one and worthy of very careful investigation by pathologists engaged in cancer research.

Carcinoma of the uterus. — Cullen, in his book on " Cancer of the Uterus," discusses the etiology from the standpoints of trauma, heredity, embryonic cell inclusion, Ribbert's theory, parasitic origin and cancer as a primary disease of epithelium. From his careful study of a small number of cases of squamous-cell carcinoma of the cervix (fourteen) he comes to the conclusion that " the injuries incidental to labor have a potent influence in the development of this variety of cancer." This seems to be the opinion of many eminent and conservative gynecologists. The association of cancer of the body of the uterus and pregnancy is not so apparent, though Cullen's series of 19 carefully-studied cases shows an apparent connection between childbearing and cancer of the body of the uterus.

Carcinoma of the stomach, gall bladder and bronchi. — Support for the belief of origin of carcinoma of these organs in ordinary pathological processes is furnished by the pathological studies of Haberfeld. From 20,000 autopsies there were 662 cases of carcinoma of the stomach, 106, or 16%, of which could be proved to have been preceded by ulcer. Inasmuch as there was no way of determining the precedence of ulcer in the other cases, he concludes that there must be a connection between carcinoma and ulcer of the stomach. The connection between cholelithiasis and carcinoma of the gall bladder is more evident. Out of 265 cases of gallstones in 20,000 autopsies, 27% were in males, 73% in females. In the same series of autopsies there were 164 cases of carcinoma of the gall bladder, of which 27% were in males and 73% in females. In 98 cases of gall-bladder carcinoma collected from other authors, there were 68 cases with cholelithiasis, an average of 70%. Haberfeld argues that gallstones were found almost without exception in cases of primary carcinoma of the bladder, while in secondary carcinoma they are very rare. The strongest argument he advances for the connection between the two conditions is that the ratio of carcinoma of the gall bladder in the two sexes is exactly the same as in the case of gallstones. He concludes that the relationship of carcinoma to gallstones is inevitable.

As an introduction to the statistics of carcinoma of the bronchi, Haberfeld calls attention to the fact that the right lung during youth is more often affected by diseases than the left. This he largely attributes to the anatomy of the bronchi, and lays stress upon the straighter line made by the right primary bronchus with the trachea. He thinks that the right bronchi and lung are more exposed to injurious agents than the left. The type of injury is not that directly due to inhalation of solid particles and injurious gases, but to the resultant secondary infectious processes. Since males are more exposed than females, cancer of the bronchi should be more common in males, and this is shown by the 193 cases he collected from his own series and those of four other authors, in which 155 were in males and 38 in females. The more frequent occurrence of carcinoma in the right side also supports the belief in the connection between injury and carcinoma. Thus, out of 146 cases collected, 94 were primary on the right side, 41 on the left side. In 9 cases there was bilateral carcinoma.

Histologically, the 68 cases in Haberfeld's series were mostly of the squamous-cell type, so that the argument is suggested that the same causes that produce the squamous-cell metaplasia of the bronchial epithelium are responsible for the production of carcinoma.

Carcinoma of the breast. — The association of chronic mastitis and carcinoma of the breast is firmly fixed in the minds of surgeons, and the pathologist when examining microscopically cases of chronic mastitis is often confronted by masses of epithelial cells hard to distinguish from carcinoma. In these cases there may be marked epithelial proliferation and changes in cell characteristics with the production of cell masses which resemble carcinoma in every way, except in evidences of invasion.

A recent analysis of 100 cases of carcinoma of the breast by Leaf gives the following results: Eighty-four per cent were married women; the remaining 16% were unmarried. Seventy-one per cent of the 100 cases gave histories of abnormal lactation characterized either by over lactation or under lactation. Thirty-five per cent showed a definite history of injury, and in 32% the carcinoma developed in the injured side. The average duration of time after injury before the carcinoma was noticed was three years and two months. Twenty-three per cent of the 100 cases had a family history of carcinoma.

Carcinoma of the penis. — Chronic balanitis is invariably given as the most important etiological factor in the production of carcinoma of the penis. The statistical *evidence* for this belief is wholly of a negative character, consisting of the known immunity of circumcised races to carcinoma of the penis. In 100 cases from the Massachusetts General Hospital, none were in Jews. Bashford, in the third report of the Imperial Fund for Cancer Research, says that carcinoma of the penis is practically unknown in Mohammedan races which practice circumcision.

Carcinoma following lupus. — Recently, many cases of epidermoid carcinoma and a few cases of sarcoma have been reported in lupus patients. The tumors develop in the affected areas after many years' duration of the disease. The number of cases reported is too great to admit of explanation by coincidence. In one series of cases of lupus (Wild), five out of every fifty developed carcinoma. Furthermore, the very early age in which epidermoid carcinoma makes its appearance in lupus patients and the frequent occurrence in females are additional evidence of relationship.

In addition to the above conditions associated with carcinoma and capable of statistical support, there are numerous other pathological processes which have long been associated with tumor production.

Tumors of the colon are more common at the flexures, and the explanation usually given is that the feces remain there for a longer time, giving rise to greater trauma and absorption there than elsewhere. The effects of heat and volatile substances from tobacco smoking are popularly supposed to contribute to carcinoma production in the mouth and lips. The name "scar cancer" has arisen from the apparently frequent development of cancer in scar tissue. In syphilitics the the development of cancers in patches of leucoplakia in the mouth has been sufficiently frequent to establish a belief in the etiological relationship. Finally, we have the association of very simple chronic inflammatory processes with carcinoma production in cases of chronic osteomyelitis of many years' duration when attended by a discharging sinus.

CARCINOMA ASSOCIATED WITH UNUSUAL OCCUPATIONS AND PRACTICES.

Perhaps the best known of all occupations associated with carcinoma is that of chimney sweeps. The type of carcinoma is the epidermoid or epithelioma, which usually makes its first appearance upon the scrotum. The affection has been most common in England, and its rarity in other countries has been used as an argument against the causal relationship of the occupation to the disease. A recent paper by Butlin discloses the fact that the sweeps in England are notoriously careless in protecting their person, while the sweeps of continental countries are more cleanly and wear a special dress adapted to protect them from the soot while engaged in their work. Chimney sweep's carcinoma makes its appearance after many years of service and is always preceded by thickening of the skin, keratoses and persistent ulceration.

Carcinoma of the scrotum is a rare disease. During five years at the Boston City Hospital, 1881 to 1887, there was but 1 case. In twenty years preceding 1887, 48 cases were collected in London, of which 38 or 39 were in sweeps. In 4 of the remainder, the occupation was not determined. Of 29 cases in sweeps from one hospital (St. Bartholomew's), 21 were below the age of fifty. Two cases were recorded in men below the age of thirty. Oliver, in his book on "Diseases of Occupation," states that the mortality among chimney sweeps from carcinoma for three years preceding 1902 compared with other occupations involving manual work was as 133 to 63. Another set of statistics gives the ratio as 156 to 44. These figures are significant when we take into consideration that cancer of the scrotum is a very rare disease, and though it may be true that the mortality among sweeps from this disease is no greater than the general mortality among women from carcinoma of corresponding parts, the vulva, as claimed by Roger Williams, the significance is not diminished. Carcinoma of the vulva is not a very rare disease, and, therefore, the comparison is not a valid one.

In fact, among all occupations where the handling of products of combustion of coal is a feature, many cases of chronic dermatitis leading to keratoses and carcinoma occur. This association is so frequent that it has become of great clinical importance. The occupations besides that of chimney sweeping where soot or distillation products of coal are handled are gardening, where soot is used to sprinkle plant beds; workers in carbon factories; and tar, paraffin and asphalt workers. In all of these occupations the evolution of the disease is the same — chronic thickening of the skin, keratoses, ulceration and, finally, carcinoma. In all, the exposed parts only become affected. In this country a few cases of carcinoma following the usual type of chronic dermatitis have been reported from the National Carbon Works.

Aniline workers. — Workmen engaged in handling aniline oil products are particularly subject to chronic cystitis, which has been fairly well proved to be due to the elimination of aniline derivatives in the urine. After many years of service, a certain proportion develop tumors of the bladder, so that the association between the occupation and the disease has become fixed in medical literature. Up to 1907, 26 cases of bladder tumor have been reported in aniline workers. Twenty of these cases were malignant. The time of exposure varied from five to twenty-nine years. The majority of the tumors are malignant papillary growths. A few have been reported as sarcoma.

Recently, I autopsied a case of carcinoma of the bladder in a man who had worked in an aniline works for more than fifteen years. For many years he had had chronic cystitis.

Bilharzia disease. — Bladder tumors are so common in persons with Bilharzia disease that the causal relationship is unquestioned. Until recently the nature of these tumors could be questioned, but a recent paper by Goebel, based upon careful pathological investigation, states that 50% are malignant.

Carcinoma of sailors. — A few cases of multiple carcinoma of the face in sailors have been reported by Unna, who, on account of the sequence of chronic dermatitis, keratoses and carcinoma, thinks that the disease is a direct result of exposure in susceptible individuals.

"*Kangri*" *carcinoma.* — This is almost the most striking instance we have of carcinoma associated with a definite and peculiar practice. The Kangri is a small earthenware stove employed by the natives of Kashmir and worn attached to the belt beneath their robes. After many years of this practice, a chronic dermatitis results which finally becomes the seat of carcinoma. Closely allied tribes living at lower altitudes, who do not employ this method of keeping warm, do not have this disease. Because of the extreme rarity of carcinoma of the skin of the abdomen there can be no doubt as to the causal relationship of the practice to the disease. This account is taken from the third report of the Imperial Cancer Research Fund of England.

Two other striking examples of carcinoma associated with definite practices are also taken from the last report of the Imperial Cancer Research Fund. These are the "Horn Core" cancer of cattle, and cancer in women who chew preparations of betel leaves.

The former is an epidermoid carcinoma beginning at the base of the right horn of cattle employed in India for draft purposes. The traction is made by means of a rope attached to the right horn and hence the evident causal relationship. Carcinoma of the cheek in women who chew betel leaves is attributed to the fact that the preparation consisting of betel leaves, lime and other ingredients is constantly kept in one position even during sleeping hours between the teeth and cheek. A causal relationship is indicated by the fact that the tumor develops on the side employed in the practice.

CARCINOMA FOLLOWING X-RAY EXPOSURES.

I have reserved this subject for the last because of its great importance and its bearing upon the value of the other associations between tumors and preceding processes. Because of the large number of cases, the occurrence in young individuals and the multiplicity of the growths upon exposed parts only, the causal relationship between repeated x-ray exposures and carcinoma cannot be denied. Nor is it denied by any who have investigated the subject with care. New cases are constantly being reported, and the etiological connection between the x-rays and carcinoma of the skin is now accepted in all countries.

The x-ray carcinoma is the first experimental carcinoma. The subjects have been men more or less constantly exposed to the x-rays during working hours. The evolution of the disease has been carefully observed and is practically constant in all cases. A few of the victims have been patients subjected to many exposures during several years. Up to the time of writing, thirty-six cases of carcinoma have been collected and verified by microscopic examination. The majority are cases of young individuals. Many have ended fatally from metastases. In all cases the tumors have been multiple upon exposed portions of the body only — hands, arms and face. X-ray carcinoma, then, is characterized by its occurrence in young individuals and by its malignancy. It develops in skin which has been for several years the seat of a chronic dermatitis characterized by telangiectases and keratoses.

The evolution is in many respects similar to the evolution of carcinoma in sailors, chimney sweeps and Kangri carcinoma, and great stress must be laid upon the fact that where a large number of cases of carcinoma are associated with a given occupation or practice, the tumors always develop on the part of the body exposed to the injurious agents.

I have had an opportunity of making a careful study of cases of chronic x-ray dermatitis, the material for which was supplied by Dr. C. A. Porter. The results of this study showed that the chief effects of the x-rays were upon the deep tissues of the skin, connective tissues, smooth muscle and endothelium. There is repeated destruction of tissue and repair until the development of obliterative changes in the vessels prevents normal repair. Then comes a stage when the structure of the skin greatly changes, during which the epithelium is constantly forced to proliferate in order to repair small defects caused by the necrosis of the underlying tissue. The epithelium is likewise probably subjected to very marked changes in nutrition. The importance of these findings is greatly increased by the fact that in a few cases where patients were subjected to a long period of exposures to the x-rays, carcinoma did not develop for a long time afterwards — usually several years. This so-called latent period is against believing that the direct action of the rays is the cause of the tumor production. The constant severe changes existing over this period in the deeper layers of the skin have a marked effect upon the epidermis, as I have proved, and are, therefore, probably responsible for the acquisition of new properties on the part of the epidermis.

The change in the epidermis is perhaps best regarded not as the acquisition of new properties, but as a reversion to an earlier type in which the property of differentiation has not been acquired while the growth capacity is at its maximum.

Other investigators of x-ray lesions and carcinoma, notably Unna, Wyss and Linser, have come to a similar conclusion regarding the effects of the rays upon the skin. All have found the chief effects to be in the tissues below the epidermis.

The conclusions drawn by myself and other workers in regard to the evolution of the x-ray carcinoma are of great importance because of the support they necessarily give to Ribbert's hypothesis.

Goebel, in his investigation of bladder tumors in Bilharzia disease, has traced the first process back to the stoppage of vessels by the ova of the parasites. The first effect is, therefore, necrosis without sepsis and followed by imperfect repair. Proliferation of the epithelium is here also secondary to connective tissue changes. It is maintained by a long-continued, constantly-repeated aseptic inflammation caused by the ova of the Bilharzia parasite.

Gœbel finds analogies between the processes in Bilharzia disease and those observed in aniline workers, tobacco smokers, chimney sweeps, etc.

There is unquestionably a great similiarity between the processes in Bilharzia disease of the bladder and the x-ray dermatitis.

SUMMARY.

In the first part of this paper I have endeavored to present a few data which support the belief that the congenital tumors and tumors of infancy and early childhood most commonly take origin from isolated or misplaced cells. At least we have very positive evidence that certain tumors, such as the teratomata, hypernephromata, mixed tumors of the kidney and parotid and the retinal tumors arise from such errors of development. In the second part, I have endeavored to show that in the cases of x-ray carcinoma and a few other instances, such as Bilharzia disease and Kangri carcinoma, there is a proved causal relationship between malignant tumors and antecedent pathological processes. The more peculiar the source of the injury, the greater is the value of the evidence when the association is marked by a strikingly large number of cases. The similarity in the evolution of the skin carcinoma in widely different kinds of exposures points to a common underlying process whatever the nature of the injurious agent. In the cases of x-ray carcinoma and Bilharzia carcinoma, there is a proved similar antecedent pathological process. X-ray carcinoma is to be regarded as the first instance of an experimentally produced malignant tumor. Its occurrence following definite lesions of the skin, of a continuous and progressive character, places the whole subject of carcinomata following repeated injuries upon a firm basis. It designates this field of investigation as the most promising one for research into the origin of carcinoma, because we have at least one and perhaps several examples of proved causal relationship.

The facts presented do not speak for belief in simple trauma as a cause for tumor production. They do indicate that long-continued progressive lesions of connective tissue supporting epithelium are responsible for the acquisition of malignant properties by the epithelium. This belief is not so far removed as it would at first appear from the hypothesis of von Hansemann, who believes that the malignant property of epithelium is a primary disease. There is no incompatibility in a theory which holds to the idea that similar properties may be acquired by years of changed environment and nutrition.

Finally, it may be said that no series of experiments upon animals, in the attempt to produce tumors, has ever been carried out which in any way approached duplication of those conditions we find in man associated with the production of cancer. The element of time is perhaps the most important factor. Many years always elapse between the onset of the antecedent pathological process and the occurrence of cancer. In the case of the x-rays ten years is perhaps the shortest period. But the magnitude of the problem and the value of the results should justify the expenditure of time and money necessary to more adequately investigate this field of the cancer problem.

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Original Articles.

ON THE SURGICAL SIGNIFICANCE OF PUS, BLOOD AND BACTERIA IN THE URINE.*

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The chief point in my paper to-night is a plea for a more careful investigation of cases in which pus, blood or bacteria are present in the urine. We are apt to consider sugar, albumen and casts as the most serious pathological signs to be found in the renal secretion, but it seems to me from a surgical point of view that pus, blood and bacteria are elements the significance of which we cannot afford to neglect. Even in the modern life insurance examination I doubt if sufficient importance is given to these elements, because in most cases they come from the urethra. Urine should be amber clear; if it is not, the cause of the turbidity should be thoroughly investigated. In this paper I do not refer to the examination of the voided urine, but to that obtained by catheter or at least by the three-glass test. In women, especially, a little pus or blood is apt to be looked at as due to an admixture of vaginal discharge, and in males the universal prevalence of gonorrhea makes it more than probable that a little pus in the urine is due to this cause. Perhaps I obtain an exaggerated idea of the importance of these elements because I see a relatively large proportion of the serious cases, but it seems to me that the really serious side makes it an obligation for every physician to make sure that the kidneys or bladder are not involved in each case. If a patient shows persistent pus, blood or bacteria by the three-glass test or by the catheter specimen, it should be a rule to have a cystoscopic examination made.

A diagnostic cystoscopy is nowadays not a painful, dangerous, difficult or expensive operation. Thanks to Kollman, Nitze, Albarran and the other famous genito-urinary specialists, the technic of this method of examination has become as simple, safe and sure as the running of a modern automobile. Our New England community has been backward in accepting the routine use of the cystoscope. We are to-day doing work but little better than what was found in the European clinics fifteen years ago. The reason of this is purely and simply that our great hospitals in Boston have been unwilling to set apart genito-urinary departments and give over this portion of their surgical work to specialists, who could give their time and brains to the advancement of urology. Genito-urinary specialists who do not have a public clinic where their superior work can be seen by their colleagues are not trusted by the community, and even when their work is good it is often unappreciated. General surgeons do the major operative work in the cases which obviously need it, but there is a large class of cases — particularly early cases — which they cannot or will not take the time to investigate carefully enough to justify an operation which is not urgent or obviously necessary. Cases of early renal tuberculosis or quiescent stones are thus often neglected. If we had but one good genito-urinary clinic in Boston it would set an example throughout all New England, so that confidence would be given to general practitioners who see the early cases.

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* Read before the New Bedford Medical Society on April 10, 1909.

Under the existing circumstances the best we can do is to devote a portion of our time to learning the use of the cystoscope, and fortunately a moderate facility in its use is easily acquired. The younger surgeons, especially, are acquiring a knowledge of cystoscopy in their out-patient training just as they learn the complicated technic of other operations. The out-patient clinics furnish material enough for this purpose, so that in a few years each surgeon can learn to catheterize the ureters and familiarize himself with the cystoscopic appearances of practically all the well-recognized bladder and kidney lesions. When the cases have been sufficiently studied they are sent into the hospital and operated on by the other surgeons, who may or may not agree with the opinion of the cystoscopist.

My experience has chiefly been from the cystoscopic end, but I want to briefly outline the 17 cases of renal and ureteral surgery on which I have operated myself. My chief apology for this is that so far I have been successful in this rather small though remarkable series, for it contains the largest tumor, the largest renal stone and the greatest number of ureteral stones I have ever seen.

Case I. Aug. 22, 1902. Traumatic rupture of kidney in a healthy brakeman of twenty-three years. Nephrectomy. Recovery. This case was reported in the Boston Medical and Surgical Journal for July 23, 1903.

He was last heard from two years after the operation and had remained well.

Case II. Feb. 16, 1906. False hydronephrosis of many years' standing in a feeble man of fifty-eight years. This was the largest tumor I have ever seen in a man or woman, with the possible exception of one or two ovarian cysts. Its removal required a curved incision into the flank, starting near the ensiform and finishing near the pubes. All the abdominal muscles on one side were divided. The tumor had caused elevation of the diaphragm, protrusion of the ribs and extended over the brim of the pelvis. The other abdominal organs were all pushed to the left side of the median line. The shock of the operation was very great, but the patient recovered and was well when last heard from, a few months ago. Years before, there had been trauma followed by bloody urine.

Case III. March 10, 1906. Enormous sarcoma of the kidney in a child. Nephrectomy. Recovery. Recurrence and death within a year.

No history of blood or pus in the urine.

Case IV. Cystic dilatation of the lower end of the ureter with ureteral stones. Removal of twenty-eight stones from the ureter through suprapubic wound. Recovery. This case was reported in the Boston Medical and Surgical Journal for May 28, 1908. He is well at the present writing, but the bacteriuria and phosphaturia still persist, unless urotropin is used.

Case V. Dec. 13, 1906. Stricture of the vesical end of the ureter with hydro-ureter in a woman of twenty-two years. Laparotomy. Ureterotomy between the bladder and broad ligament. Dilatation with sounds. Relief of symptoms except occasional attacks of pain. Cystoscopy and perureteral catheterization a year later showed easily previous ureteral opening, but slight retention of urine. This patient has had occasional attacks of pain during the last two years.

Case VI. Jan. 7, 1907. Profuse symptomless hematuria in a man of twenty-nine years. Exploratory incision in the kidney. Excessive hemorrhage immediately after operation necessitated nephrectomy. The excised kidney showed no lesion whatever. Recovery. When last heard from, a year later, this patient had remained well.

Case VII. Nov. 16, 1907. Double pyelitis in a woman of seventy years. Drainage of pelvis of right kidney. Recovery. Persistence of bacteriuria for some months. I am told by her physician that this patient is now well but that the urine has not been recently examined.

Case VIII. Nov. 22, 1907. Tuberculosis of kidney of long standing in a man of thirty-two years. Nephrectomy. The kidney was so atrophic that it was not necessary to tie the renal vessels. Recovery. This patient when last heard from, in April, 1909, was progressing well, although a perineal abscess appeared some months after the operation, and a sinus has persisted. The cystitis present before the operation is still troublesome, but improving under the use of tuberculin by Dr. Roger Lee.

Case IX. Dec. 28, 1907. Tuberculosis of kidney in a woman of twenty-five years. Nephrectomy. Recovery. This patient has remained well. Cystoscopic examination on April 14, 1909, shows that a small ulcerated area still persists in the bladder. There is very great improvement in this respect. The use of tuberculin in the hands of Dr. H. F. Hartwell appears to have greatly aided the recovery from the bladder lesions in this case.

Case X. March 11, 1908. Patient a man of forty-eight years. Renal colic from impaction of stone in vesical end of ureter. Suprapubic cystotomy. Dislodgement of stone backward. Relief of symptoms, but stone has not been found. Was very small and may have passed with the urine, and even at operation could not be positively demonstrated.

Case XI. March 27, 1908. Renal colic from impaction of small stone in renal end of left ureter in a man of fifty years. This patient had been kept lightly etherized practically continuously for seventy-two hours when I first saw him. His abdomen was greatly distended. There was no previous history of urinary trouble and the pain was in the left side of the abdomen. I first did exploratory laparotomy, made sure that there was no intra-abdominal lesion and that another kidney was present. The left kidney felt indurated, and as the extremely poor condition of the patient admitted of no hesitation, I removed the whole kidney. On examination, it showed one small rough stone firmly impacted in the beginning of the ureter. He reported himself as well in April of this year.

Case XII. Oct. 13, 1908. Intermittent hydronephrosis in small, slender girl of eighteen years. Plastic operation at junction of ureter and pelvis of kidney. Hemonephrosis within a few days. Drainage of pelvis for ten days. Recovery. When last heard from, in April, 1909, this patient had remained well. Bacteriuria was present a month after the operation and possibly still persists without symptoms.

Case XIII. Nov. 12, 1908. Stone in pelvis of left kidney in a boy of twenty years. Pyelotomy and removal of stone. Recovery.

Case XIV. Nov. 8, '08. Double nephrolithiasis in a man of twenty-nine years. Removal of stones from both kidneys at same operation. Recovery. Since operation, a small stone has been passed per urethra. Bacteriuria, but otherwise in good health at present.

Case XV. Nov. 25, 1908. Multiple renal stones in atrophic kidney. Patient a young lady of healthy appearance and without history of renal colic. Pyuria had existed for years and had been neglected. Nephrectomy. Recovery. Has remained well to date.

Case XVI. Jan. 23, 1909. Double nephrolithiasis of many years' duration in a man of thirty-nine years. X-ray showed enormous stones in both kidneys. Removal of stones weighing 220 gm. (about ½ lb.) from left kidney. Renal substance nearly normal in amount and appearance. Great shock prevented operation on other kidney. Recovery. General condition improving well. I intend to operate on the other kidney next fall. (Illustration.)

Case XVII.[1] April 21, 1909. Unilateral pyonephrosis in a feeble woman of thirty-four years. Nephrectomy. Although the symptoms in this case have existed only four months, the condition of the kidney showed that the disease must have existed much longer, for the renal substance had entirely disappeared and the large tumor was practically only a multilocular sac of pus. Pus in the urine must have been the only symptom for a long time.

The fact that I have had no mortality in these 17 cases is probably due to the small number. However, even nephrectomy nowadays has not a high mortality. It should not be over 4%. Brewer, of New York, has recently reported 53 cases with only 2 deaths. In the 59 cases of nephrectomy operated on at the Massachusetts General Hospital in the last three years, there have been but 4 deaths. These cases were probably very bad ones, for, as a rule, our cases are particularly apt to be the riffraff which other surgeons are not tempted to operate on. The truth is that the operation, when once determined on, is, as a rule, easy, and the really difficult part is the diagnosis and the decision of what form of operation is advisable. There are many men competent to remove kidneys when the lesion is obvious, but comparatively few can make a detailed diagnosis in doubtful cases. On the other hand, the preliminary examination may be overdone. You will see much in the medical journals nowadays about the different tests of the functional capacities of the kidneys. The estimation of the absolute and relative quantities of urea and of the secretion of phloridzin, indigo carmine, etc., are eulogized as essential preliminaries to renal operations. As a matter of fact, these tests are really necessary in a small minority of cases, for as yet they cannot be relied upon to tell the truth. Occasionally, like the white count in a doubtful appendix case, a comparative test is important. As a rule, the diagnostic cystoscope gives such positive information that even ureteral catheterization is often unnecessary. In stone cases, the x-ray can generally be trusted, and if stones are shown on one side only, and the position of the other ureteral opening is normal, and the jet is frequent and clear, I regard catheterization of the other ureter as not only not necessary, but unwise, for there is always some risk of infection.

I know that it would not be interesting to you to hear the details of these cases, but I hope you may enjoy going over with me the three chief points which seem of interest, and these points are, as the title of my paper implies, the significance of pus, blood and bacteria, when we have once determined that they do not come from the urethra or vagina.

PYURIA.

Case XV will serve as an excellent illustration of the importance of accurate investigation of the source of pus. This patient consulted me last August for symptoms which she supposed were due to leucorrhea. She could not define her complaint any more accurately than to say that there was a constant and disagreeable sensation in the pelvic organs. This sensation had existed an indefinite number of years, and at times had been accompanied by discomfort in the right side. There had been some abnormal sensations of this kind as long as she could recollect. During the past few years she had been in the hands of several different physicians for one reason or another, two of whom are men who have particularly good reputations on account of the thoroughness of their work. One had operated on the patient for a chronic appendicitis, and after the operation had given urotropin because the catheter had to be used on account of post-operative retention. The other had attended the lady in confinement, had observed the pus and had attributed it to the vaginal discharge. The appendix which was removed showed definite chronic inflammation, and the symptoms of indigestion which had been present before the operation were relieved by it. The confinement had been easy and natural.

When I saw the patient, she presented the appearance of good health, and the pelvic organs were normal, with the exception of a slight cervical tear and the pus in the urine, which I also, at first, attributed, as had the others, to a slight leucorrhea. On seeing the patient a second time, her complaints being still of distress in the pelvis, I asked her to give me another specimen of urine, from which she had, by careful washing and by placing a sponge in the vagina, excluded the chances of vaginal admixture. Since the pus showed in considerable quantities in this specimen, I advised cystoscopy to determine whether it was due to one of the kidneys or to the bladder. Cystoscopy showed a stream of thick pus from the right ureter, appearing at infrequent intervals, while the left ureter showed a clear urine, discharging abundantly. Although there was absolutely no history of anything resembling renal colic or of any localizing symptoms pointing to the right kidney, I thought it was best to have an x-ray taken to exclude the possibility of stone, for I suspected that the presence of pus and the painless and gradual character of the onset indicated a tuberculous kidney. Rather to my surprise, the x-ray showed a large calculus in the pelvis of the right kidney, and six weeks later the guinea pig inoculated at the time of the cystoscopy showed no tuberculous lesions. Cultures from the catheterized specimen were reported by Dr. Mark Richardson to be due to a bacillus resembling the bacillus proteus.

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[1] For the opportunity to operate on Cases II, III, VI and XI, I am indebted to Dr. M. P. Smithwick, of Boston; for Case XII, to Dr. Thomas Walker, of St. John, N. B.; for Case IV, to Dr. A. J. Hurwitz, of Boston. Cases X and XV occurred in my own practice, and Cases I, V, VII, VIII, IX, XIII, XIV and XVI were kindly assigned to me at the Massachusetts General Hospital by Dr. F. B. Harrington. For Case XVII, also at the hospital, I am indebted to Dr. S. J. Mixter.

At operation the kidney was found to be atrophic and evidently contained more than one stone, since crepitus could be felt when it was handled. The great atrophy of the kidney, the presence of more than one stone, added to the fact that I knew that the patient's nervous temperament would be incompatible with a long and tedious convalescence by drainage of the kidney, and perhaps only partial recovery, decided me in removing the kidney. The recovery was uneventful, except for a small abscess in the wound, in which the same organism as had been demonstrated in the urine was found. Presumably this infection occurred from the division of the ureter which I did not cauterize. This experience, although it did not delay the convalescence in this case, because it healed rapidly, makes me feel that the ureter should always be cauterized in division as carefully as though it were an appendix stump. The patient is now entirely well, with a perfectly clear urine. An x-ray picture of the kidney after removal shows the presence of four stones at least, so that I feel particularly glad to have removed the kidney instead of simply trying to remove the stones. It is highly probable that I should have left, at least, one of them.

Case IV, which I have previously reported, was another instance of this kind where there had been no characteristic pain like renal colic, where the patient only suffered from discomfort, where at seeing him for the first time I attributed the turbidity of the urine to a previous gonorrhea and only later by the cystoscopic findings was lead to suspect stone. In recording this case I allude to it as remarkable from the fact that, although there were more stones removed from the ureter than there had been previously reported in any other case, nevertheless there had been no characteristic symptoms.

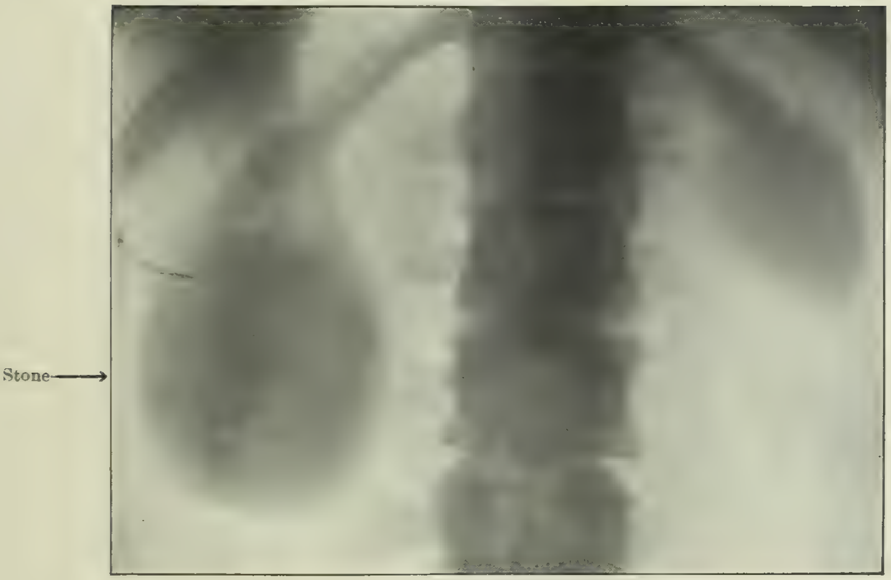
Case V was also an instance of this same point. The patient entered the Massachusetts General Hospital with a history which sounded very much like salpingitis. There was a marked vaginal discharge and the urine showed pus. Vaginal examination showed great tenderness in the region of the uterus and an inflammatory feeling mass to the left. I had no question that the case was one of an acute pus tube and did a laparotomy. To my surprise I found normal pelvic organs, with the exception of a small cyst of the left ovary about the size of a golf ball, and beneath the peritoneum in the region of the iliac artery was an enormously distended ureter which looked like a coil of small intestine. Until I had dissected it free I thought it was a retroperitoneal cyst of some kind. I dissected it through the broad ligament and then made an opening between the broad ligament and the bladder; a stricture existed in the vesical wall about a half inch in length. An incision was made in the ureter and a fine probe passed through the stricture. This was followed by small sounds until the stricture was dilated to No. 30 French. The ureter contained a purulent urine. The incision made in it was closed with catgut stitches and the laparotomy wound drained. The convalescence was uneventful. She remained well for a year, but in the fall of 1907 she had another acute attack resembling the one for which I had operated. Cystoscopy showed a turbid discharge from the left ureter. I catheterized the ureter and obtained for a time a steady flow of turbid urine, showing that the ureter still remained somewhat dilated. Since that time she has had several attacks of temporary retention, probably due to pus becoming impacted in the opening. I have advised her to submit to removal of that kidney as the only course likely to give a permanent cure. She has a bacteriuria, but no discomfort, except when the stricture becomes temporarily closed by masses of pus. In this case I should have determined positively that the pus did not come from the vagina before doing a laparotomy.

Cases of tuberculosis of the kidney like No. VIII and No. IX are almost always examples of neglect of the presence of pus in the urine. Tuberculosis of the kidney is a much more common disease than is realized, and one which is slow and insidious in origin and very apt to escape our notice. Cases which show pus in the urine but no bacteriuria are very apt to be tuberculosis. Every practitioner should keep in mind that tuberculosis of the genito-urinary system as a rule originates in one kidney, is practically always unilateral in its early stages and that nephrectomy is the only proved method of accomplishing a cure. The early symptoms of renal disease are, as a rule, attributed to cystitis, but sometimes even the signs of irritability of the bladder are wanting and pus and blood are the only indications.

HEMATURIA.

Blood in the urine is by no means always a serious symptom, although in a certain proportion of cases it may be the first sign of the most serious diseases that affect the bladder and kidneys. It may indicate as simple a matter as a slight oxaluria, or it may indicate malignant disease.

Ten years ago a young man consulted me with profuse hematuria, and since the urine showed an abundance of calcium oxalate crystals at the same time, I concluded that the blood was simply due to the irritation of the crystals. At that time I did not appreciate the importance of blood as a symptom and took the risk of making a positive diagnosis without further investigation. I see this patient occasionally nowadays and he has had no further trouble with hematuria, so that the diagnosis of oxaluria was in all probability a correct one. If a person with these symptoms should come to me nowadays, although I should make a provisional diagnosis of oxaluria, I should not feel satisfied without a thorough investigation of the case. I should certainly have an x-ray taken, and if the hematuria did not clear up at once under



X-Ray of Case XVI.

appropriate treatment I should make a cystoscopic examination.

Case No. XVI, from which the large stone was removed, is an excellent example of the neglect of following up the symptoms of hematuria. This patient was in the Massachusetts General Hospital in 1892 with a profuse hematuria. The diagnosis of stone in the kidney was not made and the case was recorded as acute nephritis. When the hematuria quieted down, he was sent out of the hospital without even a surgical consultation. In the light of the knowledge of renal symptoms which we have at present, it seems hardly possible that the diagnosis of stone in the kidney should not have been made in this case, for the symptoms dated from boyhood. The trouble was that renal colic used to be considered an essential symptom of stone. As a matter of fact, renal stone is often present without pain in the least resembling colic.

On the other hand, Case No. 6 is an excellent example of the worst that can happen from a too extensive investigation of hematuria. This patient had an excessive degree of bleeding which had lasted for months and showed no tendency to be relieved by treatment. With the cystoscope I could see an apparently clear stream of blood coming from the right ureter. There was no pus or pain or other indication to give us a clue to the diagnosis. The possibility that it might be due to malignant disease, tuberculosis or other serious lesion decided me in doing an exploratory operation. The kidney was laid open and thoroughly examined and I could find no lesion to account for the trouble. The kidney was sutured, but after the operation such excessive hemorrhage took place that the bladder became distended with blood, and clear blood flowed from the penis. The patient's condition became very poor and I had to do a nephrectomy to save his life. He made a good recovery and has remained well since. The excised kidney appeared to Dr. Whitney normal in every respect. There was not even any indication of a varicose condition of the veins of the papillæ. In spite of the fact that this patient lost his kidney, the result has been that he has remained well, although he was apparently in a serious condition from persistent hemorrhage before the operation. From his point of view he was greatly pleased by the result of the operation.

Hematuria from trauma as in Cases No. I and No. II is usually not a serious matter. Unquestionably the kidney can be badly fractured and yet heal and perform its normal function. In other cases false hydronephrosis, as in Case II, develops. The exception is like Case No. I where the bleeding is so severe that it really endangers life. Although I have seen a considerable number of cases where the diagnosis of ruptured or fractured kidney could be made, and where the urine appeared practically like blood, Case No. I was the only instance where I felt called upon to do a nephrectomy. Even in this case I watched the patient for several hours, hoping that the pulse would improve, and only did nephrectomy as a last resort. When I opened the perirenal space the hemorrhage was the liveliest one that I have ever seen. The kidney had been broken in halves, and one half was entirely free in the wound.

I saw last summer a boy who had been thrown from his horse and had struck on the region of the right kidney. This patient had been seen immediately after the accident by Dr. F. G. Balch, who wisely decided against operative interference in spite of the fact that there was much shock and a tremendous hematoma in the right flank, extending well down to the pelvis. After about five weeks the tumor formed by the extravasation and hematoma had nearly disappeared and the boy was as well as ever. In such cases we have not only the danger of the immediate hemorrhage to consider, but also the danger of a false hydronephrosis forming, as in Case No. II, in which the enormous tumor at the time of operation years after the injury presented a most bizarre appearance, being partly filled with granular brick-red detritus and partly with a greenish jelly-like material. It seemed to me evident from the history and from what could be made out of the pathology of the tumor that the probable cause was the trauma years before which had been followed by hematuria.

I have had the opportunity of cystoscoping a number of other cases of non-traumatic hematuria which have been operated on by other surgeons, and although I believe in a thorough investigation of these cases, I must say that exploratory nephrotomy is an extremely unsatisfactory procedure from a surgical point of view. It is extremely hard to tell whether one really has any lesion of the kidney or not. In three cases of a definite hematuria localized to one kidney which I have examined with the cystoscope, exploratory operations have been done by other surgeons and no lesion found. The symptoms in all of these cases have persisted and even grown worse. In another case which I saw operated on by my colleague, Dr. G. W. W. Brewster, which had been most carefully examined with the cystoscope by Dr. Lincoln Davis, and by whom tubercle bacilli had been demonstrated from the affected kidney, an exploratory nephrectomy was done without the discovery of any lesion. The bleeding was so bad that Dr. Brewster felt that the wisest course would be to do nephrectomy. Careful examination of the kidney after removal showed the presence of a small focus of tuberculosis and in this a small stone. Had it not been for the bleeding in this case which necessitated the nephrectomy, Dr. Davis's careful diagnosis would have been useless, for the focus was so small that it was difficult to find even after the kidney was removed.

One of the most interesting cases of hematuria which I have seen was referred to me by Dr. E. G. Cutler, of Boston, and Dr. J. T. G. Nichols, of Cambridge, in March, 1908. This patient was a slight, rather delicate, unmarried woman of forty-nine. She had had five severe attacks of hematuria, the first in January, 1902. She had passed small calculi twice during these attacks. Careful examination with the cystoscope showed unilateral hematuria, and a few fine flakes of phosphatic deposit were seen in the base of the bladder. Under rest in bed, with the taking of a large amount of Poland water, the hematuria ceased. I came to the conclusion that, since an excellent x-ray showed no stone, the hematuria was caused by the passage of the fine gravel which I had seen in the base of the bladder. This was also probable because in the previous attacks she had passed small calculi. The particularly interesting part of this case was the fact that the maternal grandmother and three aunts had also had hematuria. I did not advise operation on this case because of this family history and because the passage of small stones made the diagnosis of malignant disease or tuberculosis extremely unlikely. Later an inoculated guinea pig probably excluded the diagnosis of tuberculosis. (I say probably, because in Case VIII one guinea pig test was negative and a later one positive.)

This subject of hematuria is an extremely interesting one and I should like to dwell on it longer, but that the journals nowadays have so many articles on hematuria that I must refer you to them. I am purposely giving you my personal experience with cases having this symptom because you yourselves can refer to the literature. In spite of the fact, however, that my personal experience would indicate that most cases of hematuria do not justify exploratory operation, I cannot leave the subject without saying that the great masters of cystoscopy are unanimous in emphasizing the importance of hematuria as an early symptom of malignant disease and of tuberculosis of the kidneys.

BACTERIURIA.

By cases of bacteriuria I mean particularly those cases in which the freshly-passed urine is cloudy and the immediate microscopic examination shows the presence of enormous numbers of bacteria and a relatively small amount of pus. The urine in these cases has a peculiar look and resembles a solution of soap suds. The sediment does not tend to settle on standing as promptly as it does when it consists of pus or phosphates. The appearance of the urine is so distinctive that it is easily recognized.

Cases of bacteriuria are common and are usually supposed to be due to cystitis. Cases IV, V and VII are fairly good examples of this condition. Case IV, which I have previously reported, illustrates the importance of this condition. It is probable that the bacteria in these cases live not upon the tissues of the kidneys or bladder, but on the urine immediately after its excretion from the kidney substance. In Case VII, for instance, I recovered the same organism by catheterization of the pelvis of both bidneys that I found present in the bladder. Such cases may be perfectly symptomless as far as the bacteriuria is concerned, but when the urine becomes alkaline, owing to the chemical changes produced by the bacteria, we get the deposit of phosphatic gravel as in Case IV. This phosphatic deposit may cause renal and vesical irritation. Urotropin, by preventing the development of bacteria, gives relief in these cases, but it does not give a cure, for even in large doses it apparently does not succeed in exterminating the bacteria from the urinary passages. When it is omitted, they flourish again. Such cases may persist for years without any great deterioration of the general health. One patient who had had symptoms for twenty years, on whom I have done a suprapubic cystotomy for permanent drainage of what I supposed to be a persistent cystitis, proved to have this form of bacteriuria. The bladder mucous membrane was not particularly abnormal, and later, when I catheterized both ureters, I found the urine from the renal pelves almost as turbid as that which I had previously obtained from the bladder. In spite of all I have been able to do with these patients, either by the use of drugs, washing with various antiseptics or by the administration of vaccines, I have been unable to bring about a cure in any case, although the patients may be kept in good health and free from symptoms by the use of urotropin. This drug is usually given in too small doses. I have repeatedly given 60 gr. a day without serious trouble.

I was interested to see that Geraghty, in the *Johns Hopkins Bulletin* for January of this year, reports some cases of this kind which they have followed with great care at Dr. Young's clinic at Johns Hopkins, but which they have, nevertheless, been unable to cure. Chute, in an interesting article in the Boston Medical and Surgical Journal for April 30, 1908, has also reported cases of this kind. Chute has found staphylococci in such cases, but in my cases, bacilli of the colon group have been the usual organisms.

A point of great importance in this connection is that we should be careful in cases from which we have removed stones to do our best to make sure that not only the stone is removed, but that the patient is, as far as possible, freed from bacteriuria. You will find in the surgical literature many series of cases reported where stones have been successfully removed; you will seldom find that the after-results of these cases have been followed with any particular attention to the presence of bacteria.

Bacteriuria, while not a very obvious symptom, is one for which I have an increasing respect. It makes me feel that where it is possible to avoid ureteral catheterization I much prefer to do so, for I know that in my hands it is not possible to catheterize a ureter through the infected bladder without danger of infecting the ureter. I say without *danger*, for I have never actually known infection to occur. I am so much impressed with the difficulty of getting rid of bacteriuria when I find it existent that I want to be particularly careful to avoid producing it. There are men who say that ordinary catheterization of the bladder should be done with perfect safety. I do not believe that this is true. I regard simple post-operative catheterization always as a serious matter. In spite of the greatest care, one often causes a mild cystitis. The urethra practically always contains bacteria, and the slight traumatism, caused by even a soft rubber catheter, to the mucous membrane of the bladder, makes a sufficient lesion for the urethral bacteria, which are carried in with the catheter, to obtain a foothold. Ureteral catheterization is subject to the same criticism. There is nearly always some trauma to the ureter, as shown by the fact that the sediment in the urine drawn by the ureteral catheter almost always contains ureteral epithelium and blood corpuscles. I think that the danger of implantation of bacteria in the kidney is of as much consequence on one side as the good to be obtained by the routine use of the ureteral catheter for the purpose of comparison of the function of the two kidneys. In some cases, however, the information to be derived by ureteral catheterization is so invaluable that we must take this chance of infection.

Another conclusion to which my respect for bacteriuria has driven me is that where a reasonable certainty of the existence of *unilateral* calculus formation can be obtained, it is best to remove the affected kidney as well as the stone. The cases in which I have done this have made the most prompt and apparently most complete recovery.

Some of the cases which we have been in the habit of calling "pyelitis" are to be included as cases of bacteriuria. Probably most of these "pyelitis" cases and also the bacteriuria cases have their origin in acute hematogenous infections of the kidney. Some of the persistent cases perhaps have foci of infection still present in the kidney substance.

In completing this paper, even at the risk of tiresome repetition, I want to say again that I believe that we should regard pus, blood and bacteria as important urinary indications, just as we do albumen, sugar or casts. Cases in which the urine contains pus or blood, which are supposed to be due to the admixture of vaginal or urethral discharges, should be investigated by the three-glass test to make sure that the lesion is not in the bladder or kidneys. If this is found to be the case, cystoscopic and bacteriological examinations should be made and the aid of the x-ray invoked. These signs are too important to neglect, and when their source is accurately diagnosed, a good prospect of cure can be given to the patient.

My intention when I began this paper was to illustrate it with a series of bladder cases also, which show how important the investigation of the sources of pus and blood may be, but I know you will agree with me that it is well I did not prolong it. I could but reiterate the statement that a case in which the urine is found to be turbid should be carefully investigated.

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SUPERFICIAL DERMATITIS OF THE EXTERNAL AUDITORY CANAL.*

BY CLARENCE JOHN BLAKE, M.D., BOSTON,

Walter Augustus LeCompte Professor of Otology, Harvard University.

The peculiarity in its structure and its function, as well as its relationship to an important organ of special sense, make deviations from the normal of the skin lining the external auditory canal a matter of more importance for consideration than would otherwise be the case.

In the outer portion of the external auditory canal the skin possesses the characteristics of this structure upon the contiguous surface of the body. Its epidermal layer is fairly thick; its derma is rich in blood vessels; it has a layer of connective tissue carrying fat cells, and it is beset with hairs, with sudoriferous and sebaceous glands, and has, in addition, a peculiar glandular structure characterized by its size, as compared with the sweat and oil glands, and by the length of its cervical portion which reaches the surface, sometimes directly, but primarily in the pouch of a hair root at such an angle that the hair, when erected, becomes smeared with the secretion.

The glandular structures, with the accompanying hairs, are continued inward, gradually decreasing in size, to about one third the distance represented by the length of the external auditory canal, with exception of a triangular area on the posterior superior wall, the apex of which extends inward as far as the isthmus, the point of junction of the outer, cartilaginous, and inner, bony, halves of the canal.

Beyond this point the dermoid lining of the canal rapidly surrenders its basal elements, becoming finally a thin layer of pavement epithelium in close relationship to the periosteum and, ultimately, the purely pavement epithelial layer, which forms the outer coat of the drumhead.

Under conditions of maceration this epithelial layer is readily separable, both from the outer surface of the drumhead and from the inner end of the canal. Normally, it disposes of its detritus in the form of flattened epithelial scales, not after the usual manner of disposal in other parts of the skin, but by a well-defined movement or progression which carries the effete material toward the outer end of the canal until it is there mechanically excluded independently, or becomes mingled with the excreted product of the ceruminous and sebaceous glands for later disposition.

In a series of investigations, made several years ago, the lines of movement of this epidermal layer, so far as the drumhead was concerned, were definitely mapped out, the general lines of movement being from the center toward the periphery, upward and backward, and then outward along the posterior wall of the canal.

A continuation of these investigations shows that the corresponding movement of the epidermal layer of the external auditory canal is mainly along the superior posterior wall, with a gradual inclination downward toward the inferior wall, which is reached at the point of junction of the cartilaginous and osseous canals.

The observations which served to map out this peculiar movement of the skin in the canal were a simple sequence of those originally undertaken to determine the movement of the dermoid coat of the drumhead and were effected in the same way, namely, by the attachment to the skin, at the inner end of the canal close to the periphery of the drumhead, of small pieces of highly-glazed paper moistened in order to insure adhesion of their sizing coat to the smooth skin.

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* Read at the tenth annual meeting of the American Therapeutic Society, New Haven, May 8, 1909.

These pieces of paper moved successively outward and downward on the posterior wall, according to their original position around the periphery of the drumhead, and on the anterior wall upward and backward, and then downward toward the inferior wall, the general course of direction of the epidermal lining of the canal, from within outward, as thus indicated, being in a spiral toward the posterior and inferior canal walls.

In studying this movement of the epidermis of the drumhead, and of the inner half of the auditory canal, it became evident that the rate of movement from the center of the drumhead to its periphery was much more rapid than the movement along the canal wall and, moreover, that this latter was appreciably slower toward the end of the course toward the isthmus than at the beginning at the inner end of the canal.

Under normal conditions, when arrived at the isthmus of the external auditory canal, or at that point on which there was a growth of hair, the effete epidermal cells separated themselves, as on other parts of the body; but under conditions of maceration, agglutinating the effete cells, or of mechanical obstruction, preventing the movement outward, the epidermis, retaining its continuity, became thrown into rugæ, transverse to the long axis of the canal, under the pressure of the epidermis advancing from within, in some instances what appeared to be a slight transverse elevation of the epidermis proving to be, when removed, by means of the forceps, and straightened, an epidermal strip of from 3 to 6 mm. in length.

A superficial dermatitis of the external auditory canal may be defined, therefore, in this instance as one which affects principally this epidermal layer, though the primary exhibition may be, through the underlying derma, the result of a local irritation or the symptom of a systemic condition.

In accordance with the differences in structure of the skin lining the canal, there are differing degrees of vulnerability and different symptoms of disturbance. The acute inflammation originating in the inner portion of the canal may be the result, in adults, of a mechanical irritant, the sequence of an acute process in the middle ear, or the accompaniment of a gouty or rheumatic diathesis, or, in young women, a coincident of the menstrual epoch.

In all of these the primary mechanism is a dermal hyperemia with serous transudation and elevation of the thin epidermal layer which, under maceration, disintegrates and, mixing with the serum, affords an outflow macroscopically simulative of pus. In infants, the same process occurs as a consequence of sebaceous or ceruminous accumulation, or as a result of the reflex hyperemia incident to teething; the macerated epidermal layer, at the temperature of the depth of the canal, which is nearly that of the body interior, rapidly decomposing, with the formation of fatty acids, which become an added source of irritation. Under these conditions the most immediately effective first treatment is thorough cleansing by means of syringing with a weak, warm solution of soda bicarbonate, followed by careful drying with sterile absorbent cotton, this process being repeated, at intervals, until the exfoliated epidermis has been entirely removed. When this has been effected, the denuded surface should be painted with a solution of silver nitrate of a strength of from 60 to 80 gr. to the ounce, the resultant albuminoid film serving as a substitute coating in place of the deported epidermis. In the subsequent treatment, care should be taken in searching for any spots of ulceration or for small areas of granulomata in order that they may be touched with a stronger silver solution. The frequently accompanying epidermal exfoliation of the outer portion of the canal should be treated by scrubbing with a weak peroxyde and soda bicarbonate solution, followed by an application of alboline, which may advisedly be extended outwards over the concha, while the intense itching which often accompanies this condition may be relieved by the light application, by means of a cotton tipped probe, of a vaseline ointment containing tincture of benzoin and soda salicylate.

In the chronic forms of epidermal disturbance, which are a common sequence of the acute attacks more commonly observed in adults, the epidermal layer seems to have lost its normal progression, or to have had it so much impaired as to result in the accumulation of superimposed epidermal layers *in situ*, the result being, in some instances, a mass of epidermis, in more or less well-defined strata, nearly or wholly filling the inner half of the auditory canal, the keratosis obturans of Wreden. Where possible, these layers should be carefully peeled away from the canal wall and successively removed by means of forceps, the underlying hyperemic surface being searched for areas of granulomata with a view to their treatment with silver nitrate.

In some instances of long standing, the keratotic plug will be found to have undergone a lordaceous degeneration at its center, greatly impeding mechanical removal, which may be facilitated by the introduction into the center of the mass, by means of a cotton-tipped probe, of caustic soda solution, the walls of the canal having been first smeared with alboline or vaseline, the soluble product being washed out by syringing, and the more tenacious epidermis removed by means of the forceps.

In all of these cases, it is well to keep the individual under observation with a view to safeguarding from recurrences either of the acute form or of the resultant epidermal accumulations until the skin has resumed its normal healthy functions, due attention being given to such general causative conditions as may exist.

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The University of Geneva has conferred on Lord Lister the honorary degree of doctor of medicine.—*Science.*

PSYCHASTHENIA.*

BY A. H. RING, M.D., ARLINGTON HEIGHTS, MASS.

Four years ago Dr. Charles L. Dana, of New York, wrote a timely paper entitled, "The Partial Passing of Neurasthenia," and a year later Dr. G. A. Blumer, Superintendent of the Butler Hospital, at Providence, presented another upon "The Coming of Psychasthenia." These titles well express the state of unrest and readjustment brought about in the psychoses by the application of modern and abnormal psychology to the art and science of medicine.

It would be as presumptuous as it is impossible for me to attempt an exhaustive essay upon psychasthenia, but I will endeavor to cover enough of the ground to give you a clear idea of the symptom complex and state briefly such explanations as our knowledge of physiological psychology can offer.

The word "psychasthenia" was coined by Prof. Pierre Janet and first appeared in our American literature in 1905.

In an interesting article, Dr. Sidney J. Schwab translates Janet as saying in the introduction to his book, "Obsessions et Psychasthenia": "The diseases which form the object of this new study are obsessions, the manias, the folly of doubt, tics, agitations, phobias, delirum of contact, states of anxiousness, neurasthenias, the bizarre sensations of strangeness and of depersonalization, often described under the term of cerebro-cardiac neuropathy. They have sometimes been classed under the term degenerate deliriants, neurasthenics and phrenasthenics. I have often designated them under the term 'doubters,' because doubt constitutes an essential characteristic of their thoughts; and under the more precise term 'psychasthenic,' which appears to me to express feebly enough, it is true, the weakness of their psychical functions. This collection of diverse symptoms will permit the unification of many different diseases into one and it may be possible to construct a great psychoneuroses modeled after that of epilepsy and hysteria. This will be psychasthenia and will take the place of obsessions, manias, phobias, insanity of doubt, of contact and cerebro-cardiac neuroses."

It seems clear from the foregoing that Janet's intention is to give us a name sufficiently broad to include all the fatigue psychoses, or, as Diefendorf calls them, the psychogenic psychoses, and I am sure that every one who has dealt much with this class of patients and pondered over the bizarre medley of symptoms must feel a personal debt of gratitude to Janet for so far clearing up this old dumping ground, as he had previously done that of hysteria.

SYMPTOM COMPLEX.

Psychasthenia is characterized by a reduced mental tension resulting in fears or fixed ideas which dominate the patient's mind, rendering him incapable of focusing his attention upon his usual normal occupation. This idea serves no useful end, but, on the contrary, harasses the patient continually, rendering him unhappy within himself and frequently a nuisance to those with whom he is thrown. The odd thing is that except at rare intervals, when he has a severe exacerbation, and these usually come in cycles, he is perfectly aware of the inconsistency of his obsession, or phobia, and can frequently be argued out of it for a time, though it soon returns. It is this ability to see the fixed ideas in their right setting, and to discuss them impartially, which at once differentiates obsessions and phobias from the delusions of the deeper psychoses. Dr. Edward Cowles distinguishes among these cases the non-deteriorating and the deteriorating psychoses, and this agrees with my own experience; most cases retain a fair degree of psychic balance over a long life, finally dying of some intercurrent disease, though many advanced psychasthenics in their downward course may shade imperceptibly into mild delusional insanity and finally into melancholia and dementia. In this, Patton and others agree.

Psychasthenia, even in its mild form, has always an emotional depression as part of the picture. Apropos of this idea, Janet says: "I have been led to consider the majority of these symptoms (obsessions, impulses, manias of interrogation, tics and the fears of different sorts) as secondary, and to regard as the essential of the disease certain profound disturbances of the feelings, the will and the perception." It is, then, these psychic functions which are disturbed, though not actually perverted, in psychasthenia; in other words, the changes might be called physiological alterations, which may either right themselves under treatment or go on to the actual organic changes of the grand psychoses.

Those who see many neurasthenics have come, I think, to divide them into two classes, —those whose fatigue appears to be largely physical, with but few mental symptoms; and those who through the expression of fears, doubts, tics and impulsions show their sickness to be more in the sensory and emotional spheres than in the motor. And prognostically I think we instinctively feel more hopeful for the former than the latter. Indeed, while Janet does not claim for his term "psychasthenia" any prognostic significance, as does Kræpelin for his nosological arrangement, I would almost venture the prediction that as we become more and more familiar with psychasthenia we will place upon it a value as to the ultimate outcome of the disease similar to that which now pertains to manic-depressive insanity and melancholia.

CLINICAL PICTURE.

When one is confronted by a patient ill with psychasthenia, the first impression is that the story which he tells is not logical. He usually talks freely, showing none of the suspicion and reserve so common in profound delusional states. He is anxious to tell of his fixed ideas, or fears, and wants to be told that they are not warranted by the facts. He tells you he has severe palpitation and that several good doctors have assured him that there is no organic disease, but he wants also your assurance. He is often well versed in medical terms, and uses them freely in describing his sufferings. He is most conscientious in his desire to get well and is willing to work hard to do so, but in spite of his best endeavor to argue himself out of a senseless fear or refrain from committing a useless or silly act, such as putting his left foot over the threshold instead of his right, the idea insists upon recurring and demands his obedience. Most children have experienced such compunctions, and one might with propriety describe some psychasthenias as a return to the pre-adolescent type — before a sufficient number of the higher associations had been formed to give stability and decision to the mind. Physical examination during the early stages usually shows him to be well nourished and may reveal nothing more than perhaps an irritable heart and heightened reflexes; even these may be absent. Mentally, also, the patient will be found approximately normal, save for a lowered ability to form new associations which would permit him readily to adjust himself to new situations. His power for prolonged attention is usually also diminished, and, as would be expected from our knowledge of psychology, this goes hand in hand with a loss of interest. His memory, intellect and emotional tone (save for his fear or obsession) are often entirely normal. Later on, however, in the course of years, if recovery has not taken place, we are apt to find some emaciation, with episodes of arrhythmia or tachycardia, vasomotor disturbances, dyspepsia, constipation or emphysema, with frequently an underlying arteriosclerosis, all probably the result of a sedentary life. Mentally, there is a feeling of hopelessness and indecision, increased lack of interest and attention, and also a narrowing of the field of consciousness.

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* Read before the Worcester County Homœopathic Society (Mass.).

PHOBIAS.

It will help us to a clearer understanding if we analyze the leading symptoms more closely. While an idea has simply a brief feeling tone of a depressing character, we say "we fear so and so." If, now, this unpleasant feeling tone which accompanies the idea is long drawn out, it becomes a worryment which results in a more or less permanent change of mood, casting a gloom over the mind of its victim. It is evident that in order to have a sense of fear there must be an idea as its initial starting point. This idea may be either conscious or subconscious. In psychasthenics it is usually the former. If, however, it is subconscious, the patient complains of a vague sense of dread, as of impending danger or harm, but can give no satisfactory reason for it. In such cases we must revert to the association test, psychoanalysis, or to hypnosis, to assist us in determining the basic idea.

Fears may be of every conceivable kind, and many names have been coined to describe them: agrophobia, fear of open places; claustrophobia, fear of closed places; taphephobia, fear of being buried alive, etc. A case which is under treatment has a constant fear of death; another, a fear to eat because his bowels might not move. I remember one woman who would never sit in a chair until she had carefully felt it over to see if there were any needles concealed in it. If her particular chair were occupied, she would stand about the parlor for hours, sufficiently sensitive of her peculiarity not to exhibit it in public, yet dreading to try a chair which she had not explored. Another, now under care, will wash her hands every time she can and as long as the nurse will permit, fearing dirt, yet knowing that they are surgically clean already. Yet another feared to have knives about for fear she would be tempted to strike at her husband with one.

INDECISION AND DOUBT.

Normally, the power to act or to inhibit action because it is useful or logical to do so rests with the individual. Having received his idea from his various percepts, he turns it over among his associations, comparing similar and antagonistic ideas, weighing and reasoning, and finally, arriving at a judgment, comes to the decision upon which his action is based. Much of this is, of course, done automatically in higher minds and in much less time than it takes to tell it. This final judgment is in each case a new synthetic element, ever in the formative stage, and is the highest act of which the human mind is capable; indeed, so unexplainable has it appeared in the past, owing to the deficient state of our knowledge of brain physiology, that it has been commonly referred to a spiritual source. Again, to quote Janet, "If one were very desirous of formulating an anatomical translation of these psychological concepts, one might say, with Hughlings-Jackson, that it is a matter of bringing into play a higher center which is in a formative stage and excitable only with difficulty; one may say events take place as though in these patients the higher centers which preside over the complex of recently-formed associations of sensorial and motor centers could no longer enter into activity, while the lower and simpler association centers long formed alone perform their functions."

Decisive judgment being the highest quality of the mind, is it not natural that with the advent of diminished nervous tension it should be the first mental attribute to decline, with the inevitable result of vacillation and indecision? Who has not been conscious of this state of mind after a hard day's work? How common is the remark, "I'm too tired to decide anything."

With this vacillation also comes doubt — doubt as to whether one locked the door, turned out the gas, greeted a friend with sufficient cordiality.

Psychasthenics frequently live in constant misery because of these doubts and indecisions. I know of a case where the patient could not decide which foot he should put over the threshold first, and was forced to spend hours each day going back and trying it over to be sure that he had used the right foot. It is common for a patient to put his shoes on and remove them several times in doubt as to whether or not he should put on the right or left first and exasperated with himself because he is unable to decide. Such patients will return to bed and get out on the opposite side several times in the endeavor to be satisfied that they have gotten out of the right side.

AUTOMATIC THINKING.

With the decline in judgment comes also a lack of power to inhibit. This also we would expect, since to come to a judgment presupposes the power to check back other opposing ideas. And right here is the origin of one of the most annoying symptoms of psychasthenia. The patient tells you that he cannot stop thinking, and this automatic thinking goes on into the night, causing either insomnia or dreaming. Professor James says it is as much an art to forget as to remember. Just as truly is it as high an attribute of the mind to be able to check thoughts as to think them. The eternal running on and on of useless and often depressing thoughts without the power to inhibit them or turn them to things useful and interesting or else to nothingness in sleep has in my experience been one of the most difficult symptoms to meet. Any one who has had a near neighbor who persisted in running his phonograph during the wee hours of the still night may have some impression of what these patients suffer. For these thoughts are quite as automatic as the phonograph when the break is off, i. e., when cerebral inhibition is weakened.

OBSESSIONS AND IMPULSIONS.

In conjunction also with diminished inhibition and automatic thinking comes another symptom which one would expect, and that is the tendency of a single idea to repeat itself over and over, as if the cylinder of the phonograph were defective and the point scratched around and around in the same grove. The thought (obsession), being constantly repeated, naturally impells the patient to action. The psychasthenic will tell you all about it and how foolish it is, but the next minute he is impelled to do the same thing again. One will have to touch each thing seven times, another must take so many steps in a given space or always count his steps. I remember a patient of my father's who had always to walk in short right angles, so that in crossing a room he would describe a saw-tooth figure. This same patient, a man twenty-two or so, would sit hours at his meals unable to decide whether he had better eat this or that and whether he had chewed each mouthful the right number of times — he did not recover. Dr. Schwab cites a case seen by no lesser personages than Professors Janet, J. J. Putnam and himself, who all agreed upon the diagnosis of psychasthenia. It was the case of a physician of distinctly neuropathic inheritance and temperament, who, having driven himself on to the successful accomplishment of distasteful duties to the age of forty, had an attack of grip, following which he had weakness of the limbs. His physician remarked that he must keep about or he might lose the use of them altogether. This idea took so deep a hold upon him that he actually became obsessed with it and went to bed and has remained there for some years, helpless, getting about only in a wheel chair. Intellectually he is above the average, but he is literally unable to walk because he sees no use in it. Another patient, well known in the literary world, would never speak a word while he was writing a book, — all his wants were made known by whistling and pointing, — and I have known him mute for months, uttering scarcely a syllable.

Some psychasthenics have sudden impulsions to do a silly or unusual thing, and are made very unhappy if they cannot do it. One feels that he must strike every one he meets, and lives in dread lest he may do it, yet he never does. Another has a desire to kill himself, yet it is questionable if psychasthenia is ever the cause of suicide — there is too much indecision. Dr. G. A. Blumer reports a patient who made three distinct attempts to kill himself, yet never did, although he could have easily accomplished it either time. I have had two cases make the attempt, one of them twice. It may be that these would-be suicidal psychasthenics are those who come out of the water when the nurse calls out that she will lose her job. The lesser impulsions are common. Patients harassed by an obsession of fear frequently resort to liquor or morphia in the atttempt to escape or drown their misery.

While obsessions of suicide and crime rarely lead to the correlated impulsive act, obsessions of a sexual nature often do, and as a result these patients frequently indulge in various sexual perversions.

Before going on to the diagnosis, let me recite a typical case.

Case I. Mrs. X., age fifty-seven. Mother died of senile breakdown at seventy after five years' illness. Patient was an only child of nervous, active temperament. When fifteen years of age it was thought she had consumption, but she recovered after two years. Married at twenty-five years. At this time she was a thin, wiry woman with a New England conscience. Following the birth of her second child, she had puerperal mania lasting three months, from which she apparently recovered. Her husband, however, dates her mental weakness from this illness. Since then she has gradually developed an increasing tendency to hold tenaciously to any idea which happened to possess her — a lack of normal plasticity of attention. Over several years there was no fixed obsession other than an excessive cleanliness, finding many excuses to wash her hands, etc. Two years ago she become obsessed by the fear that through neglect she had been the indirect cause of the death of her child, aged three, and also of her mother. These first fears were the nucleus about which she has gradually built others, i. e., that her husband no longer loves her. These all combine to produce a sense of abject misery and dejection, the natural feeling tone born of such ideas. When admitted to our resort, her sensations, memory, associations and orientation were all normal. Physical examination revealed a thin woman, quite gray, and, save for a tense abdomen, was entirely negative. She had a tic also, the natural outcome of her ideas, consisting of a peculiar whining or moaning noise, which she kept up incessantly, save during the few hours of sleep, and even this was frequently interrupted by moans. There was also a concentric limitation of the attention which focused upon her obsessions. At this time she discussed them freely, and after a few weeks of talking them over became more hopeful, showed some interest in her surroundings and ceased moaning. She said, " It all seems like a dream." At this junction her family could not be persuaded longer to remain away and their visit seemed to re-establish the old associations. She lapsed into a deeper state of anguish than before, adding the usual fear that God would not forgive her. Here is a case presenting the phobia, tic and finally obsession which now seems to be deepening into a fixed delusion. Born with an unstable temperament, the higher mental attributes seem to first have slackened their tension, weakening the judgment and producing scruples about dirt and later unreasonable fears; then diminished inhibition and automatic repetition occurred, the obsessions being repeated with such persistency that the whole field of attention had to be focused upon them. The deepening mood impelled expression and the motor tic (moaning) resulted. After six months the patient again recovered and returned home relatively well.

DIAGNOSIS.

It is evident that the psychasthenic may range all the way from an apparently normal individual who might be said to be eccentric to one who at first glance simulates some of the grand psychoses. The characteristic earmarks are the presence of unjustifiable doubt, indecision and fear, obsessions and impulsions. There are no fixed physical signs, and we must depend upon an analysis of the mental state for a diagnosis. Psychasthenia is the bridge between neurology and psychiatry; it is the psychosis which forms the main basis of Grasset's book on the " Semi-Insane and the Semi-Responsible."

It must be differentiated on the psychic side from hysteria, epilepsy, dementia precox, manic-depressive insanity, melancholia and paresis, and on the physical side from phthisis, diabetes mellitus, arteriosclerosis, obscure malignant disease, organic heart disease and most of the organic nervous diseases, especially disseminated sclerosis and cerebral neoplasms. In their incipiency all of these states may show psychasthenic tendencies, which, however, a little observation and a careful physical examination should readily clear up.

There are a few, however, in which a greater experience with psychic disturbances is desirable, and even then one may find himself in much doubt, for mixed types are not uncommon. This is especially true of hysteria. The difference here rests not so much in a single symptom as in the composite picture. The psychasthenic does not exhibit those rapid cyclonic changes of temperament so characteristic of hysteria, but keeps an even tenor of persistent depression, vacillation, indecision, doubt, fear and obsessions. He is never amnesic, and if, as in Schwab's case, he exhibits paralysis, it is rather from an obsessive indisposition to move than the result of a real functional breach in the sensory-motor cortical associations. " He never enjoys his illness," as Kraepelin says. Meyers prefers to think of hysteria not as a disease in the general sense of the word, but as a type whose characteristic is substitutive reaction. Freud also advances this idea. This would clearly separate it from psychasthenia in which there is no suggestion of substitutive reaction, but rather a fixation of attention which is focused upon certain senseless automatic ideas with uninhibited emotional impulses. Again the hysteric may not be asthenic.

Dementia precox also may offer difficulties, as there is frequently a prolonged asthenic state preceding the characteristic stereotypes, mannerisms and explosive impulses of that disease. Also, as Patton says, " In both there is emotional instability, but the idea in consciousness and the objective expressions of the emotions " do not correspond, and this is characteristic of dementia. Manic-depressive insanity may also suggest itself, though here the patient soon loses that insight into his condition which the psychasthenic evinces, and there is marked psychomotor retardation; the onset, too, is often sudden and out of a clear sky and there is marked physical deterioration, none of which is true of the psychasthenic.

Paresis is frequently ushered in by a psychasthenic state and may at first offer some difficulties. Here, again, the antecedent history of a sudden psychosis in a previously healthy person in the prime of life should prove suggestive, and in doubtful cases lumbar puncture may be resorted to. To quote from a paper by Dr. G. A. Waterman, " The value of this aid to diagnosis has been made use of by some in cases of tabes, but to a greater extent by psychiatrists in differentiating general paresis from the psychosis which may simulate this disease, notably alcoholic psychosis, arteriosclerotic psychosis, dementia precox and psychoneuroses." Waterman shows that the leucocyte count in non-organic psychosis may vary from one to five or ten to the cubic millimeter, while in those that have an organic basis the count may be from thirty-five to fifty or more leucocytes.

Cases of arteriosclerosis may exhibit at times symptoms of a psychasthenic nature, but a study of the arteries and heart sounds and a heightened blood pressure (150 to 250 on the Janeway instrument) should readily serve to differentiate it. Personally, I have found the blood pressure universally low in the neuroses.

TREATMENT.

A paper of this sort would not be complete without a word regarding therapeutics, which can be summed up briefly. Evidently the most important single factor is prophylaxis, and in order to be efficient in many cases this should, I regret to say, be begun even in the third and fourth generation of the antecedents. Much, however, may be done for the neurotic and precocious child by careful hygiene and a sensible education — one which offers much manual work and demands a wholesome social environment and point of view. Classroom education can safely be neglected up to ten or twelve years of age — neurotic children are usually precocious and will acquire sufficient elementary training of their own accord. On the other hand, they frequently have a tendency to jump from one thing to another, beginning a task enthusiastically, but soon tiring of it and leaving it unfinished. Of course the span of attention and interest of the normal child is short, but within reason the neurotic child should be taught to persist until his task is finished. He should observe all the rules of hygienic living, especially should he get many hours of sleep, preferably in a tent or at a hooded window. Such children are subject to nervous dyspepsia, and so the diet should be wholesome and the mind quiet before and during meals. Care should be taken not to nag and fret these little ones with the constant " don't." There is no type of child to whom the educator's principle of correction by substitution and positive suggestion so aptly applies.

For the milder cases of neurasthenia in which the motor fatigue predominates over the sensorial, and especially if the heredity and adolescent period has been relatively normal, much may be done. It is in this type that modified rest treatment is of most use. The so-called work or occupation cure, on the contrary, is more efficacious in those patients, who, though relatively free from motor fatigue, and in a fair bodily state of health, yet exhibit the phobias, tics, obsessions, follies of doubt, indecisions, scruples, contact, etc., rendering them incapable of profitable activities. It is in these cases when the motor disturbance predominates that we may hope for good results by combining physical and psychical measures. At our private hospital we are in the habit of having such patients obtain additional rest by remaining in bed for breakfast, and about ten o'clock administering vibratory or manual massage, oil or salt rubs, general faradism or some form of hydrotherapy, most frequently the cold pack. This latter proved most useful in the case here reported. Each of these consume about an hour and are frequently alternated according to the indications. The patient is permitted to dress in time for an hour out of doors before dinner. Each day the physician spends a half hour or more in conversation, straightening out warped views and obsessions. These patients are seldom good hypnotic subjects, but logic appeals to them; hence explanation, persuasion and encouragement are usually the most profitable forms of psychotherapy. There is no specific drug, indeed, I know of no more discouraging chapter in materia medica than that which deals with this neurosis. Here and there a drug proves palliative, but whether it is *post hoc, propter hoc* is usually impossible to say.

SUMMARY.

In closing, permit me to briefly recapitulate:

1. Janet, who coined the word "psychasthenia," intends to include under the term obsessions, manias of doubt, tics, agitations, phobias and the deliria of contact, states of anxiousness, neurasthenias and bizarre sensations of strangeness and depersonalization. These he would group together into a grand psychosis similar to hysteria and epilepsy.

2. Psychasthenia is at base a disturbance of the feelings, the will and perception, and may range from mere eccentricities in the superficially normal through mild depression to melancholia and dementia.

3. Two types: (1) those in which the disturbance shows itself principally in motor fatigue and (2) those in whom the principal affection is in the sensory motor and emotional sphere, the latter offering the less favorable prognosis.

4. Phobias result from an unhealthy, prolonged feeling-tone of depressing ideas and may be conscious or subconscious.

5. Doubts and indecision are evidence of fatigue of the higher centers which preside over formative and newly synthetized associations. The final judgment is thus rendered difficult or impossible and the victim finds himself in a state of vacillation and with a tendency to revert to the lower and simpler associations long formed. Weakened cerebral inhibition also plays its part.

6. Obsessions and impulsions are the emotional result of the above factors and show themselves principally as a failure to inhibit the feeling-tone of ideas automatically repeated, yet the all-pervading asthenia checks the impulses short of accomplishment.

7. Psychasthenia should be differentiated from hysteria, epilepsy, dementia precox, manic-depressive insanity and paresis.

8. The treatment is largely prophylactic and educational.

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Medical Progress.

PROGRESS IN STATE MEDICINE.

BY WILLIAM C. HANSON, M.D., BOSTON.

HEALTH OF MINORS IN FACTORIES.

By a recent act of the Legislature of Massachusetts, the word " minor " as used in all laws relating to the employment of labor is defined as " a person under eighteen years of age." Heretofore, in Massachusetts, the state inspectors of health have inquired concerning the health of all persons in factories under twenty-one years of age.

While the new legislation may appear to be a step backward, it really means progress, for approximately half the number of employees known as " minors " which have been before the eyes of inspectors can no longer be grouped as " minors " or " young persons." The result is that boys and girls between the ages of fourteen and eighteen years working in factories will now receive more attention, and the practical value of the examination of young persons, under difficult and varied conditions made necessary by existing legislation, can more accurately be determined. A brief statement of the progress already made will serve to give the reader a reasonably good idea of what is accomplished at the present time. For the first few months the state inspectors of health were encouraged to submit such reports as they saw fit concerning the health of minors, during which time a careful study was made of the industries with which the minors were associated. One state inspector of health, after an experience of eight months, reported that the duty of informing himself concerning the health of minors, while undoubtedly one of the most valuable and important duties incumbent upon state inspectors of health, was still the most unsatisfactory because the territory in his district was so great, and the factories employing large numbers of minors so numerous, that the minors could not be visited often enough to permit a proper oversight. Another state inspector of health, with a similar experience, stated that he knew of no part of the work which called for so much time and patience as that of examining minors. The first formal requirement of the State Board of Health was that the state inspectors of health should submit a brief statement concerning each minor showing (*a*) the name and address, (*b*) the age, (*c*) the kind of work which the minor was found to be doing, and (*d*) an opinion as to health. Previous to this routine, the minors were not individually questioned, unless, now and then, one appeared not to be healthy, or unless distinctly unhygienic surroundings were observed. Whether the minor was questioned at his work or in an office, hallway or as quiet a place as could be found was a detail which the state inspector of health decided upon in a given factory. If the minor looked and acted as if he enjoyed good health he might be passed by without further inquiry than concerning his age and work, or he might be asked if he was well and strong, and his personal and family histories obtained. Whenever a minor appeared to be ill, or if ill health was suspected, more definite information was acquired later, and, in some instances, careful physical examinations were made. As the work was thus conducted there appeared an increasing number of tubercular family histories. This fact, considering the comparatively few minors judged to be in ill health by a casual inspection, led to the requirement of a physical examination whenever the family history of the minor disclosed any illness or death due to tuberculosis. Each state inspector of health inquired, so far as possible, of every minor whether the family history disclosed illness or death due to tuberculosis, or of any other disease to which the minor himself seemed liable, and in every instance where an important family or personal history was obtained, the essential facts were noted, regardless of the result of a physical examination. On the other hand, whenever the family history disclosed illness or death of any member due to tuberculosis, or the history of the minor suggested the importance of inquiring as to the minor's bodily condition, the state inspector of health made a physical examination with a degree of thoroughness which permitted him to record on a card provided for the purpose all important data, negative as well as positive.

In June, 1908, a system was started by which the hygienic conditions, under which each minor was found at work, were recorded in connection with data concerning health. The state inspectors of health were instructed that all hygienic conditions might be classified under two main groups. Under Group 1 they were to consider whether any, or all, of the minors in a given factory were exposed to dangers which were incident to the occupation; under Group 2, whether any, or all, of the minors were exposed to conditions which were not indispensable to the industry which might give rise to injurious effects because of the disregard of proper hygienic precautions. If one or more minors were found to be exposed to the dangers of Group 1, a statement was made as to whether the dangers were, to a certain extent, avoidable, or whether they were unavoidable. If a minor was found exposed to conditions referred to under Group 2, the state inspectors of health mentioned the conditions and expressed an opinion as to what practicable precautions might be taken.

The large number of minors giving tubercular family histories, as well as the number suspected of having tuberculosis, or of being in the pretubercular stage, although no definite signs could be detected at the time of the examination, led to the use of a special card whenever a diagnosis of tuberculosis was made, whenever doubtful signs of tuberculosis were discovered, or whenever a minor gave a history of tuberculosis in his family. At the same time the state inspectors of health were instructed to call the minor's condition to the attention of the parents whenever a diagnosis of tuberculosis was made, or, if advisable, when the case was doubtful. In suitable cases the assistance of district nurses or certain relief agencies was sought in aiding to improve the minor's conditions. The card system referred to also gave the State Board of Health opportunity, through the state inspectors of health, to confer with local health authorities relative to taking measures to prevent the spread of the disease. For example, if a card showed that a member of a minor's family had recently died of tuberculosis, and the minor appeared predisposed to the disease, the attention of the local board of health could very properly be called to the case, in order that an agent of the board might visit the family to see that sanitary home conditions were maintained. Moreover, some unreported cases of tuberculosis have in this way been brought to light, since each minor was asked concerning the health of the other members of his family. In all such cases great care was taken to prevent the spread of infection, and special advice was given to the minors.

Invariably, when a minor was found in ill-health, and, in the opinion of a state inspector of health, was exposed to avoidable unsanitary conditions, the employer made the necessary changes, and some employers took pains in such cases to change the work of the minor so that it might be better adapted to his health. Some employers went a step further by providing proper treatment for any minor found in their employ afflicted with tuberculosis. An example of a case easily disposed of is the following:

> E. C., aged seventeen; at work in an oil cloth factory where twelve minors, sixteen to twenty years of age, were employed, eleven of whom were in good health. This boy appeared anemic and thin, although a physical examination revealed no disease. He was found working under unfavorable conditions, being constantly exposed to excessive heat and moisture in a dark, ill-ventilated room, and it was found that his mother died of tuberculosis. The state inspector of health, on a second visit to this factory, found that the minor was no longer employed by the company.

On the other hand, cases like the one mentioned below are more difficult to handle:

> E. M., aged seventeen, small, undersized, anemic, weighed one hundred and ten pounds, lips pale and colorless, heart action irregular, not properly fed or cared for; mother died of phthisis, father a drinking man, home surroundings distinctly bad. Although this boy was really not fit to work in a machine shop, no one took so much interest in him as his employer, who made the work as easy as possible for him under good hygienic conditions.

FACTORY HYGIENE AND THE ENFORCEMENT OF LAWS RELATING THERETO.

After two years' experience dealing with the Massachusetts statutes bearing upon factory hygiene, the following outline for future work was recently planned:

Whenever a state inspector of health finds in a factory or workshop in which five or more women or young persons are employed (*a*) inadequate ventilation, (*b*) ineffective means for the removal of dust (irritating or poisonous dust, including infective matter), (*c*) gases, fumes and vapors (irritating, poisonous or offensive), he sends a written notice to the employer in the form of an order, which order must be complied with within a period of four weeks.

Whenever a state inspector of health finds that employees in any factory or workshop are not sufficiently protected against dust from emery wheels or belts, or buffing wheels or belts, he issues a written order for such suction pipes and connections as he shall approve.

Whenever a state inspector of health finds employees in textile factories exposed to (*a*) impure or foul odors from water used for humidifying purposes, or to (*b*) an excess of artificial moisture, he issues a written order to the effect that water used for humidifying purposes shall be of such a degree of purity as not to give rise to impure or foul odors, and shall be so used as not to be injurious to the health of persons employed in such factories.

Among other conditions or influences to which an occupation of special hygienic interest may involve exposure are (1) lack of cleanliness, (2) poor or insufficient light, (3) dampness, aside from artificial moisture in the textile industry, and (4) excessive heat. Inasmuch as there is no legal standard of cleanliness in a factory or workshop, the state inspectors of health have in mind the highest standard of cleanliness found to exist in the best factories and workshops carrying on similar business in similar buildings within the commonwealth. If it appears to a state inspector of health that this standard is not lived up to, he sends a notice to the employer in writing either in the form of an order or a recommendation based upon a general statute requirement that all factories and workshops shall be kept clean. In the same way, whenever such provision is NOT made for light, either by daylight or by artificial light, that, in the opinion of the state inspector of health, the persons employed in a factory or workshop shall be in danger of injury to their eyesight, a written order or recommendation is sent to the employer to the effect that better light must be provided. In cases when good light is less essential, owing to the kind of work done, and poor light will not probably lead to injury, although the effect of well-lighted rooms is desirable as a concomitant factor in the maintenance of health, a state inspector of health offers such suggestions in writing to the employer as he deems proper.

Owing to the fact that there is no specific statute relative to overcrowding in a factory or workshop, state inspectors of health are instructed when the number of cubic feet of space in any room bears to the number of persons employed at a time in the room a proportion less than three hundred, and the factory is impossible of proper ventilation without an expensive mechanical system, to make such recommendations in writing to the employer as in his judgment are necessary.

Whenever employees in factories or workshops are exposed to indoor dampness or to excessive heat, provided either condition is to a certain extent avoidable, state inspectors of health make such suggestions in writing to the employer as appear advisable.

In addition to the above-mentioned conditions or influences to which the occupation involves exposure, the Massachusetts laws require that pure drinking water shall be provided for employees in manufacturing establishments, that medical and surgical appliances be provided in factories, that seats for women employees be provided in manufacturing, mechanical or mercantile establishments, that washing facilities be provided in foundaries, and that receptacles for expectoration be provided in all factories and workshops.

Aside from the legal aspect of the subject, the investigations are so made and reported as to show (1) the conditions necessary from a commercial point of view, and (2) the hygienic conditions or influences from the point of view of the health of (*a*) young persons, and (*b*) adults.

HYGIENE OF SCHOOLHOUSES.

By a recent act of the legislature of Massachusetts, approved May 3, the authority to order " structural or other changes " for ventilating and sanitary purposes in schoolhouses was given to the district police, and after Oct. 1 the state inspectors of health cannot issue orders for " further or different sanitary or ventilating provisions " in said buildings, as has been their custom during the two years since their appointment. While this does not mean that school children are to lose the benefit of criticisms of the state inspectors of health concerning schoolhouse hygiene, it does mean that the question of making sanitary or ventilating changes in school buildings can no longer be considered by the local health authorities. Until recently, if any person was aggrieved by the order of a state inspector of health, the local board of health, after notice to all the parties interested, gave a hearing upon such order and altered, annulled or affirmed it; now, in accordance with legislation passed this year, all orders are to be issued by the district police, and whoever is aggrieved by an order so issued cannot appeal to the local health authority but may appeal to the judge of a superior court.

In order that trustworthy information relative to the sanitation of schoolhouses might be given from time to time to the legislature, it was agreed that the state inspectors of health should retain their power to examine such buildings and should continue their endeavor to bring into co-operation school physicians in the effort to guard against ill-ventilated or overcrowded schoolrooms; consequently a new provision was added to the changed legislation, which provides that " state inspectors of health or such other officers as the State Board of Health may from time to time appoint shall make such examinations of school buildings as in the opinion of said board the protection of the health of the pupils may require."

In accordance with this new arrangement, the following outline has just been given to the state inspectors of health as a basis for their reports, it being understood that any other points of importance shall be included:

(1) Attention must be given to the structure of a school building, and the different mechanical or other means employed to create a supply of fresh and the removal of foul air noted.

(2) Each report must contain answers to the following questions:

- *A*. In your opinion, is each room ventilated in such a manner that the air will not become so impure, during any considerable period, as to be injurious to health?
    - (*a*) Mention the location of the rooms not properly ventilated.
    - (*b*) In your opinion, can further or different ventilating provisions be provided without unreasonable expense?
    - (*c*) In your opinion, will structural alterations have to be made in order to provide for efficient and adequate ventilating provisions? If so, state whether in your opinion such structural alterations may be made without unreasonable expense.
    - (*d*) Are the existing ventilating provisions sufficiently satisfactory, provided overcrowded rooms are guarded against? If so, how many and what rooms are overcrowded?
- *B*. Is each room in the building well lighted?
    - (*a*) Does the light in each room come over the pupil's left shoulder? Over the right shoulder? From the front? From behind?
    - (*b*) Could the light in any room be improved by whitening the walls and ceiling? By washing the windows? By substituting larger windows with larger panes of glass? By the use of prismatic glass?
    - (*c*) In your opinion, will structural alterations have to be made in order to provide for adequate light in any room?
- *C*. Is each room in the building kept clean?
- *D*. Are a sufficient number of proper water closets, earth closets or privies provided?
- *E*. Is the building unfit for school purposes?

TENEMENT HYGIENE.

A report of Dr. Linenthal relative to the manufacture of clothing in tenements and dwellings in and near Boston deserves careful study. The improper places for such work, the unhealthy conditions, such as overcrowding, under which the work is done, the long hours of work, the employment of minors, and the occurrence of communicable diseases, including contagious skin diseases, in these workrooms, are the chief topics for discussion. Work on wearing apparel in the congested tenement district is generally done in a room which serves as workroom, living-room, dining-room and kitchen. These rooms, especially in the evening, are overcrowded.

Dr. Linenthal points out that if the portion of the New York law governing tenement-house workrooms, which provides that " no room or apartment in a tenement or dwelling house used for eating or sleeping purposes shall be used for the manufacture . . . of coats, vests, trousers," etc., was appended to the Massachusetts laws, the tenement workrooms in the congested district would be done away with.

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Reports of Societies.

AMERICAN SURGICAL ASSOCIATION.

Meeting of 1909, Held at Philadelphia, Pa., June 3, 4 and 5.

(Concluded from No. 5, p. 159.)

THORACIC SURGERY.

Professor Friedrick, of Marburg, Germany, reported eleven cases of unilateral phthisis in which he had resorted to extensive multiple resection of ribs. In two cases of multiple tuberculosis he performed total pleuropneumolysis, and in four partial pleuropneumolysis. He had not lost a single case from this operation.

Dr. William S. Halsted, of Baltimore, detailed some experimental studies he had made with reference to lung surgery.

Dr. Charles A. Powers, of Denver, discussed surgical measures designed to relieve pulmonary tuberculosis.

Dr. Leonard Freeman, of Denver, said that collapse of the lung might be obtained in several ways: (*a*) By the production of artificial pneumothorax according to the methods of Murphy and others. (*b*) By extrapleural resection of the ribs below the first part of the cartilages to the spine, including the periosteum. (*c*) By removal of portions of some ribs, with periosteum along the axillary line. (*d*) By resection of portions of several ribs, and periosteum directly over the diseased part of the lung, usually a cavity near the apex. (*e*) By a similar operation, without removal of the periosteum, followed by external pressure by means of a truss.

He described an operation which he had done in two cases, with encouraging results.

Dr. A. Vander Veer, of Albany, said that the hypodermic syringe, with long needle, was of value for exploratory purposes and a safe instrument for a good general practitioner to use when in doubt as to the nature of the lesion that was present. Repeated use of the aspirator was not to be condemned so long as the fluid remained sterile, and was the preferable method of treatment in malignant cases. Where he had some malignancy in which the effusion was distressing to the patient, the use of the aspirator afforded great relief. The use of the trocar and drainage tube was advisable if it was shown the aspirator was no longer affording benefit. Resection of the ribs was necessary when no improvement took place with ordinary drainage tube. The latter operation should be done early in order to protect the lungs from unnecessary pressure and relieve adhesions which, in the young, became so detrimental in causing spinal curvature.

Dr. C. L. Gibson, of New York, reported an interesting case of tubercular pericarditis in which he succeeded in effecting a cure by means of incision and drainage.

TREATMENT OF FISTULÆ AND ABSCESSES FOLLOWING OPERATIONS FOR EMPYEMA OF THE THORAX.

Dr. A. J. Ochsner, of Chicago, in this paper illustrated the value of the injection of Beck's paste into persistent sinuses and abscesses following operations for empyema of the thorax. A tabulated list of fourteen cases treated by the author by this method was given in the paper.

Two formulas were in use: No. 1, consisting of one part of arsenic-free subnitrate of bismuth and two parts of sterile amber vaseline, had a lower melting point than No. 2, which consisted of thirty parts of subnitrate of bismuth, sixty parts of amber vaseline and ten parts of paraffin of a sufficiently high melting point to cause the mixture to maintain its form at the temperature of the body.

No. 1 was used daily or every second day until the sinus, or abscess, was practically free from pus; then No. 2 was used, at first every second day, and later less frequently, until healing was completed. These mixtures were injected at 110° to 120° F. by means of an ordinary large glass syringe. Only just enough force was used to fill the cavity. The outer opening was closed with a gauze plug.

The remarkable part of the treatment lay in the fact that cases in which the abscess cavity communicated with a bronchus would heal quite as rapidly and as perfectly as other cases, and that symptoms of sepsis disappeared rapidly, and that in most cases in which there was no communication with the bronchi, the discharge from the sinus soon became sterile.

VISCERAL PLEURECTOMY.

Dr. Alexander Hugh Ferguson, of Chicago, said that by this operation was meant the removal by operation of the thickened visceral pleura in cases of chronic empyema. In six cases in which he resorted to this operation the results had been all that could be desired. All the patients gained flesh, and all cavities were completely closed. The youngest patient was twenty-three years of age; the oldest, forty-five. The amount of visceral pleura removed varied from a strip an inch long to four inches wide.

Dr. Charles H. Peck, of New York, reported a case of stab wound of the heart in a colored girl. The wound was sutured sucessfully and the patient was well twenty-four days after the operation.

Dr. Willy Meyer, of New York, detailed a new method of esophago-gastrostomy for intrathoracic resection of the esophagus.

THE PREVENTION AND TREATMENT OF THE SEQUELS OF PERINEAL PROSTATECTOMY.

Dr. James E. Moore, of Minneapolis, Minn., said that perineal prostatectomy was a life-saving operation but a grave one, and should not be undertaken lightly. It was accompanied by a mortality rate of a little over 6%, and over 17% were either complete failures or were followed by some sequel that made the operation far from satisfactory. Owing to the age and bad condition of these patients, there must be a mortality rate. The nature of the operation was such that complications and sequels were bound to occur, but at the present time the mortality rate was too high and the sequels too common. According to the latest statistics, 7.4% of these operations were failures, but in competent hands the patient should always experience sufficient relief to justify the operation, though he might not be completely cured. When a patient continued to suffer pain and tenesmus after the operation, it was usually due to a pocketed bladder, diseased kidneys or an incomplete operation.

The prostate was an important sexual organ, and its removal by any route or method was sure to have a decided effect on the procreative powers of the patient. Owing to the reticence and untruthfulness of patients, it was impossible to state how often this sequel followed, but it was certain that it occurred so frequently that every patient who was comparatively young in years should have this possible contingency stated to him before the operation was performed.

Injury to the rectum was probably the most frequent complication, often causing death, and when a patient survived he was liable to have a urethral rectal fistula. Unskillful use of fingers, downward pulling by retractors and too tight packing with gauze were the usual causes, and by guarding against these causes this accident should be avoided. When the rectum was torn it should be immediately repaired. This would often fail, but succeeded often enough to justify the effort.

Stricture was a more common sequel than was generally believed, and was due to extensive removal of the prostatic urethra. We expected injuries to the urethra from other causes to result in stricture, and there was no reason why it should not follow this operation. Enough of the upper wall of the prostatic urethra should be preserved to secure an unbroken mucous surface extending from the bladder to the meatus. Extensive dissection of the perineum, especially when cross-cuts were made, was conducive to stricture. Projecting portions of the urethra were sometimes left, which constricted the flow of urine by acting as valves.

Dribbling or incontinence was an occasional sequel of perineal prostatectomy and was due to injuries to the neck of the bladder and to the compressor urethræ muscles. Instruments introduced into the bladder to draw the prostate down should be used with the utmost care lest they injure the neck of the bladder. The compressor urethræ was the important sphincter and should be preserved by entering the prostatic rather than the membranous urethra. The treatment of incontinence when once established seemed to be hopeless.

Perineal fistula was a rare sequel and was usually due to the deposit of lime salts, the removal of which relieved the condition.

Epididymitis was an occasional sequel, but was usually of little consequence beyond the discomfort it caused, and was very often due to the injudicious passing of sounds.

SUPRAPUBIC PROSTATECTOMY.

Dr. Arthur Dean Bevan, of Chicago, said splendid results had been obtained by performing both the suprapubic and perineal operations, and, considering the ages of the patients upon whom these operations had been done, the mortality was low. Suprapubic enucleation of the prostate had the widest field of usefulness. All things considered, the cure was more complete by the suprapubic than by the perineal route. The suprapubic was less dangerous and less formidable than extensive perineal dissection. There was no injury done to the musculature by the suprapubic route or perineum; there was very little danger of injuring the rectum, and little probability of stricture or fistula following.

DISCUSSION.

Dr. A. J. Ochsner, of Chicago, said that he who had done prostatectomy both perineally and suprapubically a number of times must be impressed with the great ease with which the prostate can be enucleated from above. He had removed a large number of prostates by the perineal route, and quite a number by the suprapubic, and had been impressed with the simplicity and ease with which the operation could be done suprapubically.

Dr. Alex. Hugh Ferguson, of Chicago, said his first twenty-five cases of prostatectomy were operated by the suprapubic route. Of this number he lost eight. He disliked to return to that method. He now resorted to the perineal route. One could operate on almost any kind of enlarged prostate successfully through the perineum. If accurate statistics were collected, it would be found that the mortality was twice as high by the suprapubic as by the perineal route.

Dr. Joseph Ransohoff, of Cincinnati, said the mortality from the suprapubic operation could be greatly reduced if we made perineal drainage by means of a puncture from above.

Dr. Maurice H. Richardson, of Boston, had seen a good many surgeons operate for the removal of prostates, but never saw one who could see what he was doing to the urethra. Speaking as an anatomist, he had never been able to tell whether he was tearing the urethra to pieces or not when operating perineally or suprapubically. Other surgeons had told him the same thing. The mortality came from the advanced age of patients and not from the operation *per se*.

Dr. S. Stillman, of San Francisco, had a decided preference for the suprapubic operation where the urine was healthy, and where the urine could not be rendered healthy the mortality from the suprapubic or perineal operation could be overcome by following a suggestion which had been given to the surgical profession by Sir William Macewan.

Dr. A. Primrose, of Toronto, said his experience had been confined almost entirely to the suprapubic route. Infection of the pelvic cellular tissue was the cause of mortality in some cases in which the suprapubic route had been resorted to. It seemed feasible to remove the prostate by the transperitoneal route in some cases, and, if necessary, establish perineal drainage.

Dr. John B. Murphy, of Chicago, had operated on the prostate first by the perineal route and then the suprapubic. Finally, from an experience of one hundred and twenty-three cases he found he could take out the small, firm, hard prostate more easily and safely from below; while the large, thick, juicy prostate he could remove easier and with greater safety to the patient from above.

Dr. Leonard Freeman, of Denver, suggested a method of controlling hemorrhage in connection with the suprapubic operation.

Dr. Moore, in closing, on his part said that he expected in five years from now to hear Dr. Bevan read a paper on the complications and sequels of suprapubic prostatecomy. Dr. Murphy stood on solid ground, in that he fitted the operation to the case in hand, and did not try to make every case fit one particular operation.

Dr. Bevan, in closing, said the evidence was quite conclusive in favor of the suprapubic operation from the standpoint of completeness of the cure and the freedom from complications.

A STUDY OF ONE HUNDRED AND THIRTY-ONE CONSECUTIVE CASES OF FIBROID TUMORS OF THE UTERUS DEMANDING OPERATION.

Dr. Archibald MacLaren, of St. Paul, Minn., asked when should a fibroid tumor of the uterus be operated upon? When it commenced to increase in size or to cause symptoms?

He thought with Richardson that the same rule should be followed as in ovarian cysts or in appendicitis,— in the interval,— but that a small subperitoneal tumor need not be removed if it was not increasing in size.

It was not always possible to be certain that a certain tumor was uterine and not ovarian in origin; the usual error was to diagnose a small ovarian tumor as a fibroid, on account of its smooth, hard, solid feel. The subject of this paper was the last one hundred consecutive hysterectomies for fibroid disease, and also the myomectomies, thirty-one in number, which had been performed during this same period of time. The question of first importance was the age of the patient. A young woman should always have myomectomy, if possible.

After a myomectomy the tumor might reform, or other small growths, which were too deeply buried in the uterine wall, or too small to be palpated, might increase in size, cause a return of the symptoms and necessitate a second operation. This had only occurred three times in his total experience of over sixty myomectomies.

Myomectomy had been done during pregnancy four times, with one miscarriage. He would not advise the removal of a uterine tumor in a pregnant uterus which was producing no symptoms.

In regard to the mortality, there had been 5 deaths in the 131 cases, or 3.8%; 3% in the series of 100 hysterectomies; and 2 deaths in the myomectomies. This looked like an unjustifiable mortality for myomectomy, but as both were accidental deaths, in no way due to the myomectomy, they ought not to be charged to this operation. The first was due to the giving way of the catgut purse-string suture about the stump of the appendix, which had just been removed. The second death was probably due to the leaking of a gall bladder which had been opened and drained through a stab wound, several gallstones having been found at the time of the operation for the removal of a fibroid tumor.

One of the principal dangers of myomectomy, as well as hysterectomy, was post-operative hemorrhage. The gradual formation of a hematocele, which occasionally followed either operation, should be carefully watched for. He had been in the habit of putting in vaginal drainage at the time of the operation when there was any difficulty in preventing oozing. And twice after myomectomy he had made a vaginal section on the third day, opening up and draining such hematomata, with the most gratifying results.

In his earlier work he lost two cases where the puddle of pus in the cul-de-sac was due to the infected, broken-down blood clot which had caused the fatal septic peritonitis, which was not discovered until the autopsy. To the recognition and drainage of these accumulations of blood more than to any one thing did he ascribe his improved results over a few years ago, when he used to find them at the post-mortem.

The danger of a fibroid tumor producing a suppurative pelvic peritonitis was considerable. In the one hundred hysterectomies, three came to him with pelvic abscesses complicating the tumor, either due to a perforative appendicitis or to the necrosis of the tumor, or to compression of diseased appendages.

In regard to the method of performing hysterectomy, supravaginal amputation had been the operation of choice, and only in malignant disease or a suspected malignancy had he reverted to complete removal of the uterus, and for two reasons: First, because it was a less dangerous operation in his hands, and, second, because he had never seen a fibroid tumor grow in the stump of the cervix after a supravaginal amputation. Large-sized catgut for the vessels, No. 3 or 4, was the best ligature material, or No. 2 double. It was awkward for tying the uterine arteries deep in the pelvis, and much greater force had to be used than would be necessary on the surface, so the ligature must be larger and stronger. It was always wiser to cut the uterine arteries besides the cervix before picking them up, for they lay very close to the ureter. The only time that he had ever injured the ureter was in one of his earlier operations, when the uterine artery was ligated *en masse* before cutting the artery.

DISCUSSION.

DR. MAURICE H. RICHARDSON, of Boston, had had a large experience in operating for the removal of fibroid tumors of the uterus, and felt there was a greater danger attending myomectomy for the removal of multiple tumors than hysterectomy. If you were going to give a patient a most safe procedure in a case of multiple fibroids of the uterus, it was better to do supravaginal amputation. This opinion was based on personal experience after many years of operating on these growths.

TREATMENT OF TETANUS.

DR. WILLARD HUNTER HUTCHINGS, of Detroit, Mich., directed attention to an experimental study of the various methods of treatment of recognized tetanus, and from the results obtained by these experiments he had become convinced that chloretone was the best agent or substance that had been employed thus far with which to control the muscular manifestations of the disease. He had treated six cases that were referred to him with chloretone, with five recoveries. A detailed account of each case was given in the paper. Chloretone had no effect on the toxin circulating in the blood, nor did it break up the combination between the nerve cells and toxin. Its use was harmless. There had been no fatality following its use. It lowered temperature, and had a slight diuretic action.

DISCUSSION.

DR. THEODORE A. MCGRAW, of Detroit, said that in one of the cases related by Dr. Hutchings, in which tetanus developed, extreme care was used in thoroughly disinfecting the wound, and when the wound was opened as a matter of precaution against tetanus everything was found aseptic, yet tetanus developed.

DR. WILLIAM H. CARMALT, of New Haven, asked the chemical composition of chloretone.

DR. JOHN B. ROBERTS, of Philadelphia, said that we had all realized for many years in our hospital experience that chloral would cure tetanus, but now, with the addition of antitetanic serum, we had a good combination. He would like to know whether chloretone had any relation to chloral, or whether it was similar in its composition.

DR. THOMAS W. HUNTINGTON, of San Francisco, had used chloral to the limit in three cases of tetanus, and all three patients died.

DR. A. T. BRISTOW, of Brooklyn, wished to emphasize the absolute necessity of putting patients with tetanus in a room by themselves, kept absolutely quiet, free from noise or any irritation of any kind; and would recommend the use of chloral and bromides in large doses.

DR. DE FOREST WILLARD, of Philadelphia, said that the only case of tetanus he remembered saving was one in which he kept the patient saturated with chloral for twenty-eight days.

DR. C. B. G. DE NANCREDE, of Ann Arbor, said they had a great deal of tetanus in their section of the country. He had saved the lives of a few patients who had tetanus with chloral. He had never seen any effect from antitoxin after the disease had started.

DR. NATHAN JACOBSON, of Syracuse, N. Y., said as to the possibility of controlling tetanus by amputation, a review of the literature taught that it had little or no effect. As to the manner of introduction of the antitoxin or serum, whether it was introduced intracerebrally, intraspinally, intraneurally or intravenously, there was practically no difference in the results.

DR. JOHN E. OWENS, of Chicago, said the use of antitetanic serum must be considered in the light of a prophylactic. During the constructive period of the World's Columbian Exposition, they had several hundred cases of nail wounds of the hands and feet, and in not a single instance did tetanus develop. Their treatment consisted in opening the wounds freely, curetting them more of less, then applying 95% carbolic acid and covering the wound with ordinary surgical dressing.

DR. J. EWING MEARS, of Philadelphia, said that in a hospital at Ceylon, Cannanea, at the time he visited there, tetanus of puerperal origin was treated with injections of antitoxin successfully.

DR. HUTCHINS, in closing, said that regarding the composition of chloretone, when he began using it he did not know what it was, but was impressed with its beneficial action. He asked a chemist how chloretone was made, and he said: "If you will take equal parts of chloroform and equal parts of acetone, and put them in a test-tube, and boil for a minute or two, then add sodium hydroxide, which precipitates the chloretone, that, when purified, is chloretone." What the chemical composition of it was he did not know. It was very important to isolate patients with tetanus. Mere amputation, without any other treatment, had no effect whatever on tetanus.

DR. J. M. T. FINNEY, of Baltimore, presented a paper in which he spoke of transporting skin flaps from remote parts of the body from one individual to another. He believed that the application of this principle was feasible.

SURGERY OF THE LARGE INTESTINE.

DR. WILLIAM J. MAYO, of Rochester, Minn., in a paper on this subject, said that anatomically the large intestine was a connected whole, but embryologically and physiologically it could readily be divided at the splenic flexure into two well-defined parts. The proximal half was derived from the mid-gut and was an important part of the nutritive system as it absorbed about half of the fluids and 10% of the solids. The descending colon and the sigmoid were derived from the hind-gut, had an antiperistaltic motion, and acted as a fecal storehouse. In the large intestine, lymph drainage followed the arterial supply, but the lymphatics were not numerous and in the sigmoid were very sparse. Mobilization of the large intestine for operation was most important, and could be readily accomplished by cutting the outer peritoneal fold, which did not contain important structures, where it was reflected to the abdominal wall and lifted the gut from its bed. In this way the large intestine could be drawn outside the abdominal incision and the cut ends easily approximated after extensive resections. The inner leaf of the mesentery was very long, extending practically to the mid-line, and contained the arteries, nerves and lymphatics. After mobilization, the arteries should be tied and divided at their origin, and the entire mesentery with the fat and gland cleanly dissected from the deep structures. The right inferior angle of the duodenum must be identified and separated in operations about the ascending colon and hepatic flexure. The ureters were attached to the peritoneum after crossing the common iliac arteries, and must be isolated, especially on the left side, to prevent injury. If a neighboring organ, such as the small intestine, stomach, bladder or uterus, was adherent, it should be coincidentally resected, providing the disease was still local. In cancer of any part of the cecum, ascending colon or hepatic flexure, all of the large intestine proximal to the disease should be removed with at least six inches of the ileum, and an ileo-colostomy performed between the proximal ileum and transverse colon. In cancer of the transverse colon, splenic flexure, descending colon and sigmoid, union must be made between the two segments of the large intestine, not so safe a union as that between the ileum and colon. It could be made end to end if sufficiently covered by peritoneum, otherwise end to side, or lateral, where the peritoneum was sound. If obstruction was marked, the three-stage operation of Mikulicz-Paul was advisable. In low sigmoid cancers the combined abdominal and perineal operation was best. In fleshy males the posterior, and in debilitated females the Quénu-Tuttle operations gave good results in low sigmoid tumors. He reviewed 100 resections, with 12 deaths; for cancer, 61 times, with 8 deaths. Twenty-four were carcinoma of the cecum and ascending colon, with 3 deaths; transverse colon, including the hepatic and splenic flexures, removed for carcinoma 7 times, with 1 death; descending colon and sigmoid excised for carcinoma 30 times, with 4 deaths. For benign disease, 39 times, including inflammatory disease, tuberculosis, diverticulitis, etc., 4 deaths.

RESECTION OF THE SCIATIC NERVE.

Dr. Kenneth A. J. MacKenzie, of Portland, Ore., exhibited a patient with molluscum fibrosum, who developed, first, a tumor of the ulnar nerve, which was removed by another surgeon. Subsequently the patient developed a tumor of the sciatic nerve, which grew slowly at first, but after traumatism grew rapidly. Severe pain was transmitted to the foot from the pressure caused by the tumor. Operation consisted in removing the sciatic nerve *in toto*, with good result. Patient walked well, considering that the nerve was entirely removed and the nerve supply cut off from the groups of muscles that were involved.

OPERATIVE TREATMENT OF FRACTURES.

Dr. John B. Walker, of New York, reported six cases on which he operated for the relief of deformity following fractures, with good results.

Dr. William B. Coley, of New York, reported a case of strangulated retroperitoneal hernia of the intersigmoid fossa, and one very rare (probably unique) case of interparietal ventral hernia at McBurney's point.

SUGGESTIONS FOR THE OPERATIVE CORRECTION OF SYPHILITIC AND OTHER DEFORMITIES OF THE NOSE.

Dr. John B. Roberts, of Philadelphia, called attention to the importance of the reconstructive surgery of the external nose. He stated that the cosmetic improvements possible were not fully appreciated by medical men or by the public at large. The inherent difficulty in these operations was obtaining and maintaining sufficient projection of the reconstructed organ and preventing cicatricial closure of the nostrils. The early recognition of syphilitic lesions of the nasal bones and cartilages and the prompt institution of efficient antisyphilitic treatment would prevent the occurrence of many conspicuous disfigurements. Blows upon the nose in childhood often caused dislocation of the nasal cartilages and bones. These lesions were untreated because of negligence in examination immediately after the injury. The frontal method was probably the best for total rhinoplasty. Brachial flaps might sometimes be used with advantage. Portions of cartilage or periosteum from other regions of the body might be used to give rigidity to the tissues transferred to the nasal region. Paraffin injections into the subcutaneous tissues were sometimes used as an adjunct. Loss of the cartilaginous external nose below the nasal bones was probably best repaired by Keegan's frontal method. Nélaton's frontal method, which consisted in incorporating a portion of costal cartilage in the frontal flap, was valuable when the bony nasal bridge was missing. The author's method of repairing the sunken nose of syphilis with flaps from the cheeks and mid-frontal region was described as a successful operation. Suggestions for repairing irregular deformities of various kinds were made in the paper.

A METHOD OF COMBINING EXPLORATION AND DECOMPRESSION FOR CEREBRAL TUMORS WHICH PROVE TO BE INOPERABLE.

Dr. Harvey Cushing, of Baltimore, said that the usual osteoplastic method of exploration of the cerebral hemispheres for a tumor, which, after exposure, proved to be inoperable, was usually transformed into a palliative or decompressive measure by the removal of the osseous layer of the resected flap. This frequently led to undesirable consequences, owing to the unnecessary extensive protrusion which might occur when the brain under tension was protected by scalp alone.

In these cases the bone flap might be preserved and a sufficient hernia, under the protection of the temporal muscle, be provided for, through the removal, while the flap was temporarily resected, of the area of bone which underlay the temporal muscle. Thus the advantage of the usual subtemporal decompression could be combined with the more extensive cortical exploration permitted by a temporary osteoplastic resection.

UNUSUAL CASE OF GUNSHOT WOUND OF THE BRAIN.

Dr. Joseph Ransohoff, of Cincinnati, in this paper reported a case of gunshot wound of the brain from a 32-caliber rifle. The patient was shot in the right temple in May, 1899. The immediate left-sided hemiplegia which followed the injury disappeared within a year. Three years later general convulsions supervened, the attacks coming on every three or four months without any focal point of origin being in evidence. The x-ray showed the bullet split into three parts, one evidently in the zygomatic fossa, one in the temporal fossa and the largest fragment just within the skull, on a level with the cribriform plate, and probably in or near the cavernous sinus. Later, left-sided paralysis supervened gradually, but he did not see the case again while alive. Death ensued with coma in twelve hours after the onset of the acute symptoms, nearly ten years after the injury. The autopsy revealed an abscess in the right temporo-sphenoidal lobe, with a small piece of the bullet firmly encapsulated in the abscess wall. The largest fragment shown in the x-ray had become innocuous and embedded in the cavernous sinus.

The following papers were also read: "The History and Microscopical Study of Fifty Consecutive Cases of Excision of the Thyroid," by Dr. Francis J. Shepherd and Dr. Charles E. Duval, of Montreal, Canada; "Sudden Death: A Study of Certain Cases Occurring during Physical Exertion or Psychic Shock," by Dr. John B. Blake, of Boston; "Observations on the Inequalities of the Right and Left Femora," by Dr. A. T. Bristow, of Brooklyn, N. Y.; "Vesico-Intestinal Fistulæ," by Dr. F. W. Parham, of New Orleans.

Owing to lack of time, several other papers were read by title, although the authors were present.

A rising vote of thanks, which was extended to the local members for their hospitality, brought the proceedings to a close.

OFFICERS

The following officers were elected: President, Dr. Rudolph Matas, of New Orleans, La.; Vice-Presidents, Drs. J. M. T. Finney, of Baltimore, and George H. Monks, of Boston; Secretary, Dr. Robert G. Le Conte, of Philadelphia, re-elected; Recorder, Dr. Richard H. Harte, of Philadelphia, re-elected; Treasurer, Dr. Charles A. Powers, of Denver, re-elected; Member of the Council, Dr. C. B. G. de Nancrede, of Ann Arbor, Mich.

Book Reviews.

Blood Examination in Surgical Diagnosis. A Practical Study of Its Scope and Technic. By Ira S. Wile, M.D. Pp. 161. New York: Surgery Publishing Company. 1908.

The publishers of this useful little book have yielded to the temptation of sending to us a ready-made review. We refrain from reproducing it. It evinces partisan feeling. The book is good, nevertheless, because it tells its story simply and coherently for the busy man who is not specially trained in studies of the blood.

Seven Hundred Surgical Suggestions. Practical Brevities in Surgical Diagnosis and Treatment. By Walter M. Brickner, B.S., M.D., Assistant Adjunct Surgeon, Mount Sinai Hospital, New York; Editor-in-Chief, *American Journal of Surgery*; Eli Moschcowitz, A.B., M.D., Assistant Physician, Mount Sinai Hospital Dispensary, New York; and Harold M. Hayes, M.A., M.D. Third series. Pp. 153. New York: Surgery Publishing Company.

This book is certainly "packed full" of suggestions, as the publisher's "review" states. The suggestions are admirable and should help the general practitioner to decide on sending for an expert. A careful index of subjects would have made the volume somewhat larger, but would have added greatly to its value.

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LIFE INSURANCE COMPANY SANITARIUM.

A new departure is contemplated by the Metropolitan Life Insurance Company in the proposed establishment of a sanitarium for its policy holders who are affected with tuberculosis. Application for permission has been made to the State Superintendent of Insurance, as the consent of the latter is necessary because of the law which prescribes that insurance companies shall not invest in real estate. The Metropolitan is hopeful that the superintendent will look upon the project as one of immediate benefit to the policy holders, and will, therefore, give a liberal construction of the law. If the sanitarium is established, it will constitute the first step in the general campaign for the purpose of bringing about increased longevity which was discussed by life insurance presidents in February last. At that conference it was asserted that the Metropolitan was ready and willing to spend $100,000 a year toward the suppression of tuberculosis as soon as it was convinced that a plan then suggested for a sanitarium was practicable. Later, Dr. Lee K. Frankel, manager of the industrial department of the company, made a careful investigation of the subject, and the conclusions reached led to the application referred to. While it was found that it would cost about $100,000 a year to maintain a properly-equipped sanitarium, Dr. Frankel estimated that there would be a saving, due to the payment of fewer claims, of a much greater sum than that. Not only would the sanitarium be for the use of policy holders, but also of any of the 11,000 field agents and of the office force of 2,000 who may have contracted tuberculosis. He has prepared statistics which show that in 1908 there was an increase of 44% in the number of deaths from tuberculosis among the policy holders of the Metropolitan Life over the deaths from this cause ten years ago, and that at the present time the deaths from tuberculosis among the policy holders of the company occur at the rate of one every thirty-two minutes, day and night. He has calculated that a reduction of one third of the number of deaths from the disease may be effected by proper sanitarium treatment. In speaking of the ravages of tuberculosis in the United States, causing an annual economic loss to the country estimated at not less than $330,000,000, Dr. Frankel says:

"The fearful import of these figures is what has caused the Metropolitan Life to seek some way to combat the disease as it exists among its policy holders. While the lowering of the death-rate means much to the company, it means much more to the policy holder. It means, in the first place, an extension of life, for the loss of which his family is in no sense compensated by the policy he may carry. It also means that the company, having fewer death claims to pay, will be enabled to allow larger benefits; in other words, to cheapen the cost of insurance to the working classes. Not only does the Metropolitan want to establish the sanitarium, but, regardless of whether that is done or not, it has already started a campaign of education among its policy holders. The company is now sending out 3,500,000 copies of a pamphlet which has just left its presses, telling how consumption may be fought. One of these will go to each home where the policies of the company are held, and it is believed that the pamphlet, if the advice contained in them is followed out, will be the means of saving thousands of lives."

The company has already secured an option on a large tract of land, said to be located in the Catskill Mountains, and, if the State Superintendent of Insurance gives his sanction, the land will be purchased and work immediately begun on the sanitarium.

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TUBERCULOSIS AND INDUSTRIAL CONDITIONS.

The *Massachusetts Labor Bulletin* for July presents interesting data and discussion as to the relations between industrial conditions and the spread of tuberculosis. After reiterating the well-known fact that overcrowding and exposure to irritating dusts and gases are two of the most important predisposing causes of pulmonary tuberculosis, it points out that their evil effects may in large measure be avoided by intelligent care on the part of workmen in the use of ventilation and of apparatus for preventing noxious inhalations and in disposal of the sputum of persons already infected. As in all matters of public hygiene, education of the people is the greatest safeguard. The community as a whole is now alive to the perils of tuberculosis and interested in the problem of self-protection. In many mills and factories there have been formed to this end organizations, shared in by both workers and employers, which undertake the study and betterment of industrial hygiene, the instruction of members in the principles of health, and the proper care of those attacked by the disease. All permanent human progress must be by means of such co-operative effort. Few movements of modern times are more significant of man's conscious attempt at amelioration of his estate than the great preventive campaign against tuberculosis which has spread over the civilized world, and one of the hopeful chapters in its history is this experiment in self-help by those whose occupation particularly exposes them to this insidious scourge.

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REGULATION OF MILK TRAFFIC.

The Boston Board of Health has recently issued four new rules relative to the sale of milk and cream, three of which go into immediate effect. These require implicit obedience of all milk dealers to all regulations of the Board as to the filling of bottles and receptacles, forbid the sale of milk in the same room where it is bottled, and prohibit the mixture of milk with skimmed milk, condensed milk or water for purposes of sale, except in the preparation of modified milk. A fourth rule, to take effect on Jan. 1, 1910, provides that, except in hotels and restaurants, milk shall be sold only in tightly capped receptacles approved by the Board. Such regulations call renewed attention to the watchful oversight exercised by the Board of Health over the milk traffic, and to the debt owed by the public for this safeguarding of an important food supply and fertile possible field for the dissemination of disease. Probably no community of equal size has a purer milk supply, and the relatively infrequent incidence and trifling character of milk-borne epidemics bear witness to the wisdom and efficacy of such supervision. It is, however, to be hoped that in time, the milk producers will be educated to a full sense of their responsibilities.

MEDICAL NOTES.

Birth of Quintriplets. — A daily paper records the birth to Mrs. Thomas Renwick, of Newark, N. J., of five fetuses at one pregnancy, two boys, two girls and an embryo of undifferentiated sex. The weights are not given. All died within fifteen minutes. If authentic, this case adds one to the very limited number of instances of a very rare condition, but in the absence of reliable medical data it has little more than the interest of curiosity. The patient's mother is said to have had twins twice. Mrs. Renwick has previously had three single pregnancies.

Resignation of Dr. Guiteras. — The recently reported resignation of Dr. John Guiteras as chief sanitary officer of Havana, if due, as alleged, to the crippling of his department by unwise reductions in expenses, is an unfortunate commentary on governmental shortsightedness. Cuba can ill afford to lose either the public services of so distinguished and able a physician, or the protection to life and property which the efficient labor of his commission guarantees by preventing the recurrence of yellow fever epidemics. Dr. Guiteras is one of those whose later researches have confirmed and carried out in practical application the original discovery of Walter Reed and his associates, one of the most brilliant and honorable achievements of American medicine. It is more than a local misfortune, if inadequate appropriation compels him to decline further responsibility in continuing so important a work.

BOSTON AND NEW ENGLAND.

Acute Infectious Diseases in Boston. — For the week ending at noon, Aug. 3, 1909, there were reported to the Board of Health of Boston the following cases of acute infectious diseases: Diphtheria 30, scarlatina 15, typhoid fever 8, measles 25, smallpox 0, tuberculosis 81.

The death-rate of the reported deaths for the week ending Aug. 3, 1909, was 18.51.

Boston Mortality Statistics. — The total number of deaths reported to the Board of Health for the week ending Saturday, noon, July 31, 1909, was 202, against 218 the corresponding week of last year, showing a decrease of 16 deaths and making the death-rate for the week 16.91. Of this number 111 were males and 91 were females; 196 were white and 6 colored; 142 were born in the United States, 57 in foreign countries and 3 unknown; 40 were of American parentage, 134 of foreign parentage and 28 unknown. The number of cases and deaths from infectious diseases reported this week is as follows: Diphtheria, 39 cases and 2 deaths; scarlatina, 11 cases and 0 deaths; typhoid fever, 9 cases and 5 deaths; measles, 30 cases and 3 deaths; tuberculosis, 53 cases and 14 deaths; smallpox, 0 cases and 0 deaths. The deaths from pneumonia were 12, whooping cough 0, heart disease 12, bronchitis 2 and marasmus 1. There were 14 deaths from violent causes. The number of children who died under one year was 62; the number under five years 80. The number of persons who died over sixty years of age was 34. The deaths in public institutions were 81.

Cerebrospinal meningitis, 1 case.

Of the above the following were non-residents: Consumption, 1 case and 1 death; measles, 1 death.

Deducting deaths of non-residents, the total is 174. The corrected death-rate is then 14.56.

A Centenarian. — Mrs. Christina T. Bridgett died Aug. 2, in Dorchester, Mass., at the reputed age of one hundred and two years and four months. Up to her death her faculties were active and she lived a well-regulated life, to which her longevity is attributed. A sister recently died at the age of ninety-six.

NEW YORK.

Appointment of Dr. August Hoch. — After a very exacting examination, the State Civil Service Commission has certified to the State Commission in Lunacy the name of Dr. August Hoch, of the department for the insane of the New York Hospital at White Plains, as successor to Adolph Meyer, who resigned the directorship of the Pathological Institute of the New York State Hospitals in order to accept that of the Psychopathic Hospital of Johns Hopkins University.

Habeas Corpus Cases. — In his last report, Dr. Lamb, medical superintendent of the State Hospital for Insane Criminals, states that habeas corpus cases have of late been more than ordinarily frequent. He has collected and classified the history of some forty-three of these. In thirty-four the court ordered the relator discharged from the hospital, and of these thirty-four declared sane by the courts, fourteen found their way back to either prison or asylum. Eight, after their release, showed signs of mental disturbance and were troublesome to their families. Three, unable to earn their own livelihood, were cared for by their relatives. Six disappeared from view. Two committed suicide, and a single one, when last heard from, was partially self-sustaining. Of the forty-three cases, twenty-seven had committed criminal acts directly against persons and sixteen against property. Of the twenty-seven, twelve were charged with murder in the first degree, the diagnosis, in a majority of instances, indicating a chronic and irrecoverable insanity. Notwithstanding these facts and figures, Dr. Lamb expresses himself as not opposed to habeas corpus proceedings as such. It is to the manner of hearing that he makes objection, and states that it would be perfectly within the law for a judge to appoint a medical commission to sit in each case. Such a commission, composed of competent alienists, could determine the real condition of the patient, and the blunders now committed by the courts would by this means be avoided.

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Current Literature.

New York Medical Journal.

July 10, 1909.

1. *Dock, G. *A Note on the Ipecac Treatment of Amebic Dysentery.*
2. Alsberg, C. L. *Agricultural Aspects of the Pellagra Problem in the United States.*
3. Lavinder, C. H. *The Etiology of Pellagra.*
4. Duane, A. *Prognosis in Eye Diseases viewed from the Standpoint of the Patient's Rights and the Ophthalmologist's Duty.*
5. Kennedy, J. W. *Ectopic Gestation.*
6. Dunlop, J. *Relaxation of the Sacro-iliac Synchondrosis. Third Paper.*
7. Ward, R. F. *The Surgical Appendix.*
8. Keller, M. D. *The Treatment of Neurasthenia.*

1. Dock has seen gratifying results from the use of ipecac in chronic amebic dysentery, and hopes that others will try out this remedy and report their experience. The patient should be kept in bed and should fast while taking the cure. A preliminary purge of Epsom salts or sodium sulphate is advisable. The ipecac is given in salol-covered pills, the dose being from 20 to 60 gr. twice a day for three days, according to the severity of the case. Within twelve hours after the administration of the drug the stools improve and the amebæ are all dead. The salol prevents an emetic action; griping after the ipecac can be relieved by atropine hypodermically. [L. D. C.]

July 17, 1909.

1. Wright, J. *Microscopical Diagnosis of Intralaryngeal Growths from a Practical Standpoint.*
2. Walsh, J. *Diagnosis of Intestinal Tuberculosis.*
3. Karpas, M. J. *Remissions in General Paralysis: A Report of Three Cases, including Post-mortem Examination.*
4. Strickler, A. *Pneumococcic Arthritis.*
5. McMechan, F. H. *Dropper Ampoules.*
6. Goodhart, S. P. *The Reflex Mechanism and the Clinical Significance of the Important Reflexes.*
7. Secord, E. R. *A Statistical Review of One Hundred and Fifty Consecutive Laparotomies.*
8. Eckel, J. L. *A Case of Acute Veronal Poisoning.*

The Journal of the American Medical Association.

July 24, 1909.

1. Cushing, H. *The Hypophysis Cerebri. Oration in Surgery. Section on Surgery.*
2. Fisher, E. D. *Optic Atrophy in Tabes.*
3. Wood, C. A. *Epibulbar Leucosarcoma.*
4. Bull, C. S. *The Management of Acute Hemorrhagic Glaucoma in the Presence of Advanced Arteriosclerosis.*
5. Hartzell, M. B. *Morphea-like Epithelioma.*
6. Trimble, W. B. *The Chronic Scaly Erythrodermias.*
7. *Randolph, R. L. *Rodent Ulcer of the Cornea.*
8. Loree, D. *Prostatic Cancer.*
9. Wood, E. J. *Pellagra in the United States.*
10. Andrews, R. R. *The Vitality of Dental Enamel.*
11. Hansell, H. F. *Minor Points in the Surgery of Cataract.*
12. Nonne, M. *Clinical Diagnosis of the Syphilogenous Diseases of the Central Nervous System.*
13. Johnston, R. H. *Benign Tumors of the Turbinated Bodies Clinically and Pathologically Considered.*

7. Randolph considers that rodent ulcer of the cornea is impossible of identification in its earliest stages. It may be due to a specific bacterium. The most important sign is the deep undermining of the edges. Chronicity is an important point in the history. It has stages when it looks as if it were going to be entirely well in a few days, and then a fresh outbreak will follow.

8. Loree believes that prostatic cancer occurs probably oftener than in 16% of hypertrophied prostates, as stated by Walker. The growth is slower than cancer in other organs. The earliest symptoms are identical with those of senile hypertrophy. An innocent hypertrophy does not always remain benign, and early diagnosis and extirpation are the factors of our future success in its cure. [E. H. R.]

Journal of Infectious Diseases.

February, 1909.

1. *Ewing, J. *The Epithelial Cell Changes in Measles.*
2. *Schultz, O. T. *The Numerical Relationship of Treponema Pallidum to Certain Pathological Types of Congenital Syphilis.*
3. *Simonds, J. P., and Baldauf, L. K. *The Relationship of the Opsonic Index to the Leucopenia Leucocytosis following Injections of Heated Bacterial Cultures.*
4. *McClintock, C. T., and King, W. E. *The Aural Administration of Antitoxins.*
5. *Hectoen, L. *On the Mechanism of Opsonic Action.*
6. Hectoen, L. *Opsonins Distinct from Other Antibodies.*
7. Winslow, C.-E. A., and Walker, L. T. *A Case of Non-Inheritance of Fluctuating Variations among Bacteria.*
8. Swingle, L. D. *A Study on the Life History of a Flagellate (Crithidia melophagi) in the Alimentary Tract of the Sheep Tick (Melophagus ovinus).*

1. The author finds the following changes taking place in the epithelial cells in measles: (1) Local necrosis, with the formation of small vesicles; (2) isolated necrotic epithelia; (3) diffuse perinuclear vacuolation of cells of the epidermis, and of the dermal glandular structures; and (4) congestion, edema, swelling and proliferation of the endothelial cells and moderate increase of large round cells. He believes that the induration and exudation in and about the hair follicles and sebaceous and sweat glands, which have been described, are probably not specific. The colloid-like material which has often been described is probably due to necrotic material. If there is anything specific about the lesions of the mucous membrane, it is the extensive sub-epithelial infiltration with round cells, which often shows a focal distribution, and the focal necrosis. It seems to the author that the occurrence of the former probably determines the latter lesion in the skin, pharynx and respiratory tract. Koplik spots seem to be one expression of the focal character of the process. The presence of structures within and without the cells, resembling protozoa, are probably due to active degeneration and necrosis of the epithelial cells.

2. The author has made a routine examination of all fetuses and infants coming to autopsy for the presence of spirocheta pallida. He believes that the presence of the treponema pallidum is the only accurate criterion for the diagnosis of congenital lues, for in infants, both stillborn and living, there occur relatively frequently chronic inflammatory changes which render the histological diagnosis

of syphilis extremely difficult. The essential lesion in congenital as well as acquired lues is the vascular involvement, but in the congenital form of the disease the diffuseness of the interstitial inflammation may overshadow and hide the more essential characteristic vascular involvement. He finds two groups of cases: those showing vascular involvement and chronic interstitial inflammatory changes, and those which show none of the lesions characteristic of lues. In the first group comparatively few organisms are found, while in the second they are present in astonishing numbers.

3. The authors injected killed cultures of B. coli and B. pyocyaneus into the peritoneum of rabbits to find out the possible relation of the opsonic index to the leucopenia and leucocytosis which has been observed to follow injections of killed cultures. They find the leucocytes more sensitive to bacterial injections than the opsonic index. Their variations are greater; the period of greatest leucopenia precedes the greatest fall in the opsonins, and the period of greatest leucocytosis precedes the greatest rise in the opsonic index, which usually reaches its maximum only after the leucocytes have returned to normal.

4. The authors find that the oral method of administering the antitoxins of diphtheria and tetanus may be made effective if used as follows: In treating children they give one glass of a 1% bicarbonate of soda solution one-half hour before administering the dose of antitoxin. With the antitoxin is given one minim of fluid extract of opium and from four to ten minims of a saturated solution of salol in chloroform. When possible no food should be given by mouth for at least four hours before administering the serum. They have never seen any evidence of "serum sickness" in their animals or in children so treated. They believe that the oral method is the preferable one for prophylaxis on account of the absence of danger and the ease of administration, and because the cost may be materially lessened. The hypodermic method is the only one to be recommended for curative purposes at the present time.

5. Hectoen, as the result of his experiments, finds that in most cases serum, normal as well as immune, owes its full effect to a specific thermostable element which unites firmly with the object of its action, and to a thermolabile element which seems to remain free in the fluid. He believes that the claim that the opsonic action of normal serum in general is caused by the lytic amboceptor and complement, and that of immune serum largely by entirely different substances, is not established beyond question. On the other hand, the view that the opsonic substances in normal and immune serum are specific and identical, differing only in quantity, harmonizes well with the established facts in regard to these substances as well as in regard to antibodies in general. [W. B. R.]

The Journal of Medical Research.

April, 1909.

1. *Kneass, S. S., and Evans, J. S. *The Quantitative Relations of Antigen, Amboceptor and Complement in the Estimation of Hemolysis.*
2. Frothingham, C., Jr. *An Acute Pancreatitis without Necrosis or Bacterial Invasion.*
3. *Stone, B. H., and Sprague, L. P. *Some Studies of the Physiological Leucocyte Content of Cow's Milk.*
4. *Hiss, P. H., Jr., and Zinsser, H. *A Report of Eleven Cases of Staphylococcus Infection Treated with Leucocyte Extract.*
5. *Lucas, W. P., and Gay, F. P. *Localized Anaphylactic Intoxication following the Repeated Injection of Antitoxin.*
6. McCampbell, E. F. *Malignant Tumors in Mice. With a Report of a Spontaneous Adeno-Carcinoma in a House Mouse (Mus Musculus).*
7. *Dolley, D. H. *The Pathological Cytology of Surgical Shock.*
8. Robertson, A. R. *Rhabdomyosarcoma of the Uterus, with the Report of a Case.*
9. Buxton, B. H., and Rahè, A. H. *Effect of Dilution upon the Flocculation of Colloids.*
10. *Lord, F. T. *A Study of Specificity and Sensitization by Means of the Cutaneous Test with Human and Bovine Tuberculosis.*
11. *White, W. C., and Graham, D. A. L. *A Quantitative Modification of the Von Pirquet Tuberculin Reaction and Its Value in Diagnosis and Prognosis.*
12. North, C. E. *An Agar Gelatin Medium.*
13. Watabiki, T. *The Behavior of the Gonococcus in Carbohydrate Media.*

1. The authors describe a number of experiments to determine the quantitative relation of antigen, amboceptor and complement. Their methods of work are fully described in the article. They conclude that it may be possible to obtain the definite quantitative relations of the three members of the hemolytic series and the resulting hemolysis. They used as antigen sheep's corpuscles; as amboceptor, rabbits' serum immunized to sheep's corpuscles; as complement, guinea pig serum. They insist on the importance of such determinations before definite conclusions can be drawn from experiments in which the phenomenon of hemolysis is used as an indicator in specific reactions of blood sera.

3. The authors made a series of simultaneous counts of the leucocytes in the milk and in the blood of a number of cows to find out the relation of leucocytes in the milk to the leucocytes in the blood. The results show that the average number of leucocytes of the cow's blood is between six and ten thousand per cubic millimeter, subject to no such variations as the milk leucocytes content; that there is absolutely no relation between the general blood condition and the leucocyte content of the milk, thus indicating that variations in the latter are due to local causes entirely; that there is apparently a tendency in certain cows to a high leucocyte content in milk over a considerable time. From a series of counts of the leucocytes in the milk of two cows from the time of beginning lactation until they dried up, the authors feel that it is hardly right to have confidence in an arbitrary numerical leucocyte standard as a reliable criterion of the sanitary fitness of milk when taken from single cows, yet they believe that the physiologic average is considerably below 500,000, and that very seldom would the count of the mixed milk of ten or more cows go above this figure unless there were present abnormal conditions in some of the animals.

4. The authors report eleven cases of localized infection with staphylococcus aureus where treatment with leucocyte extracts produced very favorable results.

5. The authors have investigated a series of one thousand cases where antitoxin was given as a prophylactic measure and repeated at varying intervals. They find that an immediate localized reaction of anaphylaxis in the nature of edema and infiltration, with tenderness, followed in untreated cases by necrosis, occurs in human beings on reinjection with antitoxin. The percentage of cases in which this reaction occurs increases directly with the number of injections at short intervals given subsequent to a primary injection. This local reaction corresponds in all particulars with the Arthus phenomenon in rabbits. The local reaction may or may not be associated with the immediate systemic symptoms described by Von Pirquet and Schick; as the number of repeated injections at short intervals (twenty-one days) is increased, the Von Pirquet and Schick reaction decreases in proportion to an increase in the local reaction. The discovery of this lesion completes the analogy between the serum sickness in human beings and the phenomenon of serum anaphylactic intoxication in animals.

7. Dolley has studied the pathologic cytology of surgical shock in the dog. Shock was produced by manipulation of the peritoneal contents. This paper deals with the alterations occurring in the Purkinje cells of the cerebellum. The effect of anemia alone, without shock, has been studied, and transfused dogs have been used where anemia could not exist. He finds that there occur deviations from the normal amount of intranuclear and extranuclear chromatic material, and variations in the distributions of both. There may be an increase or decrease in amount, and both may occur in different cells of the same animal, depending on the duration and the severity of the shock produced. The increase of the chromatic material appears to be the initial reaction, and is followed by progressive decrease. The cells also show structural changes. They become edematous and vacuolated, leading to general disintegration of the reticulum, in which disintegration the

nucleus shapes. The cells may be doubled or tripled in size. The nuclear membrane may rupture.

10. The author concludes from a number of cutaneous tests which he has made in the past year that the cutaneous tuberculin test in man fails to afford evidence of a specific and differential quality in human and bovine tuberculosis. In using avian tuberculin he found that animals and man vary greatly in their susceptibility. As to sensitization, the author believes that his results are not sufficient evidence on which to base a definite conclusion that the first dose of tuberculin given will produce sensitization in the subject tested.

11. White and Graham have developed a technic for the quantitative modification of Von Pirquet's reaction. They use a throttle pipette graduated to 0.01 ccm., Koch's old tuberculin in various percentages, Von Pirquet's scarifier and an ordinary vaccine shield. [W. B. R.]

Annals of Surgery.

July, 1909.

1. *De Nancrede, C. G. B. *The End Results after Total Excision of the Scapula for Sarcoma.*
2. Mears, J. E. *The Old and the Beginning of the New in Surgery.*
3. *Blake, J. B. *Sudden Death: A Study of Certain Cases occurring during Physical Exercise or Psychic Strain.*
4. Hutchings, W. *The Treatment of Tetanus by Chloretone.*
5. McGraw, T. A. *Aneurysms in Young People.*
6. Ransohoff, J. *Gunshot Injury of the Brain.*
7. Powers, C. A. *Complete Detachment of the Facial Bones from the Cranium, together with Multiple Fractures of the Sides and Base of the Skull.*
8. Mayo, C. H. *The Parathyroid Question.*
9. *Shepherd, F. J., and Duval, C. W. *The Histopathology of Goiter.*
10. Bell, J. *Excision of the Larynx for Carcinoma.*
11. Peck, C. H. *The Operative Treatment of Heart Wounds.*
12. Friedrich, P. L. *The Operative Treatment of Tuberculosis of the Lungs with Total Thoracoplastic Pleuropneumolysis.*
13. Freeman, L. *Resection of Ribs, combined with External Pressure in the Treatment of Tuberculosis of the Apex of the Lungs.*
14. Ochsner, A. J. *The Treatment of Fistulæ and Abscesses following Operations for Empyema of the Thorax.*
15. Vander Veer, A. *Empyema Thoracis.*
16. *Meyer, W. *Esophagogastrostomy after Intrathoracic Resection of the Esophagus.*
17. Lane, W. A. *Chronic Intestinal Stasis.*
18. *Mayo, W. J. *Surgery of the Large Intestine.*
19. Bryant, J. D. *Distortion of the Mesentery and Its Relation to Intestinal Obstruction.*
20. Coley, W. B. 1. *Strangulated Retroperitoneal Hernia of the Intersigmoid Fossa.* 2. *Interparietal Ventral Hernia at McBurney's Point.* 3. *Resection of Four Feet of Intestine for Intestinal Obstruction of Strangulated Hernia Operated on Four Months Before.*
21. Parham, F. W., and Hume, J. *Vesico-Intestinal Fistulæ.*
22. Maclaren, A. *A Study of One Hundred and Thirty-One Consecutive Cases of Fibroid Tumors of the Uterus demanding Operation.*
23. *MacKenzie, K. A. J. *Resection of the Sciatic Nerve.*
24. *Bristow, A. T. *Observations on the Inequalities of the Right and Left Femur.*
25. Finney, J. M. F. *The Transportation of Skin Flaps from One Part of the Body to Another and from One Individual to Another.*
26. *Porter, C. A. *Massive Keloid of the Face and Hands.*

1. De Nancrede presents a painstaking tabulation of all cases of excision of the scapula for sarcoma accessible in medical literature and all unpublished cases with which he has been supplied. Of 65 cases of total excision for growth confined to the scapula, including some cases where the healthy clavicle or head of the humerus was removed, and 2 cases where the tip of the coracoid was left to facilitate operation, he finds that 26 died in less than a year, 3 inside of eighteen months, 2 survived two years, 2 lived three years, and 1 five years. Only 1 case is nearly certainly cured and 6 probably cured, although one of these required a secondary operation. The showing for 9 cases in which the disease had invaded the surrounding tissues requiring their removal is no better. De Nancrede believes that we too often ignore the presence of innumerable minute metastatic deposits in the lung or other organs. Their fatal presence is too often demonstrated after all the primary focus has been thoroughly removed where no recurrences appear *in situ*. The author recommends early intercostohumeral amputation rather than complete excision of the scapula.

3. Blake studied 225 cases of "sudden, non-traumatic, unexpected death." Deaths were due to status lymphaticus, myocarditis, acute dilatation of the heart, heart rupture, valvular heart lesions, hemorrhage (aneurysmal, pancreatic), arteriosclerosis (particularly coronary), alcoholism, and thrombosis and embolism (particularly pulmonary). The conditions immediately preceding death were in 20% of the cases severe, unusual exertion; in 20%, fright or intense emotion; in 25%, moderate exercise; and in 33%, rest or sleep. More than 75% of the individuals were over forty years of age.

9. After a microscopic study of 59 variously diseased thyroids (chronic inflammation, simple cysts, Graves' disease, carcinoma, intercystic papilloma and angioma), the authors disagree with MacCallum's belief that budding and infolding of the epithelium of the gland is characteristic of Graves' disease. They found such budding in 20 cases, not constantly in Graves' disease, and frequently in other conditions. They are of the opinion that such epithelial formation may occur in any thyroid undergoing active hypertrophy, especially in the absence of colloid.

16. Meyer presents a detailed description of a method of esophago-gastrostomy after intrathoracic resection of the esophagus, — a method elaborated after considerable animal experimentation. Incision in eighth intercostal space, lung (distended under differential pressure) pushed upward and inward by gauze tampons, vagi stripped from esophagus, diaphragm made tense by traction on esophagus, blunt forceps passed through diaphragm to right of esophagus, part of stomach pulled into thorax and stitched to diaphragm with silk, stitches closed together to avoid hernia, diaphragmatic peritoneum included to insure serous agglutination, cuff made at lower end of esophagus, esophagus cauterized between a proximal clamp and a distal tie, and cuff sutured over cauterized end, stomach milked and segment clamped. Second incision in fifth intercostal space: esophagus tied above with rapidly absorbing catgut, clamped distally, and cut between; stomach sutured to posterior wall of esophagus. Transverse or elliptical incision in stomach to fascial layer three-quarters inch below suture line, upper lip sutured to esophagus just below external posterior row, long sutures placed from anterior lip to esophagus just above ligature, mucosa of stomach incised, esophageal stump inserted, anterior sutures tied, anterior sero-muscular layer of sutures placed over these, pleura stitched to stomach over anastomosis.

18. After a consideration of the anatomy of the large intestine, with special reference to its blood supply and lymphatic drainage, the author emphasizes the importance of an interval of forty-eight hours between the administration of the cathartic and the operation, and for preservation of asepsis recommends mobilization of that portion of the bowel concerned in the resection by dividing the peritoneal reflexion to the abdominal wall, or, in the case of the transverse colon, the gastro-colic omentum. He then presents 100 consecutive resections of the large intestine, 61 for malignancy with 3 deaths, and 39 for benign conditions with 4 deaths. The cases are finally tabulated with reference to age and end results.

23. MacKenzie reports the excision of 10¾ inches of the sciatic nerve for sarcoma originating in the perineural connective tissue. Sixteen days later the internal popliteal nerve was dissected out, split to within one-half inch of its origin and a reflected flap inserted into the sciatic stump. Forty-six days later the external popliteal was similarly treated. At the end of eight months there was recovery of motion and power in big muscle groups, practically complete recovery of trophic function, extensive photopathic recovery, much epicritic recovery, almost

universal recovery of deep sensation, and locomotion was independent and unaided. MacKenzie attributes his success to early operation, the implantation of large "nerve-elements" to give path for regeneration, implantation in muscle-beds to avoid early involvement in scar, and absolute asepsis.

24. Interesting in their bearing on the medico-legal aspect of thigh fractures are Bristow's measurements of one hundred and twenty-four paired femora and humeri in that they show that asymmetry is the rule. They also refute the rule of Jarvis S. Wright that unequal femora are associated with unequal humeri and that the longer humerus and femur are on the same side.

26. The article was written to place on record a series of photographs which tell more than words. Although unfinished, this work is already a triumph of cosmetic surgery. [T. W. H.]

The Lancet

July 3, 1909.

1. **Moullin, C. M.** *Clinical Lecture on the Advisability and the Method of Operating in Cases of Acute Inflammation of the Appendix in the Period from the Third to the Sixth Day.*
2. ***Russ, C.** *Electrical Reactions of Bacteria applied to the Detection of Tubercle Bacilli in Urine by Means of a Current.*
3. **Walters, F. R.** *The Opsonic Test.*
4. **Jones, H. E., and Benians, T. H. C.** *Case of Multiple Aneurysms of the Aortic Arch and Thoracic Aorta.*
5. **Hewitt, F. W., and Blumfeld, J.** *Report upon the Routine Use, by the Open Method, of a Mixture of Chloroform and Ether.*
6. ***Bailey, C. F.** *High-Frequency Currents and Their Medical Application.*
7. **Biggs, G. N.** *Case of Multiple Intracranial Tumors with Involvement of Both Auditory Nerves.*
8. **Ryall, C.** *New Method for Attempting to Secure Sphincteric Control after Colostomy.*
9. **Jones, J. A.** *An Unusual Case of Extradural (Perisinus) Abscess of Otitic Origin and Its Relation to Melancholic Stupor.*
10. **Pringle, S. S.** *Case of Abscess of the Pancreas.*
11. **Yearsley, M.** *Four Cases of Chronic Middle-ear Suppuration with Involvement of the Labyrinth.*

2. Russ has investigated the electric reactions of bacteria and their application to the detection of tubercle bacilli in the urine. He has found that different groups of bacteria react in different ways to the electric current, some being attracted to the positive and some to the negative pole. In the case of tubercle bacilli he has used this means of detecting them when they are present in very small quantities in the urine. By means of an ingenious contrivance, which he describes, the electrode, to which the tubercle bacilli have an affinity, is in the form of a trap, which collects the bacilli, so that the specimen can be stained and the organisms demonstrated by the microscope. As this is much quicker than the guinea pig test, this method may be of considerable use to those doing this class of work.

6. Bailey, in an article on the medical application of high-frequency currents, believes that there are four marked effects of electric energy produced by high-pressure currents: (1) Increased cell activity and increased metabolism; (2) return of a locally inflamed tissue to its normal; (3) either general vascular dilatation or contraction, according to the particular method used; and (4) inhibition, diminished sensory or motor excitability. [J. B. H.]

British Medical Journal.

July 3, 1909.

1. **Duckworth, D.** *Clinical Lecture of Tedious Recovery from Illnesses.*
2. ***Jones, R.** *Address on the Surgical Treatment of the Rheumatoid Group of Joint Affections.*
3. ***Lockwood, C. B.** *Clinical Lecture on Arthrotomy of the Knee for the Removal of Inflamed Synovial Fringes and of the Pads of Malgaigne.*
4. **Gullan, A. G.** *Some Aspects of Life Insurance from the Standpoint of the Medical Examiner and the Agent.*
5. **Manwaring-White, R.** *Two Cases of Osteitis Deformans (Paget's Disease).*
6. **Rockliffe, W. C.** *A Danger Arising from the Use of Plated Instruments in Ophthalmic Operations.*
7. **Fenwick, E. H.** *Value of Expert Radiography and Cystoscopy in the Detection of Obsolesced Tubercle in the Kidney.*

2. Jones, using Goldthwait's classification of the rheumatoid group of diseases, describes the surgical treatment of the various joint diseases under the headings of villous arthritis, hypertrophic arthritis, atrophic arthritis, septic arthritis and chronic gout. The article is illustrated by numerous photographs and diagrams. He mentions briefly the subject of transplantation of joints, and cites a case in which this has been successfully done by Lexer.

3. Lockwood gives his opinion as to various conditions in which the operation of arthrotomy for the removal of inflamed synovial fringes and of the pads of Malgaigne is justifiable. These so-called "pads of Malgaigne" are small adipose pads immediately above the articular surface of the femur and on either side of the upper end of the patella. They were first described in 1859 by Malgaigne. They frequently lead to errors in diagnosis, being considered foreign bodies in the knee. [J. B. H.]

Deutsche Medizinische Wochenschrift. No. 25.

June 24, 1909.

1. **Stadelmann, E.** *Thrombosis of the Pulmonary Arteries.*
2. **Kellner.** *The Treatment of Epilepsy.*
3. **Halben, R.** *Infantile Tabes and Tabo-Paralysis in a Ten-year-old Girl.*
4. **Raebiger, A.** *Psychosis and Induction Psychoses.*
5. **Döblin, A.** *The Determination of Proteolytic Ferment in Feces.*
6. ***Hesse, F.** *Diphtheria Bacilli as a Cause of Sepsis.*
7. **v. Hippel, R.** *Incarceration of the Cecum in the Fovea Inguinalis Medialis associated with Chronic Appendicitis.*
8. **Köhler, F.** *Statistic Contributions on the Question of the Results of Cures of Pulmonary Tuberculosis.*
9. **Rabinowitsch, M.** *A New Method for the Exact Determination of the Tubercle Bacilli in Vaccinations.*
10. **Gantz, M.** *A Certain Percussion Method with Pleural Effusions.*
11. **Barcchi, B.** *New Method for the Demonstration of Spermatozoa in Spots on Cloth.*

6. Although diphtheria bacilli usually stay localized at one point in the body and send their toxins throughout the system, cases have been reported in which the Klebs-Loeffler bacillus has been found in the different organs post mortem. There have also been reported a few cases where this bacillus has been found in the blood of the living, but in a mixed infection. Hesse reports a case of a pure culture of diphtheria bacilli being obtained from the blood of a patient giving signs of a septicemia, presumably of streptococcic origin. When the true nature of the septicemia was discovered, diphtheria antitoxin was given, but without effect. Thus his case shows again the value of making blood cultures in doubtful cases in order that appropriate treatment may be instituted. For in this case had antitoxin been given early the result might have been different. [C. F., Jr.]

Münchener Medizinische Wochenschrift. No. 27.

July 6, 1909.

1. ***Jacob, L.** *Contribution to the Question of the Clinical Significance of the Estimation of Antitrypsin in the Blood.*
2. ***Becker, G.** *The Antitrypsin Content of the Blood in Gynecology.*
3. **Bauer, F.** *A Peculiar Reaction in the Blood of the Umbilical Cord of the New Born.*
4. ***Schneider, H.** *The Etiology of Hemicrania Ophthalmica.*

5. PREISWERK, P. *On the Trigeminal Neuralgias of Dental Origin.*
6. TRAUTMANN, A. *The Diagnosis of Lead Poisoning by the Blood.*
7. WUNDER. *How can the Physician Determine in His Office the Salt and Urea-Content of the Urine?*
8. WOLFROM, G. *On Colloid and Colloidal Silver, Especially Kollargol Credé.*
9. MENDLER. *The Operative Treatment of Fractures.*
10. HERWIG, P. *Case of Bilateral Split Hand with Syndactylia.*
11. DREYER, L. *The Test for Blood by the Turpentine-Guaiac Test.*
12. HOEDER, C. *The Precission Fluidometer.*
13. FRANCKE, K. *A Shaking Percussion Hammer with a Rubber-finger Pleximeter.*
14. STEHLIK, A. *Application of Heat to the Vagina by Means of a New Apparatus.*

1. From a large number of tests on a great variety of cases the writer draws the conclusions that an increase of the antitrypsin ferment of the blood serum is apparently constant in severe cachexia, is frequent particularly when there are changes in the white corpuscles, and occurs also in a number of cases where the above-mentioned factors are absent. The true character of the reaction and its causes are too obscure to admit of using the test for diagnosis at present. He mentions as a likely possibility that the antitrypsin ferment and leucocyte ferment are identical.

2. Having tested for the antitrypsin ferment in a considerable series of patients, Becker concludes that in carcinoma a marked increase of the ferment is pretty constant, but that it occurs also in various other diseases; that when weighed with other symptoms the reaction may be useful for diagnosis, but that it is of no great value because it frequently is positive in " anatomically benign but clinically malignant tumors." In pregnancy the reaction is normal or but slightly increased, and at the time of childbirth it rises sharply.

4. Schneider reports in detail a case of migraine in which the attacks seemed to be brought on by chilling. He mentions having seen a number of similar cases and recommends that the treatment of such cases should be directed to strengthening and toughening the patients by cold baths, exercise and the like. His results from these means have been good. One of his patients was cured by changing her occupation for one where she was less exposed to drafts and changes of temperature. [G. C. S.]

BERLINER KLINISCHE WOCHENSCHRIFT. No. 28.

JULY 12, 1909.

1. *OPPENHEIM, H. *The Psychopathology of the Phobias.*
2. ROTTER, J. *The Joint Investigation by the Berlin Medical Society regarding Inflammations of the Cecum in the Year 1907 in Greater Berlin. Report on the Therapeutic Results.*
3. RÖMER, P. H., AND JOSEPH, K. *Prognosis and Incubation Stage of Experimental Tuberculosis in Guinea Pigs.*
4. COHN, M. *The Anatomy, Pathology and Roentgenology of Pulmonary Tuberculosis.*
5. BLUME, G. *On the Knowledge of Aneurysms of the Sinus of Valsalva.*
6. ARNDT, G. *Chronic Atrophic Acrodermatitis and Circumscribed Scleroderma.*
7. MICROWSKY, E. *Stern's Suggested Modification of the Wassermann-Neisser-Bruck Reaction.*
8. SÜSSENGUTH, L. *Nature and Action of the Grape-Sugar Incorporated in the Animal Body and Its Relations to Glycogen Formation.*
9. v. WÜRTHENAU, W. *Easily Changeable Electrodes.*
10. HELLER, J. *The Frequency of Hereditary Syphilis in Berlin.*
11. DAVIDSOHN, F. *Fulguration Treatment.*

1. In a comment on Dubois' article in No. 25 of this *Wochenschrift* (reviewed on page 99 of the current volume of this JOURNAL), Oppenheim takes occasion to express his substantial agreement with the views there stated. He believes, however, that in certain of the psychoses, notably the phobias, the physical elements, the abnormal irritability of vasomotor and visceral centers, constitute the essence of the disease, to which, rather than to the psychical state, treatment must be directed in order to effect a cure. Intellectually a man may laugh at the absurdity of his obsession and yet remain a helpless victim of the physiologic events which occasionally call it into being. Mechanical and hydrotherapeutics are what he needs rather than argument and persuasion. Without denying the efficacy of these agents, Oppenheim emphasizes the importance of fortifying them with tangible, material treatment. [R. M. G.]

ANNALES DE L'INSTITUT PASTEUR.

MAY 25, 1909.

1. *NICOLLE, C. *Infantile Kala Azar.* (To be continued.)
2. BERTRAND, G., AND DUCHACEK, F. *Action of Bulgarian Ferment on the Principal Sugars.*
3. BORDET AND GENGOU, O. *The Endotoxin of the Whooping Cough Bacillus.*
4. THIROUX, A., AND TEPPAZ, L. *Contribution to the Study of the Epizootic Lymphangitis of Equides in Senegal.*
5. THIROUX, A., AND TEPPAZ, L. *Treatment of Trypanosomiasis in Horses by Orpiment alone or with Atoxyl.*
6. REMLINGER, P. *Contribution to the Study of the Hereditary Transmission of Antirabic Immunity.*

1. Nicolle has worked for some time on infantile kala azar and describes the disease as similar to the kala azar Indow only that it occurs in infants and children, which the Indow type rarely if ever does. He reports about eleven cases and thinks there are many overlooked which will appear when the disease is better known. The symptoms are a progressing anemia, irregular fever and gastro-intestinal disturbances. If this irregular fever cannot be checked by quinine the disease should be more than ever suspected. Marked emaciation is another symptom. Physical signs, besides the emaciation and anemia, are enormously enlarged spleen, slightly enlarged liver, enlarged glands, bronchitis. Of the inconstant symptoms, hemorrhage is the most common; also there are at times purpuric eruptions, slight edema and joint pains.

The duration of the disease is months and years. The majority of cases terminate fatally, but this author believes spontaneous cure possible. As the cases occurred in poor surroundings, the treatment and blood picture have been poorly worked out. The pathologic findings are enormous hypertrophy of spleen, slight hypertrophy of liver, red color of bone marrow. In these three organs the parasite is found very frequently; in other organs, rarely. The parasite is a protozoön in the Leishmania class and corresponds entirely with Leishmania donovani and Leishmania tropica. [C. F., JR.]

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Correspondence.

PARIS LETTER.

LOOKING BACKWARD.

[From Our Special Correspondent.]

PARIS, July 10, 1909.

Mr. Editor: Talking about Berthelot, the great chemist, one day, a man remarked to a friend, " Il fait de la chimie, je crois." " Non," replied the other, " il fait *la* chimie."

We cannot, however, all be leaders in our respective branches, and the majority of human beings have to content themselves with following in the footsteps of these leaders as closely as each man's personal endowments enable him to do so.

But while this constant effort to keep up with the times is usually more than sufficient to supply the ordinary mortal with occupation, it is not a bad plan at intervals to take a few moments' pause, to look around, size up the present situation and estimate the ground covered. It is also not amiss occasionally to cast a glance backwards and compare our present position with the state of affairs a certain space of time previously.

This is what I was led to do myself recently on the occasion of the present of a book. A very old lady living here was going over all her old possessions when she came across a venerable work on medicine, which she thought might interest me.

The title of this volume is "A Treatise on the Principal Diseases of Dublin," by one Martin Tuomy, M.D. He has various letters after his name, according to the amiable English fashion, and writes himself Fellow of the King and Queen's College of Physicians in Ireland. So it is not unfair to presume that he was somebody in his day and town. He wrote in the summer of 1809; consequently, just one hundred years ago.

I fancy that the experience of physicians at home is very similar to ours over here, and that they meet with great regularity the female patient who, when desirous to make herself particularly agreeable, turns with a sigh and says, "O doctor, why have not you medical men been able to advance as rapidly as the surgeons, and why cannot you do the *wonderful* things they do?"

I have had this remark made to me so often that I sometimes feel that we medical men must in reality be an awful collection of impenitent rotters if things are so bad with us as to warrant even that *ignobile pecus*, the average run of female patients, having their little fling at us with such regularity. But after perusing the estimable Tuomy's book above alluded to I have come to the conclusion that things in medicine are not quite so bad as they seem. We may not know much, but our knowledge is really considerable when compared with what appears to have been known a century ago.

Although this volume of Tuomy's is called a treatise, it does not seem to have been a regular didactic textbook; rather, a *vade mecum*, or something on the order of a book for popular use. I am not familiar with medical writings of former ages, but if this is a classical work, then matters in those days must have been even worse than I thought. What, for instance, can be said for a treatise in which diseases follow each other in the following order: Dropsy, typhus, worms, catarrh; rheumatism, gastro-enteritis, measles; chincough, leucorrhea. The writer calls these all "diseases," and springs with a light heart from pertussis to leucorrhea and then to measles and worms.

It is a small octavo volume of four hundred pages and seems to cover the whole of the ordinary medical complaints of Dublin: general medicine, the specialties as then known and therapeutics. Unfortunately, the last fifty pages are lacking in my copy; they contained the list of Tuomy's favorite prescriptions, which he had numbered, and to which he constantly refers in the main portion of his book. These pages have been neatly cut out with a knife, and it would not surprise me if this had been done by some budding practitioner, in order to have them in his pocket for handy reference!

It is a curious sensation to go through the pages of a medical work of this sort. It gives the impression of having been written by an observant child, with just intelligence enough to look at a tongue, feel a pulse, note diarrhea, constipation, cough, etc. There is not a word of scientific medicine, such as we consider it to-day; not a word on temperature, not a chart, not an illustration, no auscultation or percussion, no pathological anatomy or histology, and, of course, the omnipotent germ is totally absent. It is a sort of a frame without the picture! At any rate, without the picture as we now think we see it.

For I always have the awful sensation in my solar plexus when passing judgment on a preceding period and throwing up my hands at the depths of their ignorance that *with absolute certainty* the men of a *future* day will do the same toward us and will wonder how it could possibly be that thinking beings could ever have held such monstrous opinions on various topics as we do now! I do not pretend to know just what these present follies may be, but that they are there is open to no species of doubt.

However the question may be as regards our present shortcomings, — and it being fully understood that I take up the rôle of a critic with a vivid appreciation of my own turpitude and deficiencies, — it is only fair to say that one's hair simply stands on end at the medical horrors of this book. To say that the patient must have had a pretty tough time in those days, and that the doctor must have been a far worse infliction than the disease, is to sum the question up with one's mind filled with the milk of human charity. Our *confrères* of the day had a heavy hand. They appear to have been content with a few remedies, but to have resorted to them strenuous-like; when they were not purging with reiteration and pushing their mercurial pills and inunctions to salivation, — without which physiological result they considered that no business had been done, — they were filling in the intervals with bleeding, a pint at a time, and with a generous distribution of vast blisters at which one simply stands aghast. And then when the patient felt feeble, after a spell of the above enlightened therapeutics, the medical adviser backed him up with a liberal dose of cayenne pepper, which our friend Tuomy refers to in his work as one of the most "grateful aromatics" he knows of!

The Irishman has always had a reputation for resistance, but few things give such an impression of the extent to which he must have been endowed with this quality in those days as the fact that any patients survived these pharmaceutical administrations.

It is curious again to note the eye for proportions that the author had with diseases. That is, it is curious to *us*, unless we are to suppose that the medical constitution of Dublin and Ireland was utterly different from what now exists in a town such as the one in which I live.

His book is a practical one and he opens up with a mysterious affair he calls bilious fever. This was apparently the common, everyday disorder of his time, both in dispensary and private practice; he goes into it at great length (for him) and describes its symptoms and treatment minutely. He looks on it as the leading affair in a group called "the bilious and hepatic diseases of Dublin," and which comprises "bilious fever, inflammation of the liver, jaundice, cholera, dyspepsia and indigestion, and dysentery or fluxes." A pretty comprehensive group, as you observe!

One endeavors in vain to make this bilious fever fit into any thing of such importance known at the present time. And, to go back to what I said about his idea of proportions, he makes it his leading disorder, devoting twenty-three pages of his book to it, whereas fifteen pages are given to worms and fourteen pages to phthisis!

Dropsy he writes of as "one of the best known and most fatal of all chronic *diseases*." But that he should have looked on many symptoms and conditions (as we now understand them) as morbid entities is only natural. Laennec and Bright were then unknown. His book, for instance, contains no mention whatever of heart disease, kidney disease, pleurisy, etc.

When we come to diagnosis we meet with some things that, even allowing for the times, seem phenomenal. You would never guess, from now to doomsday, the name of the disease for which he says "worms" may be most readily mistaken. The men of old times prided themselves on their clinical sense, which, in default of any of the many laboratory aids to diagnosis which we now possess, must undoubtedly have become very refined. But when a practitioner with the titles of Tuomy writes a book on medicine in which he states that "the disease with which worms may be most easily confounded is *hydrocephalus*," you wonder whether you have not reached the limit of things permissible.

In another chapter he says that pneumonia, with which he seems quite familiar in spite of his ignorance of auscultation, "is distinguished from the inflammations by the seat of the disease," and then proceeds to make a differential diagnosis *inprimis* between it and what he calls "hepatitis"! Further on he makes a differential diagnosis between rheumatism and gout, *syphilis* and SCURVY! If this is a sample of the clinical acumen of our ancestors, the question arises whether these gentlemen's talents have not been seriously overrated.

Under quinsy he has a paragraph that went to my heart, and of which long and painful personal experience with this disorder enables me fully to appreciate the exactitude: "When the matter is discharged all distress is completely at an end; and it is very remarkable that in many instances there is but a small quantity of pus discharged, where there had been most excruciating pain." If the remainder of his book were such gospel truth as that, it would be a pearl beyond price. Every word of that phrase is veracity personified.

He has four and a half pages on a *disease* called "enteritis," which is to be diagnosed from "colic." These pages are most interesting, for here we have our modern appendicitis, together with other acute abdominal conditions, —

cholecystitis, salpingitis, etc., with or without perforation and peritonitis. All this in four and a half pages, whereas twenty-three went to bilious fever! I am wondering inwardly whether this latter disorder may not possibly be that curious and common condition in America, ptomaine poisoning. This is an occurrence we rarely see abroad; and as so many, many Irishmen emigrated to the United States, it seems not unlikely that they may have taken their Dublin specialty with them, and that it may have been transformed in the course of time into this modern American specialty.

In his treatment Tuomy is a man of optimistic convictions. Happy days those must have been, for his chapters on " treatment " are all headed " Cure "! The practice of medicine must have been a pleasure then, for the doctor at any rate, if not altogether for the patient.

" Riding on horseback is the best remedy for asthma," he says, and then proceeds to make very sensible remarks about life, customs and climate in this condition. But habit at last runs away with him once more, and as soon as the asthmatic patient manifests any special symptoms, such as an attack, catarrh, depression, etc., he opens fire with the heavy guns at once, and purges, bleeds, emetizes, blisters and restricts diet, until the reader is simply appalled.

Strange to say, his remarks on the care of pulmonary tuberculosis are really not at all bad. For once in the book the devastating whirlwind of drastics, venesection and blisters is stayed. He cannot withstand the temptation to bleed in hemoptysis, on the homeopathic principle presumably, but otherwise he does fairly well. " By early attention to this complaint much may be done, at least to protract life. Pure, dry and temperate air . . . are of essential service; where it is practicable, the patients ought to be sent to climates of equal and regular warmth. . . . The diet should be light and easy of digestion, such as milk, particularly the milk of asses, mares or of women (!) . . . Raw oysters are in many instances well relished." He only lacks a sanatorium at a moderate altitude, sheltered from the prevailing winds, and on a dry, porous soil, to be quite up to date. But the depleting mania finally comes to the front, and he goes on: " All very nourishing diet must be avoided." Too much sustenance would, no doubt, have produced " phlegm," which would have " overcharged the humors," and then the mercurial purgatives would have had to be distributed once again!

He proceeds: " The best medicines are those which are calculated to discuss (*sic*) tubercles, but it is doubtful if we possess any medicine adequate to such a purpose." (*Tu parles, cher Tuomy!*) " Barytes muriata is much applauded in internal and external scrofula. . . . Cicuta has often been given with great relief."

On the whole, we can only look on this book, as I said in the beginning, with a feeling of horror and of thankfulness that it was not our lot to live in those times. Is it any wonder that homeopathy, which put an end to this deadly period, had the vogue we all know of for a time? Would not any " pathy " have succeeded after such veterinary practice as that?

Tuomy's great remedy, the arm he mainly relied on, was the purgative, preferably mercurial. Here are his views: " In the simplicity, the propriety, and success of this treatment, I profess myself indebted to the valuable publication of Dr. J. Hamilton, of Edinburgh, on the effects of purgative medicines, a work which I hold to be one of the greatest treasures that has been published on the practice of medicine."

The fact is, we medical practitioners of to-day need not feel too badly when the up-to-date female tells us in honeyed tones that we are little better than a band of idiots, too deeply embedded in routine and too fettered by prejudice to follow the times and to take to New Thought, Emmanuel or other meteoric panaceas for the relief of our fellow-men. We do not know much, that is certain; but the better-class medical man knows that he does not know, and that is always the foundation of knowledge. We can at least safely claim that we know a good deal more than did our predecessors of a century ago, and that we know enough not to be carried off our feet by foolish and evanescent movements that have no more solid foundation than the inexhaustible *bêtise humaine.*

SPECTATOR.

RECORD OF MORTALITY

FOR THE WEEK ENDING SATURDAY, JULY 24, 1909.

CITIES.	Reported deaths in each.	Deaths under five years.	CITIES.	Reported deaths in each.	Deaths under five years.
New York	—	—	Waltham	—	—
Chicago	534	165	Pittsfield	4	1
Philadelphia . . .	—	—	Brookline	2	2
St. Louis	—	—	Gloucester	6	1
Baltimore	210	108	North Adams . .	9	8
Cleveland	—	—	Northampton . .	3	1
Buffalo	—	—	Chicopee	14	12
Pittsburg	—	—	Medford	2	1
Cincinnati	—	—	Beverly	4	1
Milwaukee	—	—	Leominster . . .	5	1
Washington . . .	—	—	Hyde Park . . .	2	1
Providence . . .	—	—	Melrose	4	0
Boston	188	56	Newburyport . .	3	2
Worcester	41	18	Revere	5	3
Fall River	61	46	Westfield	6	3
Cambridge	23	7	Woburn	5	2
Lowell	31	12	Peabody	—	—
New Bedford . .	24	15	Marlboro	4	0
Lynn	18	7	Attleboro	1	1
Springfield	28	15	Adams	—	—
Lawrence	21	10	Clinton	3	0
Somerville	13	3	Gardner	3	—
Brockton	6	1	Milford	3	1
Holyoke	23	12	Watertown . . .	1	0
Malden	5	1	Plymouth	—	—
Chelsea	12	1	Southbridge . . .	4	2
Newton	4	—	Weymouth . . .	3	0
Salem	17	9	Framingham . .	—	—
Haverhill	13	1	Wakefield	—	—
Fitchburg	—	—	Webster	—	—
Everett	4	1	Arlington	4	—
Quincy	4	1	Greenfield	0	—
Taunton	18	6			

RECENT DEATHS.

DR. GEORGE HEYWOOD, a graduate of Harvard in the class of 1887, and for the last eighteen years a practising physician in New York City, died suddenly from cerebral apoplexy on July 30.

DR. HENRY T. KELSEY, of Brooklyn, N. Y., died at his summer home at Atlantic City, N. J., on July 27.

DR. ALBERT M. CURRY, of Brooklyn, N. Y., died suddenly at Atlantic City, N. J., on July 26.

DR. HOLDEN WARD, a prominent physician of New Jersey, died on July 19, at Bad-Nauheim, Germany, whither he had gone in April last for treatment on account of heart trouble. He was born in Newark, N. J., in 1861, and lived there until four years ago, when he removed to Orange. In 1879 he was graduated from Princeton College, and three years later from the College of Physicians and Surgeons, New York. At the time of his death Dr. Ward was a medical director of the Prudential Insurance Company.

DR. CLAIR PARKHILL, a leading physician of Steuben County, N. Y., died at his home in Hornell, on July 20, from cerebral apoplexy. At the time of his death he was president of the Erie Railway Surgeons' Association.

BOOKS AND PAMPHLETS RECEIVED.

A Theory Regarding the Origin of Cancer. By C. E. Green. Second edition. Illustrated. Edinburgh and London: William Green & Sons. 1909.

Exercise in Education and Medicine. By R. Tait McKenzie, B.A., M.D. Illustrated. Philadelphia and London: W. B. Saunders Co. 1909.

The American Illustrated Medical Dictionary. By W. A. Newman Dorland, A.M., M.D. Fifth edition, revised and enlarged. Philadelphia and London: W. B. Saunders Co. 1909.

The Indeterminate Sentence. By Clark Bell, Esq., LL.D. Reprint.

Medical Expert Testimony. By Samuel P. Goldman, Esq. Reprint.

The Preparation for the Study of Medicine. By Frederic T. Lewis, M.D. Reprint.

Surgical Diagnosis. By Alexander Bryan Johnson, Ph.B., M.D. Volumes I and II. Illustrated. New York and London: D. Appleton & Co. 1909.

Address.

THE PROBLEM OF CANCER CONSIDERED FROM THE STANDPOINT OF IMMUNITY.*

BY FREDERICK P. GAY, M.D., BOSTON,
Harvard Medical School.

The probability of applying the principles of immunity, determined by studies on bacterial infections, to the problem of cancer was not very great so long as this disease was studied only as it occurred in human beings. The introduction of experimental cancer research in animals through transmissible tumors has made the possibility of combating this disease by means of vaccination or specific serum much more hopeful. In cancer, no parasitic etiological factor has as yet been demonstrated, but progress toward a prevention of the disease would seem at the present moment not to be dependent on the discovery of such an agent. We have indeed in rabies and in smallpox two diseases that may be successfully prevented, and, if we regard contagion as the beginning of the disease itself, may be cured, in spite of the fact that we possess little or no exact knowledge as to the etiological agent in either of these maladies. We are not, indeed, it seems to me, primarily interested at the present moment in discovering the cause of cancer, particularly if we may regard the tumor itself as the agent of infection and the body of the host as a culture medium (Ehrlich).

It may be well, however, to consider, first, certain agents which have been claimed, and are still being claimed, to be the cause of cancer, and, second, to consider in particular certain accessory etiological factors in the disease.

THEORIES OF CANCER ETIOLOGY.

Bacteria have been described in connection with cancer which have been supposed, by certain authors, to bear an etiological relation to the disease. Doyen still maintains that his *micrococcus neoformans* is the cause of cancer, and he has attempted to treat the disease in human beings by means of a serum from animals that have been immunized against this coccus. Schmidt and others have described certain yeasts as the cause of cancer and have claimed to demonstrate their presence in cancer tissues. Other authors have attributed the etiological rôle in cancer to a protozoon, and various forms of organisms of this nature have been described in the tissues. Borrell, who is inclined to believe that some protozoon must be the cause of cancer, admits, notwithstanding, that none of the organisms described up to the present time can be considered as proved to bear any relation to the disease; he does, however, regard the protozoon origin as probable on account of the fact that cancer histologically would seem to resemble other forms of supposedly protozoon disease such as variola, sheep-pox (clavelée) and molluscum contagiosum.

Leaving aside these supposed parasitic causes of cancer thus summarily, we may turn to a brief consideration of certain physiological factors or substances in the blood which have been supposed to bear some causal relation to cancer growth. These substances may be grouped under two general headings: Those substances which are supposed to act in some positive manner in causing proliferation of epithelial cells, and those substances the absence of which in animals predisposed to cancer may give rise to the growth of the tumor.

Starling has described the presence of certain "chemical messengers," or "hormons," in the blood, arising usually in one organ, which affect the development of another organ in the body. Starling found that if virgin rabbits were given injections of rabbit embryos, the mammary glands of these animals would hypertrophy and that the same substances injected into rabbits that had borne young would lead to lactation in addition to the hypertrophy. Loeb has applied our knowledge of these hormons to the study of tumors in an interesting manner. This author found that an injury of the uterine wall in a pregnant guinea pig would lead to a proliferation of decidual tissue at the point of injury. This decidual growth does not occur, however, if the corpora lutea are removed or destroyed before the injury is inflicted. In other words, the corpora lutea apparently form hormons which stimulate growth of decidual tissue. Spuda noted in certain carcinomata that the growth of epithelium apparently begins first about blood vessels, and he concludes from this observation that there must be present in the blood stream some substance which stimulates its proliferation. This supposition of the presence of some stimulating substance in the blood also forms the basis of Fischer's theory of "attraxins." These attraxins are supposedly chemeotactic substances in the blood which stimulate the growth of epithelial cells. Fischer has attempted to produce such overgrowth by injections of sudan oil, but offers no distinct confirmatory evidence as to the presence of such stimulating substances in the animal body.

When we turn to the negative physiological influences which have been supposed to contribute to the growth of malignant tumors, we find that Edel supposed the existence of certain normal substances in the blood which inhibit epithelial proliferation. He would regard the removal of these inhibiting substances as a primary cause in the growth of malignant tumors, and he suggests that normal human serum be injected in order to supply this deficiency. Such a supposititious lack of normal inhibiting substances is comprised in the theory of Beard, who has suggested the use of an artificial ferment to replace this lacking substance. He has used trypsin in human beings and claims that injections of this sustance will kill the abnormal tumor cells without affecting the normal tissue. Von Leyden and Bergall, who have attempted to confirm Beard's results, decided that no such effect was produced by trypsin; but they, in turn, describe a ferment which they have isolated from the liver and which they claim affects only cancer cells. They attribute the growth of cancer to a lack of this hydrolytic ferment which is present in normal individuals.

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* Being a lecture delivered at the Harvard Medical School, March 11, 1909, as one of a series given under the auspices of the Cancer Commission of Harvard University.

In conclusion, the ideas of Albrecht and Ehrlich, as to the reason for the growth of cancer cells over the normal cells of the body, may be mentioned. These writers conclude that cancer cells grow more rapidly than normal cells on account of their greater affinity for nutritive substances.

SPONTANEOUS CURE OF CANCER IN HUMAN BEINGS.

Of great practical interest in connection with the possibility of producing an artificial condition of immunity in human beings afflicted with cancer are observations on the disappearance of both benign and malignant tumors in human beings. Both sarcomata and carcinomata have been reported by Czerny, Reichel, Rotter and others as having spontaneously disappeared. As we shall later see, the transmissible tumors of animals frequently disappear after having grown for a considerable period of time.

EMPIRICAL ATTEMPTS AT SPECIFIC TREATMENT OF CANCER IN HUMAN BEINGS.

Attempts had been made to treat cancer in human beings by more or less specific methods, even before any of the exact knowledge which has been acquired from the study of experimental tumors in animals was obtained. Busch commented on the fact that the interoccurrence of erysipelas frequently leads to the disappearance of cancer in a patient suffering from this disease. On the basis of this apparent beneficial effect, Fehleisen treated a number of cases of cancer with cultures of the streptococcus isolated from cases of erysipelas and apparently obtained certain beneficial effects. The dangerous results from the erysipelas itself led temporarily to an abandonment of this method of treatment, but Coley has for several years treated cases of inoperable sarcoma with a toxin derived from the streptococcus of erysipelas, or better still, with their toxin combined with a toxin from the bacillus prodigiosus. He has reported some one hundred cases of inoperable tumor which were either greatly benefited or apparently perfectly cured by this method.

Attempts have been made to produce a specific antiserum for cancer by immunizing animals with cancer cells. Thus Richet and Hericourt immunized dogs and asses with an extract of human cancer and used the serum of these immunized animals in the treatment of the disease. Their results were, however, uniformly negative. Von Dungern's description of a specific epitheliolysin, which he found in the serum of rabbits that had received injections of the ciliated epithelium from the trachea of the cow, gave hope of the possibility of forming such a specific serum for other epithelial cells. We have come, however, through the work of Pearce and others, to regard such cytolytic sera as specific for the animal species that has furnished the cells rather than for any individual type of cells from such an animal.

THE EXPERIMENTAL STUDY OF TUMORS IN ANIMALS.

Tumors have been described in many mammals. In addition to the tumors of wild animals, tumors have been noted in such domestic animals as the dog, cat, horse, cow, mouse and rat. Tumors are very rare in amphibians and have not been described in reptiles. They do, however, occur in birds and fishes. These tumors of animals are both benign and malignant, and the malignant tumors are characterized by the same peculiarities which accompany the malignant tumors of human beings.

TRANSMISSION OF TUMORS IN ANIMALS.

There is no authentic record of the transmission of a malignant tumor in the human being to another individual. There are, however, cases in which tumors have apparently been transplanted from one part of the body to another in a given individual. Many attempts have been made to transfer the tumors of human beings to animals, and with a few exceptions have been uniformly unsuccessful. Dagonet describes the occurrence of a tumor growth in a rat a year after implanting a metastatic tumor from the lymph gland in man. Werner describes the occurrence of a tumor with metastases in a dog following implantation of a human carcinoma of the jaw. From subsequent observations in animals, we know that, as a general rule, the tumors of one species can never be transplanted in animals of another species.

Nowinski, in 1876, succeeded in transferring a nasal tumor of the dog to another dog. In 1889, Morau transferred a carcinoma of the mouse through seventeen successive generations in other mice. In 1901, Loeb described a sarcoma of the rat which was transmissible to other rats but which finally died out. In the same year, Jensen described a large series of experiments with a mouse carcinoma, and he succeeded through a number of successive generations in transplanting his tumor successfully in 50% of the animals inoculated.

Since the description of these tumors, numerous tumors of mice and several tumors of the rat and dog have been described and studied by experimental methods. Many of these tumors show the characteristics of real malignancy in that they produce metastases which lead to the death of the animal.

Spontaneous tumors undoubtedly occur much more frequently in animals than was at first suspected. Whereas, a few years ago, Bashford made the statement that spontaneous tumors in mice occur in only twelve individuals out of 30,000, more careful observation through the entire life history of these animals has led us to believe that such tumors are much more common. Tyzzer, for example, has found that spontaneous tumors occur in his mice in at least 5% of all the animals. The success in transplanting these spontaneous malignant tumors of animals varies markedly with the individual technic of the observer. Ehrlich found that eleven out of ninety-four malignant tumors were transplantable. Certain types of tumors are much more readily transplantable than others. Ehrlich found, for example, that, in his experience, only 8% of the hemorrhagic tumors could be transmitted to other animals. That the individual technic in transplanting is a matter of primary importance as to the percentage in which these tumors take has recently been evident by the work of Gierke and of Murray. These authors succeeded in transplanting thirty-seven out of forty-eight hemorrhagic tumors similar to those described by Ehrlich. They attribute the difference in results to the fact that Ehrlich used much more of the tumor substance in transplanting than they did.

There are certain general factors apart from individual technic which must be considered in drawing any conclusions from experiments with transmissible tumors of animals. There are present, indeed, two sets of varying factors, one set dependent on the animals inoculated and the other on the tumor used for inoculation.

It has been the general experience of workers in this field that young animals take the tumor better than old ones. There are very marked differences between races of the same animal species in susceptibility to a given tumor. Thus, Jensen found that whereas his tumor took well in white mice, it took in a much smaller percentage of cases in gray mice. Harland has found not only differences in different races of mice, but determined that a change of environment would lead to a different resistance in a given race. He found that if he removed Berlin mice to Norway, they failed to take the Ehrlich tumor, whereas, in Berlin, they were very susceptible to it. In addition to variations in race and environment, the probable differences in individual resistance of animals may be mentioned. The fact that certain animals of a given lot fail to take an implanted tumor, whereas others do take it, may be attributed, as Jensen has done, to the occurrence of a natural immunity in the "negative" animals.

The tumor used for implantation may vary remarkably in "virulence" during successive generations. A tumor which takes in 100% of cases when first transplanted, may, after several successive generations, take in only 40 or 50%. It is probable, also, that individual parts of a given tumor vary in their virulence. The point of inoculation of the tumor is also of considerable importance. Thus Bashford, Murray and Cramer have shown that if the tumor is implanted in the axilla, many more animals will take than when the tumor is implanted on the dorsal surface of the animal. This difference they attribute to the greater vascularity of the former region. We have already seen that variation in the amount of tumor inoculated was the cause of the difference in results between Ehrlich and Gierke in their transplantations of hemorrhagic tumors. This factor of the amount inoculated is also of importance in the experiments for the production of an artificial immunity. Tumors may change markedly in cellular type during successive generations. Thus Loeb, Ehrlich and others have described the transformation of a carcinomatous tumor into a sarcoma, and Flexner and Jobling have described transformation of a sarcoma of the rat into a carcinoma. Apolant has mentioned that carcinomata of the mouse grown in partially-immunized animals may become adenomatous in structure. Such changes as these in cellular type are of undoubted importance in the virulence of the tumor. The age of the tumor is of some importance in the percentage of successful implantations. It is in general agreed that old tumors are better than young tumors, owing perhaps to the fact that they contain more calcium. (Clowes and Bæslack.) Lewin, by picking the tumors which grew best, succeeded in getting a more virulent strain. In some experiments of my own, by successive implantation from the metastases of tumors instead of from the original inoculated tumor, I obtained a tumor which was more virulent, as indicated by the fact that it grew more rapidly and produced metastasis sooner.

IMMUNITY IN EXPERIMENTAL CANCER.

Jensen attributed the failure of 50% of his mice to take the tumor to the existence of a condition of natural immunity in the negative animals. In addition to a failure to take the tumor, many observations have since been made as regards the resorption of tumors that were apparently growing well. Thus, Wehr noted the spontaneous disappearance of lymphosarcomata in dogs. Gaylord and Clowes found that 20% of their apparently successful inoculations in mice would show resorption after a period of growth. Lewin has noted similar results in connection with rat tumors. Michælis has noted the disappearance of tumors that have grown for as long as four weeks in mice.

The most systematic attempt to explain this condition of natural immunity to tumors in animals is the theory of atreptic immunity advanced by Ehrlich. It has already been mentioned that the tumor of one species will rarely or never grow in an animal of another species. Ehrlich found that, although no definite growth of a mouse tumor would take place in a rat, such an inoculated tumor would show growth for about eight days, after which time it gradually disappears. He found that if before this eight-day period the mouse tumor which had been placed in the rat is removed and re-implanted in a mouse, vigorous growth took place. Such a tumor can be subsequently re-implanted in another rat and grown for a period of eight days. No growth, however, takes place if the tumor is transplanted from the first rat directly to another rat without intervention of the mouse. These experiments have been repeated and confirmed by Borrell. Ehrlich attributes the failure of the mouse tumor to grow in the rat to a lack of certain "*X*" substances which are present in the mouse and are necessary for the growth of the tumor. These substances are not present in the rat, and the tumor of the mouse transplanted into this animal can grow only so long as the "*X*" substances brought over mechanically with the tumor last. After the exhaustion of these substances, it is necessary to re-implant the tumor in the mouse in order to regain these particular substances. He further presupposes that the " *X* " substances act either directly or indirectly in furnishing nourishment to the cancer cells. This theory of Ehrlich's was further corroborated by his observations of the growth of several tumors along the line of inoculation. Ehrlich found that on inoculating mice by a trochar subcutaneously from the groin to the axilla the greatest amount of tumor was discharged at the latter point. The tumor at the axilla then grew rapidly, whereas the one in the groin, being somewhat smaller in the beginning, soon fell behind proportionately in size. This failure of the groin tumor to grow, Ehrlich attributes to a monopoly of the " *X* " substances by the larger tumor in the axilla. A third observation which contributed to form his atreptic theory was that a second implanted tumor would almost never grow in a cancer animal. This latter experiment, as we shall see in a later connection, is true only under certain conditions, and a consideration of these conditions has led to perhaps the most interesting results so far obtained in the artificial immunity of animal tumors.

We may now consider the condition of immunity produced in mice or rats which have resorbed a tumor. Gaylord and Clowes noted that animals in which the tumor had been resorbed resisted re-inoculation with another tumor. These observations have been repeatedly confirmed since that time by other observers, the results differing only in a matter of percentages. It may in general be accepted that animals which have failed to take a first tumor, or which have resorbed a first tumor, will rarely take a second tumor; animals which have failed to take both a primary and a second tumor will practically never take a third tumor. The rat that was used in Ehrlich's experiments with the mouse tumor not only failed to allow the mouse tumor to grow for more than eight days, but it was found that it would subsequently actually prevent the growth of a similar tumor coming directly from the mouse for even that brief space of time. In other words, as Ehrlich himself states it, the rat had acquired an active immunity to the mouse tumor in addition to the atreptic immunity that was originally present. In a similar way Ehrlich found that animals which had received poorly transmissible tumors, and particularly the hemorrhagic tumors to which reference has been made, become subsequently resistant to highly transmissible tumors. And in a similar way he found that animals which have failed to take a moderately virulent carcinoma become immune not only to another implantation with the same tumor, but also to implantation with sarcomata. As a result of these observations, he concludes that the active immunity of mice to tumors is a pan-immunity rather than a specific immunity for any particular type of tumor. Other observers agree more or less completely with these results and conclusions. It may be stated in general that a tumor which fails to take protects best against reinoculation with the same tumor, but also, although to a somewhat less extent, against inoculation with another tumor of different type. It has been noted by Clowes that living tumor cells must be used to produce this immunity and that extractives of the tumor itself will not give rise to the condition.

Bashford, Murray and Cramer found that mice which had received ten days or two weeks previously an injection of mouse blood are insusceptible to the ordinary transmissible tumors of mice. Either whole blood or the red blood cells may be used to produce this condition or resistance. The blood, however, must of necessity be of the same animal species. This observation has been confirmed by Lewin in tumors of the rat. Schöne found that the previous injection of mouse embryos or of mouse liver will likewise give rise to a condition of immunity to mouse tumors, and Bridré found that the injection of liver or spleen from the mouse will likewise protect against mouse tumors. Russell, who has corroborated these experiments, comes to the conclusion that variations in the percentages of protection produced by previous injections of these different organs will of necessity vary, and that the greatest protection is secured by the previous injection of a tissue the histogenesis of which is nearest to that of cancer itself. Gierke has tried the effect of simultaneous injection of blood and tumor, but was not able to protect animals from the tumor by this method. In my experiments on a rat tumor I have obtained the same results.

Since it is evident from these experiments that mice that have been previously treated either with tumor or with other tissues from a mouse become immune to inoculation with the mouse cancer, it becomes important to ascertain the exact nature of this immunity as compared with other known forms of immunity. Gaylord, Clowes and Bæslack claimed that the blood of mice which had recovered by resorption of a tumor had the property of curing mice that were suffering from the cancer, and, when injected with the cancer, of preventing the growth of the latter. These experiments have unfortunately never been corroborated, although they have been repeated by many experimenters. In my own experiments I find that rats receiving simultaneous injection of the Flexner rat tumor plus the blood of animals that have received three or four implantations of tumor without any resulting growth give just as high a percentage of tumors as do animals treated with tumor plus normal rat blood or with tumor alone. Throughout my experiments I have noted the important variation in racial susceptibility to the tumor. This factor, as I have already mentioned, has been repeatedly noted by other observers in mouse tumors. Thus, in my own experiments, whereas the most susceptible strain of rats took the tumor in 100%, rats from another dealer took in only 50%, and animals from other sources still took in even less than 50%. I found that the inoculation of tumor plus blood of negative or refractory animals in relatively susceptible animals gave no less percentage of takes than the inoculation of tumor alone. In dealing with animals from a markedly insusceptible strain, a curious paradox was met with. It was found that such animals would take in many more instances when they received the refractory blood than when they received tumor alone.

Michælis investigated the properties of the blood in mice that had been rendered artificially immune to mouse tumor. He found that the blood serum of such animals had no demonstrable antagonistic property against cancer cells, that is, it failed to destroy them, and, when mixed with an emulsion of cancer cells, produced no "reaction of fixation." This reaction of fixation is the most delicate method at our disposal for the demonstration of anti-substances in the serum of animals that have been immunized against, or have reacted to, a bacterial infection. From these experiments, then, with a cancer emulsion and serum of immune animals, we may conclude that the immunity to cancer animals does not correspond to the ordinary bacterial immunity. These reaction of fixation experiments I have repeated in the case of the rat tumor which I have studied and have also failed to obtain any reaction of fixation. Sticker noted that the blood of dogs that had recovered from lymphosarcoma failed to affect the cells of this tumor. Beebe and Crile have, however, described certain experiments with animals suffering from lymphosarcoma which might seem to demonstrate the presence of certain antagonistic properties in the blood of immune animals. These authors found that the transfusion of blood from a dog that had recovered from the lymphosarcoma into an animal suffering from the tumor would lead, in certain cases, to a disappearance of the tumor. These experiments they controlled by transfusing the blood from normal dogs into other cases. The differences seem to be marked between the two series of animals. It is, however, to be noted that in nearly all their successful experiments more blood was transfused into the cancer animal than had previously been removed by bleeding, which would seem a factor of some importance in determining the cure.

Bridré, on account of the fact that various mouse tissues may be used in immunizing mice against mouse tumor, has referred to this form of immunity as an iso-immunity to mouse tissue. This immunity, however, does not resemble in any exact way other forms of immunity which have been described.

As in the case of human beings, many attempts have been made, on more or less empirical lines, to produce an antiserum for cancer tissue. Rabbits, goats, hens and guinea-pigs have all been given repeated injections of mouse tumor and their sera have then been employed in treating tumors in mice. The results from such treatment have been, however, entirely negative.

RE-IMPLANTATION OF TUMORS IN CANCER ANIMALS AND A CURE THROUGH VACCINATION.

In spite of Ehrlich's original statements as to the monopoly of food substances, either by a larger of two tumors or by the first tumor when two are implanted successively, it has become evident, through the experiments of many investigators, that this support for a theory of atreptic immunity works out experimentally in only a limited number of cases. It has been repeatedly shown that simultaneously inoculated tumors in a given animal will grow equally well. A number of investigators succeeded in growing a second tumor in a cancer-bearing animal. Loeb, Bridré and Gierke, indeed, regard the cancer animal as a more favorable soil for a tumor than the normal animal. Schöne attempted to put Ehrlich's atreptic theory to an experimental proof. He reasoned that if it were true that the first implanted tumor monopolizes the nutritive substances to the exclusion of a second implanted tumor, the removal of this first tumor should allow the second one to grow. He removed, therefore, a tumor that had been growing in mice, and eight days later planted a second tumor and found that it grew. Sticker, who is working with the lymphosarcoma of dogs, finds that the growth of a tumor in an animal may be divided into two definite phases. During the first phase, which is characterized by the absence of metastasis to the tumor, the removal of the first tumor is necessary to allow the second tumor to grow. During the second, or metastatic, phase, a second inoculated tumor grows irrespective of the presence or removal of the primary tumor. Murray, in commenting on these experiments, has stated that re-inoculation of the tumor, when positive, means that a metastatic phase is present. Flexner and Jobling have repeated these experiments with the rat tumor and have shown that during the first period of tumor growth the animal is protected from a second inoculated tumor.

Independently of Schöne, I tried, about a year ago, the effect of implanting tumors in animals from whom the first tumor was removed. Instead of waiting for eight days, as did Schöne, I re-implanted the tumor immediately after removing the first tumor and found that whereas this second tumor failed to take in tumor animals up to the thirtieth day of growth, it took in them from that period on. This period of thirty days corresponds rather closely to the time during which no metastases are evident following inoculation of this tumor in most susceptible animals. In these susceptible animals which take the tumor in 100% of cases, metastases occur at a rather definite period following implantations of a uniform amount. This period is between thirty and forty days. My results, then, would agree thoroughly with those of Sticker as regards the separation of the life history of the tumor growth into two definite periods, a pre-metastatic and a metastatic period.

In some experiments which were designed primarily to control the re-implantation of tumors in animals from which the first tumor was removed, most interesting results were obtained. I found that if animals were given a second implantation of tumor up to the period of thirty or thirty-five days, *without removal of the primary* *tumor*, not only did the second tumor fail to take, but the first tumor actually disappeared. In certain experiments, comprising a number of animals, the original tumor disappeared in nearly every instance. At later periods of time, the second inoculated tumor grew and the first continued to grow. This type of experiment has since been repeated a number of times with the additional control of an equal number of animals in whom a second inoculation is not given and the primary tumor simply left. These control animals are designed to show that the first tumor does not spontaneously resorb in animals that do not receive the second tumor inoculation. As a result of these experiments, I have found that in approximately 50% of the animals treated during the first three or four weeks of tumor growth, re-implantation of the tumor will lead to a cure of the original tumor and to a prevention of metastases. The original tumor usually disappears under this treatment within two weeks. In certain animals in whom the disappearance of the original tumor is delayed or in whom the cure is imperfect, a histological study of the partially cured tumor is of interest. Such tissues show that either an enormous increase of the connective tissue stromata has taken place or that there is acute degeneration of the epithelial cells.

This cure by vaccination, if it may be so called, corresponds in many details to what we know of the treatment for rabies, in which instance the individual may be treated successfully by vaccination, that is to say, by successive inoculation with the virus of rabies, at any time up to the third week following the bite of the rabid animal. The pre-metastatic period in cancer growth in animals would correspond, then, to a period of incubation, and the disease itself would be considered as declared only when metastases appear. These results in a treatment of growing tumors by re-inoculation have been mentioned as incidental happenings or have been indirectly touched upon by certain observers. Sticker, for example, mentions that he was able to cure a sarcoma in dogs at times by treating the animals with an emulsion of sarcoma cells. Bridré noted a very unexpected disappearance of a mouse tumor in a few animals which had been treated with an emulsion of the tumor. Gaylord, on re-inoculating mice every six days, obtained a growth of the first two or three tumors, which tumors, however, after a period of growth, disappeared on subsequent inoculation, and the animal became immune. In other words, he was able to produce a condition of immunity through vaccination with a malignant tumor. His results differ from my own, inasmuch as I have produced a cure of a tumor that has been growing three or four weeks by a single re-inoculation, in which instance the re-inoculation fails to give a growth.

Reference has already been made to the failure of the blood serum of animals immunized against a tumor to give a reaction of fixation with an emulsion of tumor cells. In other words, animals immune to cancer apparently do not contain antibodies to cancer cells such as those that are present in the usual bacterial infections. It is of interest to note that in the case of human beings suffering from cancer, a reaction of fixation between their blood and cancer tissue has been proved both by Lüdke and by Simon and Thomas. The latter observers found a fixation reaction in 65% of the cancer cases they examined, whereas such a reaction occurred in only 2% of control normal individuals or in cases suffering from other diseases. These authors also mention that they have treated some cases of cancer with cancer extract. They do not, however, state that they have obtained any favorable results. In my own experiments with the rat tumor, I have found that a reaction of fixation was at times demonstrable between the blood serum of cancer rats during the pre-metastatic phase, but not during the metastatic phase. Similar results were obtained by Clowes, although he makes no separation into metastatic and pre-metastatic periods, but simply says that he obtained a reaction of fixation with the moderate size tumors, but not with the largest tumors.

It would seem justifiable, then, as a working hypothesis, to regard the pre-metastatic period of a tumor as a period during which the animal shows reaction products to cancer tissue, and during which period the animal is able successfully to combat a generalized infection of the cancer. In those cases in which spontaneous resorption of the tumor occurs, which, as we have already stated, are relatively frequent in animals and have also been described in human beings, we may suppose that the resistance of the individual has succeeded in overcoming the cancer. From our experiments in animals, it would seem possible that during this pre-metastatic reaction period, the resistance of the individual may be increased by re-inoculation of the tumor, or possibly of products of the tumor, to such an extent that the resorption of the original tumor may be brought about.

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Original Articles.

THE IMPORTANCE OF ACTIVE MUSCULAR EXERCISE IN THE RESTORATION OF FUNCTION.*

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Sports and gymnastics are rightly considered as essential factors in promoting the public health, and not everywhere are they so lightly valued as in this country. State and commonwealth have the greatest interest to encourage their development, because they help to build up the youth; they are by far the best source from which adults may gain strength; they invigorate the old people.

Sports require perfect health of the mind and body, but whenever the function of any organ is injured, people are usually not able to derive any benefit from them, and even great harm may be done. But that which is of advantage for the healthy body is also a most favorable adjunct in the restoration of the injured function. That part of medical art and science which deals with the therapeutic use of exercises is called mechanotherapy, or medico-mechanics, and we use this term to refer to active and passive exercises, massage and to some modern methods of hyperemic treatment.

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There is a distinct difference between the active exercise and the other mentioned methods. While these latter depend either upon the hand of the operator or upon instruments, active exercise makes use of the function of the organ itself.

Deutschlænder, in an article on the treatment of fractures by early movements, proposes, as a name for this method, the term " functional treatment " with good reason, because he uses the function of the broken arm or leg to cure the fracture and to restore this very function. But we may go even farther and use this term " functional treatment " for the whole system of active and active-passive exercise and resistance movements.

There is a wonderful power of regeneration in the human body, and it is perhaps one of the greatest problems of medical science to investigate this capacity, and of mental art to make the greatest possible use of it. Active exercise is entirely based upon this principle. Its therapeutic use, therefore, demands definite physiological and pathological indications and requires careful clinical and experimental study. There are in this field many questions still open; others have been satisfactorily answered. We shall here consider to what extent active exercise may be used in the restoration of function and how much we may expect from it.

Let us begin with the influence of exercise upon the muscles themselves. We shall also examine the relation of nervous and muscular function and the effect of functional treatment in lesions of joints and bones. Finally, the importance of active exercise in the diseases of the circulatory system and some other internal diseases will be considered.

I. MUSCLES.

It is an experience of daily life that muscles become bigger, firmer and stronger by training. The enlargement of the muscle is due to an increase in number and size of the fibers. More important than the anatomical change is the physiological change shown by the increased strength and endurance. Our experimental methods are still at present too crude to enable us to determine exactly how much this increase of strength and endurance is due to some peculiar changes in the muscular tissue and how much to other factors, such as the nervous tone. As a matter of fact, we cannot always distinguish microscopically between fibers taken from a strong or a weak muscle.

Treves, in one series of his ergographic experiments, which consisted in lifting a weight through a certain excursion, has shown that the maximum weight which could be raised only for a few times was, in the beginning of the experiment, 35 kgm., and the minimum weight which could be lifted for a considerable time through the same excursion was 11 kgm. After four weeks' practice, the maximum weight was increased to 40 and the minimum weight to 29 kgm.

These results of exercise, so evident under normal conditions, are still more striking in pathological cases, as shown by the tape measure and the dynamometer. Such observations we make daily on our patients who show atrophy due to inactivity and similar conditions. Here the superiority of active exercise over massage cannot be questioned.

While often the problem is comparatively simple, in certain cases it may be very difficult and complicated.

Prescribing proper exercises may require a thorough understanding of the pathological conditions and mechanical factors. This is particularly true in the so-called corrective exercises, as we use them in the treatment of lateral curvature, flat-foot and other orthopedic deformities. The indication is to restore the normal balance of the antagonistic muscles by strengthening certain groups. In the complicated mechanism of the spine, careless exercise may do a harm which is greater in degree than any improvement which may be gained by correct exercise. This is perhaps the reason why the functional treatment of lateral curvature is not so generally adopted as it should be. The best orthopedic surgeons, however, including *Hoffa*, *Lange*, *Lovett*, *Schulthess*, *v. Mikulicz*, maintain that active exercise is the best method, which should never be entirely neglected in any case of scolisis.

II. NERVOUS SYSTEM.

Having considered the effect of exercise upon the muscles themselves, we will now turn our attention to the effect which such exercises produce upon the nervous system.

A few physiologic remarks may be helpful in understanding indications and methods. Modern theories, according to *Waldeyer*, *Goldscheider*, *Jacob* and others, teach us that the nervous system is composed of a multitude of neurons. Any stimulation affecting the endorgan of one neuron, if strong enough to be above the neuron threshold, not only excites this individual neuron, but its excitation acts in turn as a stimulus upon the next neuron and so on.

The passing of a stimulus through the nerve cell and the transition of the stimulus from one neuron to the next finds a certain resistance which results in a diminution in the strength of the stimulus and in the rapidity of its passage. Normally, and still more so under pathologic conditions, this resistance is variable. One stimulus breaks the way for the next, and the continuation of stimuli along the same path finally makes the way smoother, lowering the resistance, as we might say, or, in more technical language, reducing the neuron threshold. In all exercises we see this physiologic law work; by practice movements become stronger, quicker and more precise, and words that are well known are read more quickly. Still more striking examples are seen in pathologic conditions, as, for instance, in the hyperesthetic skin, where repeated pricks with the needle, at first slightly felt, produce finally a disagreeably painful sensation.

For the preservation of the normal condition of the nerve cell, a certain amount of stimulation is necessary. When for a time, for any reason, no stimuli pass through the neuron, degenerative changes take place. One of the most striking examples of this is seen after amputation of a leg in the atrophy of certain cells in the ventral horns and even in their contact neurons of the lateral columns.

There is a very intimate connection between the motor and sensory parts of the nervous system. Motion causes stimulation of the sensory nerves in the joints, tendons, muscles and skin and so produces perception of motion, localization, force and tension. These perceptions allow the brain to control motion, localization, etc., in the brain. (So it is evident that the conception of motion is an acquired function of the brain. *A priori*, there are not such conceptions present; the new-born baby must learn intended motions; it has no control over its motions.)

The conception, on the other hand, allows the will to act on the appropriate organs in the appropriate manner. The product of this action is the motion, which stimulates the sensory nerves, causes the perception of the motion and so results in proper control of the performance. The perception leads to the conception, as we have found, thus making a complete circle. On the integrity of this circle depends the right performance of voluntary motions. Any disturbance, either central or peripheral, interferes with correct action.

On these physiologic theories we base our treatment by exercises of such disturbances of the nervous system as involve the motor organs. These principles must be kept in mind more or less under all circumstances. We have shown that the chief physiologic points to bear in mind are, firstly, the condition of the neuron threshold which may be altered by pathologic processes; secondly, the necessity of stimulation for preservation of proper function of the nerve cells; and thirdly, the relation of motor perception and conception to motor action. Practically, we cannot distinctly separate these various points, but we should at least bear them in mind in treating patients.

In the treatment of disturbances of motor function, we have to deal with some break in the circle referred to above. In most cases abnormal conditions of the neuron threshold play a great rôle in the break. Consequently, our treatment in the majority of cases will be directed to such methods as will raise or lower this threshold in accordance to the indication.

In cases of paralysis, it is evident that for a considerable time stimuli of normal quantity and quality have not been sent from the motor centers to the muscles, the result being that the paths, so to speak, have grown indistinct, and there is now an abnormal resistance. Therefore, the treatment must be directed to again breaking out the paths and lowering the resistances.

It is understood, of course, that the prognosis will depend upon the degree of real destruction of the nerve tissues. But in many cases we cannot measure this beforehand; hence it always behooves us to make a trial. To each case must be given special care and study. Without going into details, the following are some of the most useful methods:

1. Associated movements; we use them in hemiplegia, where we instruct the patient to make the same motion at the same time with the healthy and affected limb.

2. The imitation method; the operator demonstrates a certain motion; then, by the aid of passive motion, he makes the patient repeat, until the patient is able to do it himself.

3. Another method is to make use of the galvanic current. The electrode is placed on the paralyzed muscle and the patient asked to contract the muscle coincidently with the make and break of the current. At first the current must be strong enough to cause a real contraction of the muscle, and later it can be diminished as the muscle begins to take up work for itself.

4. The kineto-therapeutic method, which consists in active and active-passive exercise while the patient is lying in the water. The lessened weight of the limbs will allow motion to be made more easily and more correctly in the water than outside.

We have other cases quite opposite to the above, where the threshold is abnormally low, giving rise to great irritability, such as is seen in the occupation neurosis. The treatment here must be directed to a raising of the neuron threshold and must naturally be accomplished by somewhat different methods. We need, then, recourse to a combination of rest and exercise. The desired rest may be accomplished by the use of splints or by imbedding the hand in sand, and a special exercise must be prescribed which educates the muscle and at the same time avoids such movements as cause the original irritation.

Closely connected with these methods are the so-called co-ordination exercises recommended by *Frenkel* in 1890 for the treatment of motor ataxia. Many satisfactory results have been reported in a disease which was considered to have an absolute bad prognosis. We will not go into the details, but it may be added that the essential is active movement prescribed in special forms which are susceptible to various modifications.

III. JOINTS AND BONES.

The importance of mechanotherapy for the restoration of the injured function of the joints is generally acknowledged, and it is hardly necessary to discuss it here. However, the special value of active exercise and its advantage in many cases over massage and passive exercise or forcible manipulation is not sufficiently recognized. In a case, for instance, of Colles' fracture, treated for several weeks with splints only, the wrist and more or less all joints of the hand and fingers are limited in motion and swollen. There is found also alteration in the tendon sheaths and the peritendinous tissues. The muscles have lost their normal tone and tension. Although we use in such a case massage and passive exercise, we should consider them always as factors of secondary value and not neglect active exercise from the very beginning. The more injured the hand has been, the more urgent is this indication. The following are the special advantages of the active exercises: They are by far the best way to increase tone and strength of the muscles; they have a mechanical effect on the tendons, the function of which can be improved but never entirely restored by massage. The most important effect which active exercises produce is the restoration and maintenance of normal joint action. This is less perfectly accomplished by passive motion, although we must often make use of the latter.

Active movements, therefore, are valuable in restoring the function of joints, by their early use preventing much of the loss of function which results from long use of fixation methods. Let us briefly consider their application in the treatment of fractures, dislocations and joint lesions.

It has been for many years, and it is still with many physicians, both in this country and abroad, dogmatic to treat fractures by fixation until bony union has taken place. The extension method allows the use of exercises to a certain extent. *Bardenheuer*, who has chiefly developed this method in fractures of the humerus, for example, begins with movements on the third day.

Lucas Championnière first (1897) recommended the use of massage and early movements in certain fractures either alone or in conjunction with fixation, which, however, he regards as auxiliary. In Germany, *Deutschlænder*, especially within the last few years, has obtained remarkable results by this method. Not only did the x-ray show that his results were as good as those obtained by fixation, but by such methods he shortened the time and prevented the great loss of function often seen in fixation methods. The reasons which he gives for the early use of massage and exercise are the following: They hasten the resorption of hematoms in the joints and tissues; they furnish the stimuli which prevent muscular atrophy. Furthermore, in support of his method, *Deutschlænder* points out that in the process of development it is the functioning of muscles and joints which determines to a great extent the development of the bones into those forms best suited to the required purposes. In this same way proper exercise can be made to aid in the accurate reduction of the fragments and in the modeling of the callus.

Such methods have their limitations, of course, and are not applicable to all fractures. Only the physician with his knowledge of anatomy and mechanical physiology can make use of it.

However, even if we cannot allow ourselves to be as radical as Deutschlaender,— and there is some possible just criticism,— we can, with sensible limitations, make good use of his principles.

In uncomplicated dislocations functional treatment from the beginning has an especially practical application. Moreover, here it is perfectly evident in many cases that there is no good reason for the prolonged fixation treatment often used. Experience shows that it is not sufficient to leave such exercises to the patients. It has been said that such early treatment causes much pain. That depends to a great extent upon the way in which it is done; at all events, however, the pain in such slow movements with the careful help of the physician is not so great as in cases of joints already stiffened, when we have to stretch the contracted muscles, ligaments and capsules.

Admitting the usefulness of functional treatment in ordinary stiff joints, its application in infectious arthritis is questionable during the acute stage. The main objections are that the pain may be too great and the inflammation may be increased. My own experience is somewhat limited, but I have been much surprised to see how little pain is caused even in inflamed joints by proper use of active exercise with assistance. The few cases so far treated in this way have done so well as to warrant its further trial. In no case have we seen any aggravation of the inflammation, while the function has always been very much improved. I do not recommend this method as the sole treatment, but I believe it may be used in connection with rest and other methods whose usefulness have already been demonstrated, such as Bier's congestion, the use of vaccines, and others.

Arthritis deformans has always been a crux medicorum, its prognosis doubtful with all methods of treatment. Some physicians advocate medico-mechanical treatment and, theoretically at least, active exercises, stimulating the nutrition as they do, ought to be of advantage. More experience is necessary before anything definite can be said on this subject.

In a paper of this kind it is impossible to make a complete list of all the conditions which may be benefited by functional treatment. And without stopping to discuss its use in sprains, bursitis, etc., I would like to emphasize finally the application of active exercise in relation to *Julius Wolff's* transformation law.

IV. THE CIRCULATORY SYSTEM.

Most of the effects pointed out in the foregoing parts are in close connection with the increased circulation caused by the action of the muscles. Well-known physiological experiments have shown that dilatation of the arteries and veins in the muscle and in its neighborhood takes place while the muscle is working, and that also the rate of flow at least in the veins is increased. Also in lymph vessels the rate of flow is augmented. These changes in the local circulation are required to produce the increase of metabolism which is necessary for the growth of the muscle substance and for the resorption of waste products.

Furthermore, among the physical therapeutics used in the treatment of circulatory diseases, active exercises in different forms have played a great rôle. The following are the theoretical principles considered in the application of active gymnastics. The dilatation of the blood vessels over a large area should cause theoretically a lowering of the general blood pressure. But our observations on man and dog show that in strenuous work the pressure is lowered only for a few minutes and afterwards is raised to often a remarkably high degree. This compensation is explained:

1. By reactive contraction of the vessels in other parts, especially of the intestinal arteries and veins.

2. By the increased respiration produced by the necessity for more oxygen. The forced expiration directly aids in the emptying of the ventricles. How much the force of respiration may accomplish is shown by *Boehm*, who was able to maintain a fairly good rate of flow by forced artificial respiration, while the heart itself was not working actively.

3. The circulating chemical products of muscle work stimulate respiration and also the heart directly. Stokes and Oertel explain so the fact that muscular exercise, although increasing the work of the heart, often benefits the organ itself.

It must be added, however, that by prescribing exercises we do not always wish to raise the blood pressure in the arteries, but often to increase the rate of flow in the venous system alone without raising the general pressure. Now upon the right selection of exercises will depend whether the heart is simply relieved and compensated or whether a real training of the heart is accomplished. For the first purpose, exercises with the assistance of a well-trained nurse or in a Zander institute are preferable; while for the latter, besides these, exercises such as mountain climbing after the manner of *Oertel* may be advisable.

V. OTHER INTERNAL DISEASES.

Among other internal organs the function of which may be restored or at least improved by gymnastics should be mentioned especially the lungs and pleuræ. Indications for such treatment may be either diseases of these organs themselves and their sequelæ or disturbances of the circulation sometimes accompanying such conditions. In chronic bronchitis, emphysema, asthma and pleuritis, breathing exercises have been recommended, and according to the special indication inspiration or expiration must be more favored. Resistance movements either with another person or with apparatus such as Zander's have been grouped into an elaborated system, and textbooks of physical therapeutics give careful prescriptions for this purpose.

The principles of such exercises are in a few words the following: Strengthening of the respiratory muscles to promote the deep breathing in order to force all parts of the lungs and pleuræ to take part in the function and also to improve the circulation within the lungs. Deep inspiration, together with resistance movements of the trunk and upper extremities, will favor the expectoration in chronic bronchitis and loosen adhesions in pleuritis. How much can be gained even in empyema is shown by a case now under treatment. A young fellow of eighteen years, who had been operated upon for empyema of the left pleura six weeks before, was sent for treatment in the Zander department of the Massachusetts General Hospital. The wound was still discharging, so that daily dressing was necessary. His general constitution and especially his heart was very weak, the pulse-rate increasing from 100 to 120 by a few motions. On the left side the respiratory excursion was absent, while the right side made an excursion of 1¾ inches. The patient was prescribed very slight and slow active and passive breathing exercises which were connected with vibration and tapotement of the back and side and with asymmetrical resistance movements of the trunk and arms. In twelve days the wound was closed, the pulse dropped to 88 and became more stabile, the excursion of the left side was ¼ inch. In another week it had increased to ½ inch, and it is now (three weeks later) 1 inch. The patient has become stronger and of better color.

As in stiff joints, the prognosis here depends upon organic changes. Strong fibrous adhesions or pleural callosities cannot be torn. Long-standing loss of elasticity of the lungs in emphysema cannot be cured, but in the early stages much can be done to avoid such conditions or at least retard their development.

Among other diseases which are amenable to active exercise treatment may be mentioned diabetes, obesity and constipation. The sugar-content is lessened by exercise, as *Kuelz, v. Mehring* and other competent authors have shown by exact experiments with their patients.

That obesity is reduced by muscular training is a well-known fact, only it needs some energy on the part of the patient. With a few weeks' exercises nothing may be expected, but for months and years systematic and constant attention is necessary.

We know of no more satisfactory treatment of chronic constipation than careful and persistant exercise and massage for the development of the abdominal muscles.

We believe that in the future many conditions in which heretofore reliance has been largely placed upon drugs will be found to be satisfactorily amenable to treatment along the line of active muscular exercises as outlined in this paper. We also believe that more lasting results may be expected from these methods which call into action the restorative and conservative natural forces within the human body itself.

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Plans have been completed for the new psychiatric ward given to Johns Hopkins Hospital by Mr. Henry Phipps, of New York City. The building will be of dark brick and stone and in conformity with the other buildings of the institution.—*Jour. Am. Med. Asso.*

ACUTE POST-OPERATIVE DILATATION OF THE STOMACH.*

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In looking up the convalescence of the first 100 cases of Cesarian section at the Boston Lying-In Hospital, the writer came upon this final note on two of the early cases: Persisent vomiting; no result from treatment; patient gradually failed; death at the end of thirty-six hours; no autopsy.

The following experience which befell me on a case of Cesarian section may fall in the same class and I believe the results in my case are of sufficient interest to report, at the same time giving a brief review of the literature upon this interesting subject.

The patient was a primipara, age nineteen, with a generally contracted pelvis; the fetal head was resting upon the symphysis pubis, and under an anesthetic could not be brought into the pelvis. The operation was the regular one done by most of the operators at the hospital, the uterus being delivered through the abdominal incision, the abdominal contents protected anterior incision of the uterine wall, the operation completed taking about thirty minutes. She made a good ether recovery, her pulse coming down to 100 at the end of twenty-four hours; the bowels were moved by enemata on the second day, and the convalescence seemed to be progressing satisfactorily.

About 4 A.M., on the third day, she was reported by the nurse to be having a great deal of abdominal pain, to be vomiting large amounts of brownish-green fluid, to have a pulse of 160, of poor quality. Seen a short time after this, she was the picture of extreme shock, the pulse could not be obtained at the wrist at all, her extremities were cold, the facies were those of impending death, and altogether the picture was bad. We at once considered the possibility of sepsis, hemorrhage and a possible breaking open of the wound. The dressing was taken down and the wound looked satisfactory, but the appearance of the abdomen at once attracted attention; there was a tremendous amount of distention of the upper abdomen, the lower segment being soft. Closer inspection showed a balloon-shaped tumor extending from the ensiform down to the fundus of the uterus just below the umbilicus. When she vomited, this tumor was much accentuated, and on percussion proved to correspond to the stomach. She had been in this condition now about three hours and was not improving, so a stomach tube was introduced well into the stomach, and the effect was immediate, and enormous amount of gas and about a quart of the same dirty fluid came up. The stomach was then washed out with two gallons of luke-warm water, she was given morphia, $\frac{1}{4}$ gr., and placed upon her side; in twenty minutes she was asleep. The most striking feature was the immense physical relief to the patient and the immediate retraction of the stomach.

For the next twenty-four hours all food was stopped by mouth; she received continuous salt solution by rectum and enough morphia to keep her quiet. By enemata, the bowels were relieved of quantities of gas. There was no further vomiting and the pulse gradually came down to normal.

The case was apparently one of acute post-operative dilatation of the stomach quickly relieved by the passage of the stomach tube, the treatment at the same time establishing the diagnosis.

Since reporting this case at the Obstetrical Society, two others have been brought to my attention, and as both illustrate important points in the condition, and absolutely confirm the existence of this condition, they will be briefly reported in this paper.

The second case was one which occurred during an abdominal operation by Dr. W. P. Graves, and I take this opportunity of acknowledging his kindness in giving me the data to use.

His patient was a woman aged forty-three. The operation was done Feb. 2, 1909. It was a supravaginal hysterectomy for multiple fibroids and pelvic inflammatory disease. There was no previous history of digestive disturbances.

On making the abdominal incision, the lower border of the stomach was noticed to be at the level of the umbilicus. During the operation the patient did not take ether well in the Trendelenburg position, and strained and coughed at different times. The intestines interfered somewhat with the operation, and the gauze packing was changed two or three times to keep the bowels out of the field of operation. At each change the stomach appeared lower in the abdominal cavity. After the operation for hysterectomy was finished, the gauze packing was removed from the abdomen and the appendix was amputated. By this time it was found that the lower border of the stomach was within one inch of the symphysis pubis, and almost completely filled the abdominal cavity. Considerable difficulty was encountered in sewing up the peritoneum. When the wound was finished, the abdomen had the appearance of a full-term pregnancy, or of a large ovarian cyst. The stomach tube was passed, and with the expulsion of a large amount of gas, the tumor collapsed. No digestive disturbance followed the operation.

This case showed perfectly the condition, the stomach was seen and felt, and the passage of the tube at once relieved the condition.

The third case was a primipara who I saw first one week before she was delivered. She came to me with a history of constant gastric disturbances throughout the entire pregnancy. In fact, upon questioning, she admitted stomach disturbance of years' duration. Her bowels were straightened out and she was put on a course of treatment to relieve the stomach. One week later, on account of a deformed pelvis, a Cesarian section was performed. She was a very poor ether subject and vomited throughout the operation. The stomach was washed out on the table without much apparent relief to her condition. She had an excessively fat abdominal wall, so was sutured in layers. During the suture of the peritoneum, the stomach was found below the umbilicus and was constantly in the field of operation; the second passage of the tube made it a simple affair and the wound was closed without further difficulty.

The interesting feature of this case was that she continued vomiting, and the stomach was continually dilating for three days, so that the stomach was washed on a four-hour interval for those three days. The lavage seeming to take care of the dilatation for about four hours, the fourth day after one lavage she stopped, and while she had still some discomfort, the stomach contracted to about two inches above the umbilicus, where it was on her discharge at the end of four weeks.

Brinton, in 1859, first called attention to the condition known as acute dilatation of the stomach, but it is only in the past few years that its existence as a post-operative complication has been recognized, and a large amount of literature recently produced impresses one mainly with the importance of the diagnosis.

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* Read before the Boston Obstetrical Society, Dec. 22, 1908.

This paper will deal only with the post-operative variety of acute dilatation of the stomach.

Connor, in March, 1907, wrote an excellent monograph on this subject, and reports forty-two cases. He is much impressed with the fact that in many instances, at least, the clinical picture is often not difficult to recognize, if the possibility of the condition is borne in mind; there is also reason to believe that with the earlier recognition of the condition, it will be possible to treat successfully many cases which have heretofore proved fatal.

Time of advent. — At once to two weeks after operation.

Diagnosis. — Of chief import is the *sudden* onset. The usual symptoms are extreme distention, limited to the upper one half of the abdomen, vomiting of large amounts of greenish-brown fluid, no rise of temperature, rapid pulse, great thirst, little abdominal tenderness and rapidly increasing collapse. Persistent hiccough, splashing sounds in the stomach, and visible peristalsis may exist; next to the vomiting, the rapid development of collapse is perhaps the most striking feature of the clinical picture.

It must be emphasized, however, that any one or most of these symptoms may be lacking in a given case, and the diagnosis is made definitely by the demonstration of the greatly dilated stomach by means of careful physical examination, and especially by the use of the stomach tube.

The character of the vomitus differs to a considerable degree, and this has been explained to a certain extent by the experimental work of Kelling. Kelling states the vomiting may be copious, and at frequent intervals; it may be slight (regurgitant) at frequent intervals, and in a few cases vomiting is not a marked feature. This variation in vomiting he explains as due to different anatomical factors which are variously influenced by the stomach distended with fluid and gas.

The etiology, pathology and modus operandi of acute post-operative dilatation of the stomach are not definitely known, but the experimental, clinical and pathological evidence have caused many different conclusions to be brought forth.

Zade states that the acute dilatation is due to the effect of the anesthesia. The dilated stomach as it extends lower in the abdomen presses the small intestines into the pelvis; this shifting of viscera puts the mesentery on tension, and a kink is produced in the duodenum at the duodeno-jejunal junction, causing definite obstruction. This explains the mechanism in the majority of cases and has led Zade to suggest the term "gastro-mesenteric ileus." The acute dilatation of the stomach is the primary condition; the kink in the duodenum, secondary.

Bloodgood states the chief etiologic factor seems to be some toxic agent; in some cases the toxic factor may be sufficiently great to produce paralysis with hypersecretion in a stomach previously dilated.

Robson states: It seems not improbable that some of the cases of ileus, after abdominal operations, may be caused by acute dilatation of the stomach, which, when once initiated, tends to persist and get worse, owing to the distended stomach dragging on and kinking the duodenum, this leading to shock by pressure on the heart without there being any signs of sepsis; in some cases the gastric dilatation is only a part of a general involvement of the intestinal canal due to peritonitis; in other cases the dilatation is due to pressure upon the duodenum by the superior mesenteric artery.

Johnson, in "American Practice of Surgery," states the cause as a motor paresis of the musculature of the stomach associated with a marked hypersecretion, and possibly regurgitation of fluid from the upper intestinal tract, although the vomitus does not become fecal.

It is more probable that this depends upon a local disturbance of innervation, but it may be an expression of general toxemia.

Laffer, in a very recent article, states that the most recent evidence points to a primary innervation disturbance affecting the gastric nerves or their centers in the brain or cord. Laffer says it has not been proven that the compression of the duodenum by the root of the mesentery is the primary cause of the so-called mesenteric ileus.

Lichtenstein reports two cases which show that pancreatic juice in the stomach contents indicates secondary occlusion of the duodenum. Indican appears in the urine during the occlusion, and the disappearance of the indican shows that the passage is again permeable.

Kemp considers this class of cases to be the manifestation of an atonic condition, a paresis, so to speak, of the entire gastro-intestinal tract, the stomach as well as the intestines being distended. Dilatation of the stomach is an important factor, and the general condition seems to correspond to our former nomenclature of post-operative intestinal paresis. It would seem to be due to some shock of the sympathetic system, from the operation at the time to the anesthetic, and later to toxemia and sepsis.

Treatment. — Connor states the effectiveness of treatment will depend in a large measure upon the time at which it is begun. When the stomach has reached its maximum dilatation, and the patient has reached a state of extreme prostration and collapse, treatment has often been unsatisfactory and unavailing. On the other hand, when the condition has been recognized before this terminal stage was reached, the results have been most gratifying. The first step in the treatment, whatever the cause of the dilatation may be, is the prompt and complete emptying of the stomach with the stomach tube. Owing to the often enormous size of the stomach, and the flaccid state of its walls, this is not always a simple task. The tube must be made to reach the most dependant parts, and changes in the posture of the patient may be necessary in order that all the contents may be reached. This emptying of the stomach should be repeated as often as necessary, usually several times in the twenty-four hours. Food or drink by mouth should be absolutely interdicted. The excessive loss of fluids should be met by large saline enemata, or by hypodermoclysis. Nutrition should be maintained as well as possible by rectal feeding. Bloodgood states the use of the stomach tube should be associated with a change of posture, the knee-chest, semi-recumbent or left lateral with elevation of the pelvis.

Munro, writing on "The Technic of Abdominal Surgery" in Keen's recent book, says: "In the acute rapid distentions of septic patients, or occasionally after clean operations, it is well to give atropine combined with morphia if there is pain, and to employ gastric lavage and repeated enemata." Munro also states that acute gastric dilatation will simulate an acute intestinal distention. In such cases the expulsion of gas with the rectal tube and by enemata, though satisfactory, does not lessen the abdominal distention. The stomach tube will clear up the diagnosis, and copious and repeated lavage will save many lives.

When the dilatation persists and the accumulated fluid fails to pass and the patient becomes weaker from loss of food, operation should be considered. In these cases where operation is deemed necessary, Lennander advises a temporary gastrostomy. As a prophylactic measure, Bloodgood advises greater care should be used in the preparation of abdominal cases, the restriction of food and the elimination of cathartics just before operation.

In conclusion, it would seem that acute post-operative dilatation of the stomach is not so rare as the literature would lead one to believe.

The diagnosis can usually be made by having the subject in mind, especially where we have the presence of distention, vomiting of large amounts of brownish-green fluid, no necessary rise in temperature, rapid pulse and a rapidly-increasing collapse.

The passage of the stomach tube will usually establish the diagnosis. According to reported cases, the condition is very fatal, Laffer stating that 63.5% die. Recognized early, however, most of the cases respond well to treatment, the high mortality figures being probably due either to a late diagnosis or to a complete failure in recognizing the condition.

The importance of the stomach tube as a part of an operation outfit is emphasized by the existance of this comparatively recently recognized condition.

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CONGENITAL IMPERFORATION OF THE ESOPHAGUS WITH TRACHEO-ESOPHAGEAL FISTULA.

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Congenital malformations of the esophagus are of rare occurrence and manifest several distinct varieties.

Ballantyne[1] classifies them as follows:

1. Complete absence of the esophagus, its place being taken by a thin muscular band stretching from the pharynx to the cardiac end of the stomach.
2. Termination of the esophagus in a simple cul-de-sac.
3. Termination of the esophagus in a cul-de-sac, the lower radiment of the canal communicating with the trachea and bronchi.
4. Tracheo-esophageal fistula, the esophagus being otherwise normal.
5. Membraneous obstruction of the esophagus.
6. Presence of esophageal diverticula.
7. Duplicity of the esophagus.

Of these forms of malformation, the third is the most common. It represents one form of congenital imperfection of the esophagus in association with tracheo-esophageal fistula.

Von Luschka,[2] in 1869, described a typical case of this condition in which the upper portion of the esophagus ended abruptly as a blind sac about 2 ccm. above the tracheal bifurcation, and the lower moiety of the esophagus appeared normal, except that it opened above into the trachea at a point about 1 ccm. above the tracheal bifurcation. The separated portions of esophagus were united by a small strand of muscle.

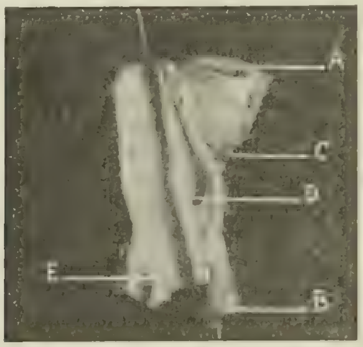
Von Luschka also refers to three other similar cases — those of Martin, 1825; Schœller, 1838, and Levy, 1845.

Ogle,[3] in 1856, reported another such case. Similar cases, in which, however, the tracheo-esophageal fistula occurs at the bifurcation, were given by Padiea,[4] in 1835, and Porro,[5] 1871.

Hirschsprung,[6] in 1861, recorded the details of 14 cases of this variety of esophageal imperforation. In all cases the upper moiety of the esophagus was somewhat dilated and ended as a pouch at varying distances from the mouth. In 2 cases, the point of greatest depth of this pouch was only a little over 1 ccm. from the tracheal bifurcation. In 4 cases the upper extremity of the lower moiety of esophagus opened into the trachea at its bifurcation. Once it opened into the right, and once into the left bronchus. In 9 cases the separated ends of the esophagus were united by coarse or fine bands of muscle. In 1 case there was no connection. It is remarkable that in 1 of his cases, cartilaginous rings, similar to those of the trachea, were found in the lower moiety of the esophagus.

Associated malformations have sometimes been found, though, as a rule, the body elsewhere is normally formed. The deformity most commonly recorded is imperforate anus, sometimes with recto-urethral fistula. Rarely much more extensive deformities have been found. Thus, Polaillon[7] gives a case which, in addition to imperforate anus with recto-urethral fistula, showed absence of a radius and club hands. Grimmel[8] reports a case of atresia of esophagus, duodenum and rectum.

Clinically, the condition causes such uniform and severe symptoms that a diagnosis is readily made. Soon after commencing to nurse, there is sudden vomiting, choking with more or less cynosis, and often the child stops breathing. The picture is most distressing, and convulsions frequently supervene. A small rubber bougie carefully inserted will confirm the diagnosis. This condition can only be confused with pyloric stenosis, from which it can be easily distinguished. In pyloric stenosis, vomiting may not occur until after several feedings, an esophageal bougie can be successfully passed, and occasionally the lax abdominal walls and empty intestines permit the hypertrophied pylorus to be palpated.



Posterior view of trachea and esophagus. The trachea is opened on its left side throughout its entire length, and the everted posterior wall shows the fistula, *D; C*, the pouch-like lower extremity of the upper portion of esophagus *AC; B*, the cardiac end of the lower portion of esophagus *BD;* E, bifurcation of the trachea.

In imperforation of the esophagus, death is inevitable, occurs usually in a few days and is the result of one or more of the following: Inanition; pneumonia, resulting from aspirated food; suffocation, possibly from pressure of the distended esophageal cul-de-sac upon the trachea; or suffocation from aspiration of regurgitated food.

The following case is in all respects typical:

J. L. R., aged twelve days, born Dec. 27, 1906. White male. No. 3292.

Mother's history. — Has borne nine children, six still living. No tuberculosis or syphilis recorded; pregnancy and parturition said to have been uneventful.

Child's history. — Of good development and nutrition at birth. Nursed at breast for one day only, since which all foods have been rejected. Stools have consisted only of meconium.

Physical examination. — Jan. 6, 1907. General condition very poor. Subcutaneous fat almost absent. No normal findings in lungs or heart. Abdomen soft, pliable and not tender.

Jan. 7, 1907. Râles in both lungs. No dullness.

Clinical course. — Jan. 7, 1907. Still passing meconium. When food is given, it regurgitates immediately. Passed stomach catheter 10 ccm., and then encountered an obstruction. Tried to insert sodium bicarbonate solution, milk, etc., but it always came up beside the catheter, and the child presently became cyanosed, requiring artificial respiration.

Jan. 8, 1907. Received a nutrient enema. An esophageal bougie was passed 10 ccm., but, as before, it could not be inserted any further, gastrostomy was advised and shortly after performed under ether. No pyloric stenosis found. A catheter was tied into the abdominal wound leading into the stomach, and whey inserted into stomach through a funnel. Soon after the whey was vomited by mouth. Another nutrient enema was given. Only meconium in stools. Death at 8 A.M., Jan. 9, 1907.

Autopsy three hours post-mortem.

Body: That of a white male infant; weight, 2,043 gm.; nutrition only fair. In the median line of epigastrium, 3 ccm. below ensiform cartilage, there is an open operation wound through which protrudes stomach mucous membrane. Through opening into stomach a long piece of rubber tubing is inserted. No other marks on body; no palpable lymph nodes. Anterior fontanelle open; posterior fontanelle closed. No discharge from orifices.

Peritoneal cavity: No free fluid or adhesions, except for those incidental to operation. Serosa smooth and pale throughout. Appendix 6 ccm. long; normal appearance. *Pleural cavities:* No adhesions; no free fluid. *Pericardial cavity:* Serous surfaces perfectly smooth and pale. *Heart:* Weight 16 gm. Myocardium pale pinkish and firm. Endocardium smooth throughout. Foramen ovale and ductus arteriosus closed. *Lungs:* Entire posterior half of right lung is deeply injected, thickened and of firm consistence; non-crepitant; sections of it sink in water. Cut surface shows numerous discrete, slightly elevated, grayish-pink areas, from which a small amount of turbid exudate can be expressed. Left lung soft and crepitant throughout. *Liver:* Weight 75 gm. Surface smooth and on section of almost uniform dark-brown color throughout. Bile passages patent. *Spleen:* Weight 33 gm.; surface smooth; on section, Malpighian bodies and trabeculæ are faintly visible; pulp firm and does not scrape. *Pancreas:* Small; weight 2.2 gm.; pinkish and normal. *Alimentary tract:* The esophagus consists of two distinct portions entirely separated from one another. The upper portion opens normally above into the pharnyx, but below it ends in a blind cul-de-sac, the lowest portion of which is 1.4 ccm. above the tracheal bifurcation. Measurements of this upper moiety: Length, 25.0 mm.; diameter of lumen, 5.0 mm.; thickness of wall, 1.2 mm.

The lumen is about uniform throughout; the thickness of the wall increases slightly towards the lower end. The mucous membrane is pale, smooth and slightly thrown into folds.

The lower moiety is in all respects smaller than the upper part. Below it opens normally into the stomach, but above it forms a fistulous communication with the posterior wall of the trachea at a point 8.0 mm. above the bifurcation and 6.0 mm. below the pouch-like end of the upper part. Measurements of lower moiety: Length, 30.0 mm.; diameter of lumen, 3.0 mm.; thickness of wall, 0.8 mm.

Mucous membrane smooth and pale. The pylorus is freely patent, measuring 15.0 mm. in circumference. The mucous membrane of the stomach and intestines is smooth and pale.

Kidneys: Weight, 25.2 gm. On section, right kidney shows extensive hemorrhagic infarction of the pyramids, and large collections of uric acid in the papillæ. Left kidney apppears normal. *Adrenals:*

Weight, 4.6 gm.; firm and flat; organs normal. *Bladder:* Mucosa pale and smooth. *Genitalia:* Negative. *Thymus:* Weight, 1.2 gm.; organ much shrunken in appearance. *Organs of neck:* Negative.

This malformation is only to be explained by some developmental deviation from the normal early in embryonic life, though some writers have believed that an inflammatory process could cause the obliteration of a portion of the esophagus and by ulceration establish a fistulous opening into the trachea. The trachea is formed very early in embryonic life from the anterior part of that portion of the fore-gut which is to become the esophagus. The lumen of the gut is somewhat flattened, or pear-shaped, the ventral portion of the lumen being much narrower than the dorsal portion. The trachea is formed from the ventral portion by a process of pinching off of this narrow ventral portion of the gut lumen. This pinching off process extends throughout nearly the entire length of the esophagus. The lungs are budded off from the esophagus as two lobes near the lower end of the trachea. Separation of the trachea begins below and progresses upwards. It is readily seen, then, that failure of the trachea at any point to pinch off would leave the esophagus in communication with the trachea. There would then be simply a tracheo-esophageal fistula. However, the esophagus, after complete separation from the trachea normally, becomes imperforate for a brief period and then opens again. It is possible that a portion of the esophagus fails to become perforate, and this may account for the total absence of a section of esophagus.

I am much indebted to members of the Department of Comparative Anatomy for assistance in interpreting this rare condition.

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[5] Porro: *Ibid*, vol. ii, 1871.
[6] Hirschsprung: Copenhagen, 1861.
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Clinical Department.

THROMBOSIS OF THE LEFT FEMORAL ARTERY.

BY CHARLES S. WALKER, M.D., KEENE, N. H.

J. F. C., male, forty-five years of age; occupation, wood-worker in box shop.

On Nov. 30, 1908, the patient was working on a saw splitting a piece of lumber 42 inches long, 10 inches wide and 1½ inches thick. The lumber was warped, and was withdrawn twice, and on the third attempt was thrown back, striking patient about one and one-half inches below Poupart's ligament of the left leg. The impact threw him upon his back; after a few seconds he regained his feet and on account of severe pain in the calf of his leg went home.

There was considerable soreness where the plank struck him, and marked discoloration in twenty-four hours, and a general lameness of the muscles. The foot was warm and he experienced no pain in the limb at this time, but the pain in the calf muscles continued when walking or standing, but ceased on sitting or lying down.

The patient returned to work on Dec. 1; he could walk perfectly well and continued at his work for a week, measuring lumber and sending it into the shop, though after the third day the foot became pale in color, and cold, but no pain, except in the calf muscles, during this week.

On Sunday he worked around the house part of the day, and slept the remainder of the day.

Monday, Dec. 7, about 3 A.M., the foot began to pain him, and on getting up he was unable to walk, having to come down stairs on his hands and knees. He went to his work, riding to and fro.

Dec. 8, started to walk to his work, but was unable to do so because of the excruciating pain, and he was taken to a physician's for his first medical treatment since the accident. Lotions were prescribed and patient was told to keep quiet for twenty-four hours.

I saw the patient twenty-four hours after; he was suffering great agony, having had no sleep for three nights. The foot was cold and white; there was no pulsation in the left femoral artery, although perfectly distinct in the right femoral. In addition to the pain in the calf muscles, there was a sensation in the foot described by the patient as like that of a frozen foot regaining its circulation.

Small doses of morphia were administered, and the limb was elevated as much as possible. Elevation caused much agony, and hanging the limb down caused a cessation of the discomfort.

Dec. 13, the foot was somewhat discolored and swollen, but regained its usual color on being elevated. The limb was wrapped in cotton, for the warm room felt like ice-cold applications, and the patient complained bitterly. The discoloration became more marked, and pain sensations increased.

The elevation of the limb could only be of short duration, but was carried out as far as possible. Blebs began to appear on the dorsum and sides of the foot. The patient had been seen by several medical men, and the diagnosis of thrombosis of the femoral artery and a probable embolus of the popliteal artery at its division confirmed.

On Dec. 27, the discoloration was seen above his ankle and a surface that had previously been warm was now cold and becoming more marked each day. The pain increased. Five weeks after the accident, with all symptoms increased, he was removed to the hospital for operation. The left leg was amputated on Jan. 4, 1909, at the junction of the lower and middle third of the femur. On division of the muscles, the femoral artery and vein were found filled with clots, and portions were removed by expressions.

The amputation was well above the line of discoloration, trusting that a sufficient collateral circulation could be provided to allow the flaps to heal. A dissection of the amputated limb was made; all the vessels, both arterial and venous, were found filled with clots, and organizations going on. The soleus muscle was dark and baggy; above this point, the muscles were in a healthy state. Twenty-four hours previous to the operation, the patient's temperature was 101.6°, pulse 102; the morning of the operation, 100.6°, and twenty-four hours later, 99.2°.

The patient had frequent attacks of sharp, shooting pains, and for a few days complained of the old pain in the foot. The patient made a good recovery; the flaps healed nicely, but the lack of pulsation in the femoral artery continues. The case was one of great interest to watch because of the peculiarity of the accident.

Medical Progress.

RECENT PROGRESS IN LARYNGOLOGY.

BY A. COOLIDGE, JR., M.D.,
AND
I. D. KERR, M.D.

REMOVAL OF THE TONSILS.

Especial interest has been directed during the past year or two to the faucial tonsils. For many decades the question of whether tonsils should be removed or not has met different answers, but during the last few years there appears to have been an outburst of operative fervor which is probably reaching its height, as it cannot increase indefinitely from lack of material. During the progress of this revival, the fact became evident that all operations which had previously been used for the removal of the tonsils often left a large amount of tonsillar tissue behind, and practically never removed it all. More recently, it was found that by simply dissecting behind the capsule the whole tonsil could be easily removed. The former methods are now known as tonsillotomy, the latter as tonsillectomy. Both the name and the operation started a few years ago in the West and have now reached, but not crossed, the oceans.

We are thus at present in the midst of two controversies about tonsils, — when shall we operate, and how? The first question will probably vex us for several years to come. The second is likely to be determined comparatively soon, when the question of immediate and subsequent dangers of the recent radical removals are definitely settled. The operation of tonsillectomy is not within the year new. The principle consists in separating the tonsillar capsule from the underlying structures and shelling out the tonsil with its capsule intact. Different instruments and details of technic have been described.[1]

An interesting modification of tonsillectomy has recently been described by Matthews[2] who has done the operation many times with children. He uses the horizontal position, and ether as an anesthetic. Chloroform he considers dangerous. His description of the removal of the right tonsil is as follows: The index or index and middle finger of the right hand are inserted and the palmar surface applied to the right anterior pillar. By several strokes of the finger along the pillar, from above downward, a plane of cleavage is formed and the tips of the fingers are felt to enter between the outer fibrous tissue-covered surface of the tonsil and the inner surface of the pharyngeal wall. If, as is less frequently the case, the tonsil adheres to the posterior pillar, the palmar surfaces of the fingers are then brought in contact with the exposed surface of the tonsil, and the tonsil forcibly pulled forward or rotated on its vertical axis toward the mouth. The adhesions to the posterior pillar separate easily. Next one inserts the finger into the space made by separating the anterior pillar from the tonsil, turns the palmar surface towards the tonsil and brings it in contact with its upper pole. With the finger above the tonsil, and the pillar thoroughly separated from it, the tonsil is pushed inward toward the pharynx and downward towards the epiglottis, thus stripping it laterally from the pharyngeal wall. The tonsil, now out of its natural bed between the pillars, remains attached only by a band of mucosa at its lower pole. One can now, if he desires, tear away this remaining attachment with the fingers, but it is more difficult and time consuming than the preceding steps of the operation, and consequently the removal is completed by a Mackenzie tonsillotome of small size and small aperture. The blade is drawn back and the instrument inserted with the finger over the aperture and the blade pushed home only when the finger feels that the tonsil is engaged. The left tonsil is removed in the same way with the left hand. Inspection shows that the whole capsule is removed. The operation can be done in two minutes and with little ether. The operator is guided by the sense of touch only, and the necessary skill is easily acquired. There is free bleeding at the time, but the author has never seen any subsequent bleeding. Convalescence is no longer nor more painful than after other operations.

Modifications of this method of finger enucleation have also been described. The mucous membrane connecting the pillars with the tonsil may be incised previous to the enucleation, to admit the finger behind the capsule without tearing the mucous membrane. Instead of the guillotine, the wire snare may be used to complete the operation.

West[3] describes a slight modification of Ballenger's method of tonsillectomy from the Johns Hopkins Hospital. It is done with local anesthesia by injecting cocaine around the tonsil. The tonsil is pulled forward and separated from the posterior pillar with a right angle knife. It is then drawn inwards, and the incision carried from the lower end of the first incision by a straight knife, around the anterior attachments of the tonsil to the upper end of the previous incision; then the tonsil is drawn farther forwards, while the capsule is separated from the underlying muscle, beginning above and behind. If bleeding obscures the view, a blunt pointed bistoury is used, cutting from below upwards. In case of hemorrhage, he uses special hemostats, which he allows to remain for an hour or two. The only points which he makes are beginning behind the tonsil, and his special hemostats.

Freer[4] gives a short summary of the anatomy of the tonsillar region, and describes his special instruments and technic for tonsillectomy. The tonsil is dissected from the pillars and from the palate above before any traction is used. It is then pulled inward and downward, severed from its other attachments with a curved knife. On the value of complete tonsillectomy, he says that the most satisfactory and perfect method for the removal of all varieties of diseased tonsils is their dissection from the tonsillar fossa with knives of suitable form. Tonsillotomy with the tonsillotome or snare, cautery dissection and the attempt to cause shrinkage of the tonsils by galvanocaustic slitting of the crypts are timid and unreliable methods which should be abandoned. He believes that there is less danger of prolonged hemorrhage from the rational excision of the tonsil than from the usual methods of its removal.

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[1] See Ballenger: Diseases of the Nose, Throat and Ear.
[2] Ann. Surg., December, 1909.
[3] Arch. für Laryngol., xxii, 10.
[4] Jour. Am. Med. Asso., Feb. 13, 1909.

How much we owe to Chicago for this modern tonsillectomy is suggested by this paper, where instruments, the previous operations, the anatomy and even the position of the patient are known under the names of Freer, Casselberry, Ingals, Rhodes and Robertson.

SUPPURATION IN THE ANTRUM.

Empyema of the antrum was recognized and treated before the beginning of modern methods of rhinology, but the etiology has not yet been firmly established, and the proper treatment of the different cases is still a matter for discussion. Some cases get well by simple lavage; others only after a radical operation. This does not necessarily depend upon the length of time which the empyema has lasted, nor upon the presence of polypi or other local appearances, nor can it yet be definitely ascertained from the bacteriology. If the suppuration is kept up by some defect in the teeth, it may spontaneously stop when the defect is removed, but this also cannot be surely foretold, and it is often impossible to know whether or not the teeth are at fault. A paper by A. Logan Turner[5] based upon a series of cases, aims to try to determine whether there are means at our disposal to say at the outset whether lavage is likely to be sufficient or a radical operation to be advised. His conclusions are interesting and are given in full. The success or failure of lavage is not influenced by the age of the patient. In patients of advanced years, however, the minor operation of lavage is to be preferred, because of its simpler nature associated with the minimum of shock. The existence of nasal polypi with antral suppuration should not make the radical operation imperative, as cases associated with nasal polypi may be cured by simple irrigation. Nasal polypi, however, should raise the suspicion that the antral disease is complicated with suppuration in one of the other sinuses, probably in the ethmoidal cells. In cases of antral suppuration with a duration of less than one year, lavage may be successfully practised in the majority of cases. We have not sufficient cytological and bacteriological data at present to allow us to determine before treatment is commenced in what cases in this class lavage may prove a failure. In cases of suppuration of more than one year, lavage may in the first instance be practised when the pneumococcus and staphylococci are the predominent organisms. When in the same class of case the streptococcus pyogenes is the virulent organism, or when the streptococcus is associated with the presence of squamous epithelium and lymphocytes, the radical operation should be advised and practised. When lavage is decided upon, an intranasal operation should be carried out in preference to the alveolar route. When the radical operation is practised, the only satisfactory method is through a large opening in the wall of the canine fossa. After curetting what is necessary, the operation should be completed by making an opening through the antro-nasal wall and allowing the buccal wound to close (Caldwell-Luc).

Oppikorfer,[6] in Siebenmann's clinic, has made an exhaustive study of the microscopical structures of the mucous membrane in one hundred and sixty-five cases of empyema of the accessory sinuses. The changes in the epithelium and the deeper structures were similar in the different cavities, except that in the antrum there is more increase in connective tissue. In about a third of the cases there had been a change over a greater or less surface to pavement epithelium. This change proves that the empyema has existed for a considerable time. Sometimes the ciliated epithelium persists. Often there are paths in which there is no epithelium. The basal membrane can always be found, but generally only in limited areas. The connective tissue changes varied even more than the epithelium. The thickness of the mucous membrane depends upon the amount of connective tissue, the extent of the edema and the amount of blood contained in it. Clinically, there is no difference between a slightly thickened and a completely polypoid membrane in the character of the empyema. The antrum contains more glands than the frontal sinus and is consequently more liable to cyst formation. There is no way of determining from the microscopic appearances the character of virulence of the empyema. This is better determined by the history, the secretions and the micro-organisms. Tuberculosis was not found, except in one doubtful case.

ATROPHIC RHINITIS.

Nothing very positive has been added to our knowledge of atrophic rhinitis during recent years; perhaps it might be said that we never had any real knowledge of what atrophic rhinitis is nor how to treat it effectively. Among the theories of etiology which have been advanced, no one has received a majority following. There are, of course, different conditions in the nose which may produce one or more of the different symptoms which make up a picture of a typical case of atrophic rhinitis, but looking at the symptom complex of a typical case, the suggestion that this is a disease with a definite pathological entity and, therefore, always due to the same unproved pathological process, seems a more rational view. This is, however, not the opinion of many students of the subject.

Steiner[7] reports the study of a series of cases with especial reference to the most frequent symptoms. The age, when first seen by a physician, was under twenty-five in over 60% and under thirty in 90%. The typical facies he found in 53% and in a less-marked degree in 25%. He found the middle turbinate atrophied in only 11%. In 15% there was also empyema of an accessory cavity. In only 6% was hereditary syphilis proved. He was much impressed by cases in which operative removal of a growth from a nasal cavity was followed by typical symptoms of ozena, and looks upon this as an argument that the symptoms may arise from abnormal potency of the nares. He believes that atrophy of the mucous membrane with fetid crusts may arise from one of four causes, — congenital defect, mechanically, from empyema of a sinus and from syphilis.

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[5] Brit. Med. Jour., Oct. 10, 1908.

[6] Arch. für Laryngol., Bd. xxi, p. 422.

[7] *Ibid.*, heft 2.

The theory of Gruenwald that the disease is secondary to suppuration from the accessory sinuses appears at first to be one of the easiest to argue against, but nevertheless, in some modification, it is often introduced.

Frese[8] undertakes the elaboration of a theory that atrophic rhinitis is often the result of hereditary syphilis. The first stage in the process is the snuffles of infancy, which may get well or may lead to retarded development of the nose and the different structures.

D. Braden Kyle[9] thinks that there is not any one etiological factor as a cause of atrophy of the nasal mucous membrane; that the source of ozena in the condition has no one origin, and that there may or may not be associated sinus-lesion; that we do not have an atrophic condition which follows a simple chronic inflammation with contraction, and that we do have an atrophic condition due to faulty nutrition from other causes and that we do have an atrophic rhinitis which is a truly atrophic change. He believes that no specific micro-organism will account for all cases.

In order to find what evidence the Wassermann reaction might give on the question of the syphilitic theory of the etiology of ozena, Sobernheim[10] applied this test to seventeen cases of typical atrophic rhinitis. In no single case was there a positive reaction. Although this cannot be considered as positively conclusive, he thinks that it may be said that there are cases of ozena which have no connection with syphilis. If this is accepted, it may be argued that a disease with so definite a pathology is probably due to some definite, non-syphilitic cause.

THE CONNECTION OF THE LYMPHATIC SYSTEM OF THE NOSE AND THE TONSILS.

In 1895, B. Frænkel called attention to the occurrence of acute tonsillitis following operations and catarrhal inflammations in the nasal cavity, and suggested that the infection was carried to the tonsils through the lymph channels from the nose and is not due to a direct infection from the surface of the tonsil. This question is the subject of a paper by Lenart.[11] It has often been noticed that a typical attack of acute tonsillitis may follow an intranasal operation in about three days. The whole tonsillar ring is commonly involved, a fact which often escapes observation. The tonsillitis is not often confined to the side upon which the operation was done, although that side may be the first to show disturbance. The object of his experiments was to study the lymphatic connection between the nose and the tonsils and to explain the frequent appearance of tonsillitis after nasal infection. The nasal cavity, especially the lower turbinate, is rich in lymphatic channels, as is also the pharynx, and especially the regions of the tonsillar ring. Anatomically, these are all connected together. To ascertain the direction of the lymph currents, the author injected pigment into different intranasal structures in different animals. In twenty-four hours this pigment was found in the tonsils and in other parts of the tonsillar ring. After one-sided injection, the pigment was found in both tonsils. He concludes that substances may go from the nasal mucous membrane to the tonsils by way of the lymph channels, and that infection may take place in this way and is not confined to the side on which it originated.

THE SURGERY OF THE EXTERNAL NOSE.

This subject has, until recently, received comparatively little attention, except that different flap operations for the correction of excessive destruction of the nose have long been described under general surgery. Operations for the lesser deformities, one-sided displacement, unsightly prominences and sunken bridges, have often been avoided by the rhinologist through a lack of certainty of his results. Often, also, the desire of the patient to change his facial appearance is due to an obsession, which may persist, to the discomforture of the operator. There are, however, not a few cases in which the desire for a cosmetic operation is entirely reasonable, and in which the proper operation is justifiable. The problems for the operator differ so radically that the subject is a very complex one. It may be necessary to remove or to change the position of bone or of cartilage, or to fill up depressions in contour. The nasal septum may be involved so that it requires adjustment, either at the same time or independently. As external scars are to be avoided, submucous or intranasal resections have, other things being equal, a certain advantage, although there appears often to be an unnecessary reluctance to small skin incisions.

A brief description of different deformities and the different flap operations is the subject of a paper by Beck.[12] A few cases are reported operated upon by different methods.

Subcutaneous methods of correcting unsightly noses are described by Roe[13] in a series of cases. Generally, the first step in the operation is to raise the skin, without injuring it, from the deformed portion, the incision being made from the inside of the nostril anterior to the deformity, and the redundant portion cut away or placed in the depressed portion. After the operation, there is frequently persistent swelling of the nose on removal of the external dressing. This can only be overcome by continuing external pressure until this tendency has completely disappeared. For the filling up of depressions in contour, especially of the bridge in the so-called saddle-back deformity, the use of pieces of metal, or rubber, inserted subcutaneously, has been generally abandoned on account of their tendency to come out at some subsequent time. Living bone, or cartilage, is moved into position in some plastic operations. The more common way of filling these depressions is by the subcutaneous injection of paraffin.

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[8] Arch. für Laryngol., xx, p. 474.

[9] Laryngoscope, June, 1908

[10] Arch. für Laryngol., Bd. 22, p. 1.

[11] *Ibid.*, Bd. 21, p. 463.

[12] Laryngoscope, October, 1908.

[13] *Ibid.*, 1908.

PARAFFIN.

The injection of paraffin subcutaneously for elevating unsightly depressions has not been received with universal enthusiasm; it is often critised and not infrequently condemned. A judicial review of the results of its use up to the present time is of the greatest value in showing to what extent its use is justifiable in cosmetic surgery. Harmon Smith, who did much in this country to call attention to its possibilities at the start, now summarizes the results, both of his own experience and from the results of others.[14] His conclusions, briefly, are that the use of paraffin is not without its dangers, which, however, can be avoided when performed by one of experience. The proper paraffin is one with a melting point of about 115° F., and made of hard and soft paraffin. The mixture must be injected cold, and the needle directed from above downward. The upper part of the nose must be protected by the digital pressure of an assistant, and the injection must be made slowly and only in small quantities at each sitting. The second injection should not be made shortly after the first. The author's experience has been more fortunate than that of some others, who, in consequence of unfortunate results, are inclined to condemn the procedure. In many cases the accidents may be attributed to faulty technic, but they would seem to indicate that it would be unwise to recommend it for trivial defects, though justifiable in cases where the deformity is a serious matter to the patient.

THE OPSONIC TREATMENT OF CATARRH OF THE RESPIRATORY PASSAGES.

The bacteriology of inflammations of the nose and throat is a subject which has, until recently, not developed beyond the stage of academic interest. An impetus to the study has been started in the practical application of opsonic treatment.

As a result of four years' work, Allen[15] believes that the subacute stage of acute colds can be cut down to a duration of two to three days by the injection of a suitable vaccine. As soon as the patient is seen, smears and cultures should be made of the mucous discharge and the infecting organism ascertained and a vaccine made from it. If mixed infection is found, a mixed vaccine is given. The dose is according to the organism. He finds that chronic nasal catarrh is apparently always due to the bacillus of Friedlænder, and in cases where the accessory air sinuses are not involved, complete cure, both of the chronic attack and acute exacerbation, is to be expected from opsonic treatment and daily washing with weak antiseptic washes. Cases of ten years' standing have been cured. Marked improvement follows within a week of treatment. One to two treatments prove sufficient.

When the sinuses have become affected, treatment is much more difficult unless free drainage can be established, when complete cure may result. Poor blood supply and lymph flow to a part do not bring sufficient opsonin to insure the death of the infecting organisms. Perhaps very prolonged treatment might secure this much-desired result. The most common organisms found in nasal catarrh are B. Friedlænder, B. influenzæ, B. septus, and micrococcus catarrhalis.

Some people appear to be immune to all "cold organisms"; others are especially susceptible to one of the group; yet others to more than one. Vaccine during the subacute stage in those susceptible to only one of the group has not only markedly cut short the attack, but entirely prevented the onset of others, even for a period of over a year. In those susceptible to more than one organism, any attack may be due to one only of their particular enemies or to more than one. Each organism produces its own type of cold, and from the unusual features presented, mixed infection can be diagnosed from the clinical examination.

The author is more hopeful than a majority of the profession at present appear to be. There is no doubt, however, that the bacteriology of the nasal and pharyngeal cavities offers a field for research, and it is to be hoped that our present lack of knowledge and lack of system in treatment may be replaced by definite findings.

BISMUTH PASTE.

Inspired by the use of bismuth paste in general surgery, Beck[16] has treated three hundred and nineteen cases of different affections of the nose, throat and ear by this method. The paste is made by adding subnitrate of bismuth to vaseline and other similar substances, the proportions depending upon the consistency desired. It is injected into the nasal, aural, accessory or abscess cavity by means of a syringe, somewhat similar to that used in injecting paraffin subcutaneously. He has used it in cases of chronic suppuration of the accessory sinuses, atrophic rhinitis and chronic tonsillitis as a dressing after intranasal operations and other conditions. In the majority of cases of nasal accessory sinus suppuration, some slight operation, as puncture or middle turbinectomy, is essential in order to enable one to inject the sinuses properly. As a nasal dressing in turbinectomy and septal operations, it has served him better than any other in that it checked the bleeding and prevented infection. He has never had any serious results or complications. Without yet knowing the limitations, the author would use it in any case of chronic suppuration of the nose or throat. It should never be used in acute conditions, since violent reaction may follow its use.

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[14] Laryngoscope, October, 1908.

[15] Vaccine Therapy and the Opsonic Method of Treatment. By R. W. Allen, M.D., London. P. Blakiston's Son & Co., Philadelphia, 1908. See, also, Lancet, Nov. 28 and Dec. 5, 1908.

[16] Jour. Am. Med. Asso., Jan. 9, 1909.

PAPILLOMA OF THE LARYNX IN CHILDREN.

This important subject is critically reviewed in a recent paper by Harmon Smith.[17] Papillomata may occur at any time during life. All congenital tumors of the larynx have been found to be papillomatous. In some cases hereditary syphilis is a posssible cause and the growth will disappear under treatment with potassium iodide. Frequently they disappear without any recognized cause. This fact has led some observers to conclude that, irrespective of treatment, the growth will not disappear until a physiological change has occurred in the patient which will retard the activity of the cell organisms.[18] Local predisposition seems to be the only etiological factor that can be definitely cited. There are cases of papilloma of the larynx in adults due to the inspiration of irritating vapors and particles of dust, but this condition is unlikely to occur with children.

Thick growths appear more frequently upon the cords than upon the ventricular bands, and more frequently in the anterior than in the posterior part of the larynx. Tuberculosis papillomata may occur in the posterior commissure. They may spring from all parts of the larynx, even from the under surface of the epiglottis and the aryepiglottic folds. Hoarseness or possible loss of voice, dyspnea, cyanosis and the peculiar facial expression of anxiety accompanying any disturbance of respiration are the prominent symptoms. Papillomata may be present when hoarseness is attributed to adenoids.

Although there are several varieties macroscopically, they appear to be of the same structure when examined microscopically. The most frequent is the pale granular variety firmly attached to the cord or ventricular band. The second kind is more vascular, and varies from a polypoid condition to a pinkish mucous-soaked appearance which would indicate a more rapidly growing and better-nourished neoplasm. A third kind is where the growth appears sessile or where there is a large base from which more neoplasm springs, making more of a cauliflower appearance. The growth may be a hypertrophy of the normal papillæ or may be entirely new formation in the part. The basis structure is formed of connective tissue. The free surface is covered by epithelium. Blood vessels and nerves enter into the interior of the papillæ.

Each case has to be treated according to the symptoms present, although many apparently similar cases will not yield to the same line of treatment. Smith considers the treatment under three heads. First, that of necessity, where the symptoms denote the characteristic "facies" of insufficient respiration. He advocates immediate tracheotomy with no further operative measure on account of the patient's lowered resistance. Under the second heading, "expedient treatment," tracheotomy would always be justifiable. The concensus of opinion justifies tracheotomy in those cases of multiple papillomata of the larynx when there is difficult respiration or impaired health apparently due to bad breathing; when there is no evidence that the patient will become tractable in the use of intralaryngeal methods, and in cases where there is rapid recurrence after removal. In other cases treatment involves no other surgical procedure than that which might be accomplished through the *vias naturales*. Some cases can be treated with cocaine and removed with Mackenzie forceps, the snare or curette of Krauze, Heryng, Laudgraf and Schroeter. If the Jackson self-illuminating speculum is used, it is necessary to anesthetize the patient, which in itself adds an element of danger, but if the patient will not permit of intralaryngeal treatment, it will be necessary to anesthetize. Chloroform is recommended rather than ether, because it lessens the laryngeal sensation by being less irritating to the mucosa. After partial anesthesia, a 10% solution of cocaine to the interior of the larynx and a one-thousandth solution of adrenalin is recommended to render the larynx less sensitive to manipulation and obviates the necessity of deeper general anesthesia. Nearly every kind of an astringent has been tried locally but with little result. A few observers have reported beneficial results from the use of alcohol in full strength. Internally, arsenic has been used more than any other internal drug and probably hastens that physiological change necessary to the disappearance of the warts. Bostock is a strong advocate of potassium iodide and arsenic internally.[19]

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Reports of Societies.

THE AMERICAN GYNECOLOGICAL SOCIETY.

Thirty-Fourth Annual Meeting, celebrating the Centennial of McDowell's Operation, held in New York City, April 20, 21 and 22, 1909.

The President, Dr. J. Riddle Goffe, in the chair.

The Society convened in the solarium of the Waldorf-Astoria Hotel.

An address of welcome was delivered by Dr. Clement Cleveland, of New York, which was responded to by Dr. J. Montgomery Baldy, of Philadelphia.

The first order of the scientific session was a symposium on

Cesarean Section; Indications in Placenta Previa and the Justifiability of Sterilization in this Condition.

(a) INDICATIONS FOR CESAREAN SECTION IN PLACENTA PREVIA.

Dr. George Tucker Harrison, of New York, read a paper on this subject, in which he pointed out that the resources at our command were amply sufficient in the vast majority of cases. While the cases in which Cesarean section for placenta previa was justifiable were very few, they did occur, and when such a case presented itself for operative intervention he maintained that vaginal Cesarean section should be the operation of election. Vaginal Cesarean section was a surgically exact method and should not be brought in competition with other methods. It fulfilled the requirements of quick scientific surgery in that one could make a clean incision, deliver, sew up the incision and get union by first intention.

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[17] Laryngoscope, Feb. 20, 1909.

[18] Clark: Boston Med. and Surg. Jour., Sept. 28, 1905.

[19] Monatschr. für Ohrenheilkunde, 1905, Part II.

(*b*) CESAREAN SECTION IN PLACENTA PREVIA.

DR. CHARLES JEWETT, of Brooklyn, N. Y., said that in cases of complete placenta previa, when complicated with an undilated and rigid cervix, abdominal section claimed consideration. Certain of the more conservative sectionists accorded a place to the Cesarean operation in these conditions when it could be performed in a hospital. But the benefits of a hospital environment obtained in a similar measure for obstetric delivery. Even in complete previal implantation, and with undilated cervix, bleeding was amenable to one or more of the usual obstetric procedures, gauze tamponade or water-bag within the cervix, or the latter passed through the placenta, podalic version, etc. Grave hemorrhage in placenta previa was due more to failure in the timely and well-directed use of the obstetric measures at our command than to any lack of them.

With ligation of the uterine arteries, as proposed by Miller, of Pittsburg, the author had had no experience in vicious implantation of the placenta. Its value in certain other uterine hemorrhages was known, and if its author's claims were borne out by further trial, nothing more was required for the management of the kind of hemorrhage under discussion. From the standpoint of shock, the major operation was at a signal disadvantage. The abnormal implantation was seldom or never recognized until bleeding had begun. Abdominal section was a grave risk after much hemorrhage. In a greatly depleted patient it was almost surely fatal. Cesarean section, when once begun, must be carried to completion whatever the condition of the woman. On the other hand, no shock attached to the introduction of a hydrostatic bag, and little or none to a Braxton-Hicks version. The obstetric procedure might be moderated to suit the needs of the individual case. Bleeding controlled, time was permitted for returning strength, and a slow and gradual dilatation and delivery entailed a minimum of tax. In a considerable proportion of cases expulsion or extraction was made easier by immature fetal development. In nearly 25% the child was non-viable, and here often extraction might be simplified by craniotomy. As between a skillful section and an equally skillful obstetric delivery, less shock should obtain in the latter.

The principal claim for Cesarean section in placenta previa was its diminished fetal mortality. Under obstetric treatment, the death-rate of the child was formidable. A large proportion of the children were doomed to death, whatever the method of delivery. Of the possibly viable children, Cesarean section might save many lives, but by no means all. Vaginal Cesarean section, the cause of which had been espoused by German writers, had no greater claim to consideration than the supra-symphyseal operation. While it might offer quite as good a prognosis for the mother, the chances for the child were not so good, owing to the somewhat greater fetal risks in extraction through the natural passages. Not only did we find little rational basis for Cesarean section in placenta previa, but its claims received scant support from experience.

In 2,010 cases of placenta previa from the German, French and Italian literature of the last two years, the maternal mortality under obstetric methods of delivery was 221, 10.9%; the fetal, 1,159, 57.3%; 726 of these cases, reported by Futh, were collected from the practice of midwives and general practitioners. Many were subjected to prolonged tamponade and were exhausted by needless hemorrhage. Exclusive of Futh's cases, the maternal mortality was 6+%, and the fetal, 68.8%.

Comparing these results with those of 95 abdominal Cesarean operations collected from seven publications, all but one of the last year, he found in the latter a mortality of 11.5% for the mothers and 34% for the children. Sellheim, in one vaginal Cesarean section, saved both mother and child. In 12 utero-vaginal sections reported by Bumm, the maternal deaths were 8.3% and the fetal, 83.3%. Hammerschlag referred to 26 vaginal Cesarean sections with a fetal death-rate of 55%. How many mothers were lost he failed to say. The few vaginal operations made a better showing for the mothers than the abdominal, but the percentage of fetal deaths was no less than under obstetric methods.

If conclusions might be formulated on so small a number of cases, the Cesareanists had not yet established their cause.

(*c*) THE INDICATIONS FOR ABDOMINAL CESAREAN SECTION IN PLACENTA PREVIA.

DR. HENRY D. FRY, of Washington, D. C., said the principal dangers to be overcome by the obstetric treatment of placenta previa were hemorrhage, laceration of the uterus and sepsis. Delivery from above escaped these dangers to a great extent, because removal of the infant and placenta by a Cesarean section did away with the first and second stages of labor. Abdominal Cesarean section, however, brought dangers of its own, such as shock, sepsis, acute dilatation of the stomach and other post-operative complications. The indications for the classical Cesarean section were primiparity, small vagina, rigid and undilatable cervix and placenta previa centralis. This combination would be met with in about 5% of all cases of placenta previa; therefore the purely obstetric management would best meet the indications in 95% of the cases. The indications for Porro-Cesarean section included those women who had been subjected to preliminary obstetric interference plus the classical indications mentioned.

(*d*) THE ADVISABILITY OF CESAREAN SECTION IN THE TREATMENT OF COMPLETE PLACENTA PREVIA.

DR. FRANKLIN S. NEWELL, of Boston, said that the advocates of Cesarean section claimed that the maternal mortality under the ordinary methods of treatment was so great that some change must be made. Hirst stated that in the hands of the general practitioner a mortality of approximately 40% was present in complete placenta previa, but thought that in the hands of experts the ordinary mortality should be in the neighborhood of 1%, or, in other words, an accidental mortality. Other authorities admitted a mortality varying from 3 to 6% in a large series of cases, presumably under the care of experts. The maternal mortality from abdominal Cesarean section for placenta previa was variously given as from 20% upward, even in expert hands, and it seemed probable that if abdominal Cesarean section was adopted as the routine treatment by the profession as a whole, a constant high mortality would be maintained, since the results of surgery performed by the general practitioner were always worse than those obtained by competent abdominal surgeons. While the maternal mortality in the hands of an expert averaged from 3 to 5%, in the hands of the general practitioner the mortality was 40%. The fetal mortality in cases of complete placenta previa varied from

60% to 65% under the ordinary methods of treatment, and it would seem at first sight that this was the indication for the performance of Cesarean section. However, any one who studied carefully the causes of the fetal death-rate must be impressed with the fact that no such improvement in statistics was to be expected as would seem probable at first sight. If there was any factor which claimed recognition in determining the advisability of substituting Cesarean section for the ordinary methods of treatment of placenta previa, it would seem that the morbidity attendant on dilatation and extraction was the one. There could be no doubt but that the trained surgeon, who had had no obstetric training, would have better results in treating placenta previa by Cesarean section than if he tried to perform an operation with which he had had little or no experience. The advocates of Cesarean section had not recognized that their personal limitations furnished the great indication for an abdominal delivery and not the exigencies of the case. Recently vaginal Cesarean section had been urged as the best solution of the problem, and the advocates of this operation claimed that it was simple and easy for the trained surgeon and carried much less risk with it than the abdominal delivery, but the author's feeling, based on a limited experience with the operation, was that it was not as simple a procedure, even in uncomplicated cases, as it was commonly stated, and he felt that, although in the rare cases, where the cervix was more or less rigid it was probably a safer operation than abdominal delivery as a routine procedure; but in complete placenta previa it had few, if any, advantages over the methods heretofore in use.

(*e*) CESAREAN SECTION IN CASE OF PLACENTA PREVIA.

Dr. Egbert H. Grandin, of New York, said that since, except where the patient may be kept under constant observation, the rule should be to empty the uterus as soon as the diagnosis is made, rarely would the question of section offer. Less radical means would suffice from the sandpoint of the woman, and, in marginal instances, for the child. In central implantation near or at term the child might be disregarded, and except the cervix be diseased, undilatable and not incisable, the question of Cesarean section would not offer. Where time permitted, if the vaginal portion had merged, dilating measures sufficed associated with the Duhrssen operation. In marginal instances the vaginal Cesarean section might enter into consideration.

(*f*) STERILIZATION IN CESAREAN SECTION.

Dr. John Osborne Polak, of Brooklyn, N. Y., felt that the obstetric surgeon should sterilize the woman who was subjected to repeated Cesarean section for the reason that, *first,* she requested the procedure; *second,* after the second section in the presence of the absolute indication, if the proper consent could be obtained; *third,* if the pathological conditions present necessitated extirpation of the uterus in the interests of the patient's life and health, sterilization might be done, if necessary, without consent.

In elective and uncomplicated hysterotomies, excision of the proximal ends of the Fallopian tubes at their origin in the uterus and the occlusion of the severed ends by flattening them out and suturing them to the peritoneum on the posterior fundal wall was the operation of choice. When infection, disease or atony with uncontrollable hemorrhage of the uterus was present, hysterectomy or the Porro operation should be elected in order to secure to the patient immunity from future conception and gestation. Finally, whenever possible, one or both ovaries should be retained in order that an operative menopause might be averted.

(*g*) THE JUSTIFIABILITY OF STERILIZING A WOMAN AFTER CESAREAN SECTION, WITH A VIEW TO PREVENTING SUBSEQUENT PREGNANCIES.

Dr. Charles M. Green, of Boston, said it was ethically and morally unjustifiable to sterilize a woman in performing Cesarean section, even if she and her husband requested it. The burden of proof to the contrary rested with those who advocated it. Opportunity might properly be taken in performing Cesarean section to remove pathologic organs; and the result might be that the woman could never again become pregnant, as in bilateral salpingo-oophorectomy, or in hysterectomy for neoplasms. But in the presence of disease requiring total ablation of the pelvic generative organs, pregnancy could not again occur were the organs not removed. If the indications for Cesarean section were absolute, and husband and wife were so informed, they might abstain from subsequent sexual intercourse and pregnancy. If the indication was relative and the disproportion of minor degree, the woman subsequently might be safely delivered of living children. She might deliver herself. In either case experience taught that repeated section might be performed as safely as the primary operation. A husband and wife might not ethically ask that either be sterilized with a view to preventing pregnancy and avoiding repeated section. If such a request was made and acceded to, not only was the operation morally wrong, but, in the event of a second marriage, might be bitterly regretted.

The author furnished statistics in support of these opinions.

DISCUSSION.

Dr. Albert F. A. King, of Washington, D. C., said there were a great many cases of placenta previa that occurred all over this country for which the greatest surgical skill could not be obtained, and hence the question arose, What was the best treatment to pursue in these cases? We had to fall back on obstetric treatment. It was very essential to divide the cases into two classes, namely, the treatment of those in hospitals with surgical aid, and the treatment of those in the homes of women without surgical aid. Obstetrics in home without proper surgical aid was entirely different from obstetrics in hospitals with surgical aid.

Dr. Herbert R. Spencer, of London, England, stated that some nineteen years ago he wrote his first paper on "The Diagnosis of Placenta Previa by Abdominal Palpation." At about this time Lawson Tait made a statement relative to the high mortality from obstetric methods of treatment of this complication of pregnancy, and suggested abdominal Cesarean section. This was received with great ridicule everywhere by obstetricians in Great Britain, and Tait acknowledged that he had not done obstetric work for many, many years. The speaker looked the subject up in connection with the University College Hospital, in which there is a large maternity under his charge, the number of cases of confinement amounting to 2,500 to 3,000 a year, and found at that time that the mortality of women treated in their own homes and those treated at hospitals aseptically by his predecessor, John Williams, and his own slight experience after him, was about 6%. Tait said the mortality under obstetric methods of treatment was 40 or 50%. This statement regarding percentage of mortality was very much ridiculed.

He had had practically no experience with abdominal Cesarean section or with vaginal Cesarean section in the treatment of placenta previa. His own treatment had been usually Braxton-Hicks version, and leaving the case to nature, and usually the child was delivered, without any further hemorrhage, in the course, on an average, of three hours, but this resulted in a high fetal mortality. One should consider whether he was going to take into account the mother or the child, or both. While that treatment saved the mother in the great majority of cases, the fetal mortality was quite high.

In a certain small proportion of cases there was an indication for abdominal Cesarean section. The speaker cited such a case.

Professor Hofmeier, of Wurzburg, Germany, stated that abdominal Cesarean section in the treatment of placenta previa was limited to a small number of cases, for the reason that it was practically impossible for the general practitioner to follow out this method of treatment. The old method of combined version and slow extraction, which was generally accepted in Germany twenty-five years ago, and the treatment by means of metreurynters in cases of large and strong children, had given good results, and in spite of the results obtained by abdominal Cesarean section in placenta previa, combined version and slow extraction was still a useful method of practice.

Dr. Charles M. Green, of Boston, desired to place himself on record as being in agreement with Dr. Fry and others who took the position that Cesarean section must have a limited application in the treatment of placenta previa.

Dr. A. Lapthorn Smith, of Montreal, said it was his earnest conviction at the present time that the mortality following abdominal Cesarean section in the hands of experts in this country was almost *nil.* This operation was far preferable to *accouchement forcé* which, in the hands of the general practitioner and some experts, had quite a high mortality. He hoped this society and other societies would frown down upon *accouchement forcé* as a means of delivery in this and other cases where Cesarean section could be resorted to, with practically no mortality. If the woman was operated on before she was touched by septic hands, when the child was not viable, there was no reason for waiting to do abdominal Cesarean section, as there the life of the child did not come into question. When it came to the question of whether Cesarean section in the hands of the general practitioner was logical or not, it was not. It was only a safe operation when done by an expert.

Dr. Philander A. Harris, of Paterson, N. J., said it was hardly in accord with his experience when he heard one of the speakers mention the extreme dangers of dilating the cervix with the hand. He had not done much obstetric work in the last few years, but in forty odd cases which he attended before that time, labor was not attended with great difficulty, and in many of them he had no trouble in dilating the cervices with his hand. Of this number of cases he lost only one by the employment of this method of dilatation. Fatalities sometimes resulted from the injudicious use of *accouchement forcé.* If one knew how to use the hand and took plenty of time, there was no occasion for a woman having hemorrhages and extensive laceration of the cervix.

Dr. E. W. Cushing, of Boston, did not think Dr. Green, or even the Boston Lying-in-Hospital, had a right to determine whether a woman should be sterilized or not. If she had been malformed by nature and could not be delivered of a child without repeated surgical operations which involved the risk of life, and she desired to avoid that subsequent risk by having a sterilizing operation done, she had a right to do so.

Dr. Henry D. Fry, of Washington, D. C., said that his rule was to explain the situation to the woman and her husband and allow them to decide whether or not she should be sterilized. He did not believe we could draw a dividing line on account of the social position of the woman and say we could sterilize those of the lower class and not those of high social position. If such a position were taken, women of humble position, who had given birth to children who had subsequently become great men, would be sterilized.

Professor Hofmeier, of Wurzburg, Germany, said he had performed sterilization not only with the consent of the woman and her husband, but at their urgent request. He did not think it was possible for women to abstain from sexual intercourse and subsequent pregnancy as indicated by Dr. Green.

Dr. Charles Jewett, of Brooklyn, N. Y., performed Cesarean section two months ago on a woman upon whom he did the same operation two years previously, and at the request of both the husband and wife he felt justified in sterilizing the woman.

Dr. Herbert R. Spencer, of London, England, did not consider we were justified in saying, in the absence of pathological conditions, such as fibroid tumors, cancer or infection, that a woman should not have any more children. From a purely ethical standpoint he could not see any difference between consenting to operate on a woman and preventing her from having children by this sterilizing operation and committing an abortion because she asked it. The so-called sterilizing operation was not always reliable. A distinguished abdominal surgeon in England had supposedly sterilized a woman, but subsequently, much to her annoyance and mortification, she again became pregnant, and the speaker delivered her. He subsequently delivered this woman for the seventh time after the operation of so-called sterilization.

Dr. J. Montgomery Baldy, of Philadelphia, said that nature had so arranged matters that some women, apparently healthy, could not bear children. Pathological processes set in which rendered them incapable of so doing. A woman was not in this world to be a beast of burden, although she had reproductive duties to perform, and there came a time when, after she had performed them to the best of her ability, nature had so deformed her, perhaps maimed her, that she no longer could be delivered of a child without a surgical operation, and for the sake of her health, comfort and happiness she was the best arbiter as to whether sterilization should be done or not. His sympathies went out largely to women in this respect. They had a right to an exceedingly serious say in regard to many of these operations. If a woman, guided by the conscientious judgment of the physician, decided to be sterilized, the surgeon had a right to sterilize her and prevent reproduction in the future in this individual case, but this did not mean that this operation should be done on every woman who requested it.

Dr. Andrew F. Currier, of New York, placed himself on the side of those who believed that it was an injustice to a woman, aside from any desire she might have for children, to subject her repeatedly to an operation which risked her life. The mere physical conditions alone which resulted, or were likely to result, should influence us very materially in regard to the question of future pregnancy.

Dr. Seth C. Gordon, of Portland, Me., thought a woman had a right to say whether she should be sterilized or not. Where she was subjected repeatedly to an operation which was known to be dangerous to life, in order to be delivered of a child, she certainly had a right to say whether or not sterilization should be performed.

Dr. C. C. Frederick, of Buffalo, N. Y., had sterilized women at their request and that of their husbands in cases where Cesarean section had been done for the absolute indication with narrowing of the pelvis to a degree that it was absolutely impossible to deliver a viable child through the pelvis.

Dr. Albert F. A. King, of Washington, D. C., said that self-preservation was the first law of nature, and preservation of the species was the second law. He agreed with those who had expressed the opinion that women and their husbands had a right to decide the question of sterilization.

Dr. J. Wesley Bovee, of Washington, D. C., concurred in the view that the husband and wife should decide whether the woman was to become pregnant or be sterilized, but the surgeon had not the right to act as he chose to produce sterility. The decision of the question rested largely with the husband and wife and not with the surgeon. The surgeon had no right to remove a woman's possibility of future pregnancy except for grave pathological lesions in the organs of generation themselves.

Dr. William S. Stone, of New York, said that one of the impressions gained from this discussion was an exaggerated idea of the frequency of placenta previa. Personally he never performs either of the surgical procedures mentioned, namely, vaginal or abdominal Cesarean section, for placenta previa. On one occasion, however, in a case of severe hemorrhage, where the placenta was normally implanted, he did a Duhrssen operation. He had no idea of doing it until he found hemorrhage was profuse and the indication was to empty the uterus just as rapidly as possible, and it occurred to him at the time he could resort to the Duhrssen operation and deliver the woman quickly, which he did with success.

Dr. Reuben Peterson, of Ann Arbor, Mich., said it was the concensus of opinion of the authors of the various papers read that Cesarean section was very infrequently indicated in placenta previa where we could usually dilate the cervix easily. If Cesarean section was generally promulgated as an operation for this complication of pregnancy, the mortality in the hands of the general practitioner would be enormous. This should always be borne in mind. A safe procedure for the general practitioner was to resort to the Braxton-Hicks method, or use the bag. Only a very small number of the cases he had seen presented indications for abdominal Cesarean section. Vaginal Cesarean section was totally unindicated in this class of cases.

Dr. George Gellhorn, of St. Louis, said that Dr. Fry had clearly shown that in only about 5% of the cases was Cesarean section indicated in placenta previa. He wondered if this percentage could not be still further reduced if the Barnes bag, so widely used, was discarded, and instead the Champetier de Ribes or the Pomeroy bag used more generally, as he thought a number of cases would be successfully delivered which heretofore had met with failure.

As to Cesarean section, it was not only necessary to consider its mortality, but its morbidity, and in placenta previa this operation had certainly untoward complications or after-effects that should be emphasized, and among them post-operative adhesions, ventrofixations, sepsis, etc. If the indications for Cesarean section in placenta previa were extended, the number of such complications later on would materially increase.

With reference to sterilization, he said there was a simple way of sterilizing the man by doing a vasectomy instead of sterilizing the woman. This simple operation could be done in a minute or so under local anesthesia, yet how many men would be willing to have vasectomy done on them? He thought we should be more charitable and not do unto others what we did not want done unto ourselves.

Dr. Willis E. Ford, of Utica, N. Y., said he hoped the society would not go on record in favor of the sterilization of women, for if it opened the door, it might be opened still wider for other operations which ought not to be done.

WHAT SHALL WE TEACH THE GENERAL PRACTITIONER CONCERNING THE TREATMENT OF ABORTION?

Dr. Frederick J. Taussig, of St. Louis, mentioned the never-ceasing argument as to whether the finger or the curette was preferable. The curette was still popular with the general practitioner because it required less technical skill for its use. The summarized experiences of many large clinics showed that no one method of treatment was available for all cases, but that each had its special field of usefulness. An attempt to construct a simple table of operative procedures varied according to (1) the stage of pregnancy at which abortion occurred (first six weeks, second six weeks, third to fifth month); (2) the stage of the abortion (imminent, inevitable, incomplete); (3) the experience of the physician in charge (country practitioner, city practitioner, specialist); (4) surroundings (country residence, city residence, hospital).

The author demonstrated a new case of instruments especially designed for the treatment of abortion and miscarriage.

(To be continued.)

Book Review.

Diseases of the Bones and Joints. By J. E. Goldthwait, C. F. Painter and R. B. Osgood. D. C. Heath & Co. 1909.

This book is a welcome addition to the swelling list of excellent orthopedic literature. This may be said although the publishers claim that "it is not a work upon orthopedics or upon surgery, but is a study of the many heretofore obscure problems of chronic joint disease, addressed to all who must care for the so-called rheumatoid cases."

The writers intend it especially for the general practitioner. "It is to those practitioners of medicine, therefore, to whom sufferers from joint disease usually make their first appeal, that these studies are offered."

Some works are encyclopedic in character, others are compends for students, some are introductions to the study of a specialty and others, again, treatises presenting the generally accepted views of leading writers upon the subject. Often the most valuable books are those containing a statement of the personal views of an investigator based upon careful study or extended experience.

It is in this latter group that the book under review may be classed. In reality its scope is much greater than is indicated by the publishers' announcement, for more than half the work calls attention to the writers' views on matters other than those included under the head of the rheumatoid cases.

These subjects are naturally those to which the writers' attention has been called in their extensive experience as orthopedic surgeons, and it is for this reason that the book may be regarded as a treatise containing the conclusions from the experience in orthopedic surgery of three noted orthopedic specialists.

This is sufficient to warrant a hearty reception of the work not only by general practitioners, for whom it is written, but also by orthopedic specialists.

The type, the paper, the illustrations are of the best and the book may be regarded as a model medical publication.

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THE USE OF TOBACCO BY ADULTS.

In another column of this issue we print an interesting letter in regard to our recent editorial on "The Use of Tobacco by Schoolboys." Our correspondent evidently takes exception to our approval of the temperate use of tobacco by adults on the ground that such use, whether or no harmless to them, may influence the young to an indulgence certainly detrimental. Assuredly "*maxima reverentia debetur pueris*," and grown-ups should be willing to sacrifice much for the sake of example to the immature. Nevertheless, adults constantly do and must permit themselves various indulgences in food, work and pleasure which are to them harmless, but would be injurious to children or adolescents if imitated. It is the province of wise education to explain the nature of these practices and prevent their becoming ill examples. Adult prime is, after all, the acme of human existence, towards which childhood is an evolutionary and probationary stage. It is one of the highest duties of adults to foster and safeguard those who are passing through this period, but it does not seem that they would most effectively do so by adopting for the regulation of their own conduct the standards appropriate to children.

The question of the physical harmfulness or innocuousness of the moderate use of tobacco by adults must be settled on its own merits by scientific investigation. It would be out of place to discuss it here. Granting, however, that such use were proved to produce ultimately a certain amount of not very serious damage to the organism, the question would still remain whether such use were not still justifiable if it facilitated or intensified some of the higher activities. After all, human life is not purely a physical affair, nor is a rigidly scientific attitude always practicable or desirable, even for physicians. Man does not live for his bodily welfare alone, and some of his greatest achievements are accomplished at the expense of physical detriment. Hard labor, responsibility, profound thought, the wear and tear of life, ultimately induce degenerative tissue changes. "The paths of glory lead but to the grave." Doubtless we should all be more robust if we lived outdoors and not in houses, yet without architecture civilization would be impossible. Because farming is more healthful than sedentary occupation, no one would advocate abolishing the professions. It were as well to argue against art, love and religion because the emotions they induce sometimes upset the mental and physical equilibrium. Should the engineer relinquish his post because watching signals causes eyestrain, or the physician refuse to rise at night because loss of sleep will shorten his years? Now it is the testimony of many of the world's most eminent, honorable and enlightened men that the use of tobacco has been to them an aid in their good labors for the benefit of mankind, testimony too numerous to be lightly neglected. For to those who know how to practise it, smoking is not merely a sensual pleasure. It calms the passions, clears the mental processes, and fortifies against the "slings and arrows of outrageous fortune." In other words, it is one of the agents by which man is helped to meet and conquer certain adversities and limitations of his environment. Such advantages, if afforded by tobacco, should at least be weighed against its possible physiologic and histologic damage. Perhaps in an ideal world there were no need or excuse for even the temperate use of tobacco. But until such be attained, it would seem to have legitimate place in a rational life; to be humanly, if not scientifically, justifiable.

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LIFE INSURANCE AND HEALTH.

It is now announced that a health bureau, the work of which will be to keep policy holders in as good physical condition as possible, has been established by the Provident Savings Life Assurance Society, with Dr. Eugene L. Fisk, the medical director, at its head. The purpose for which it has been organized will be carried out by correspondence with the policy holders and by giving free medical examinations at stated intervals to those who desire them, the objects sought being the prevention of disease, where possible, and the discovery of disease in time to cure it. The plan of operations also includes the sending out of circulars giving information as to the prevention of disease. The idea of the bureau originated with E. E. Rittenhouse, former state insurance superintendent, who became president of the Provident Life in January last. He has expressed the opinion that the day is at hand when every life insurance company will be engaged in similar work. "If the crusade against consumption has brought about the results which have already been attained," he asks, "why should we not do something to reduce the extraordinary loss of life from diseases of the kidneys, heart and brain, a large percentage of which can be prevented or cured, if taken in time? These diseases are common to middle life and old age, and are to a great extent due to the breaking down of the vital organs as the result of the 'strenuous life' Americans lead, and of intemperate living. The question is whether some effort should not be made to save some of these lives. While in the last thirty years the loss of life from pulmonary tuberculosis in New York has been reduced about 38%, in the same period the combined death-rate from apoplexy and diseases of the heart and kidneys has increased from 19.2 to 36.3 per 10,000 population, or about 90% increase. In Massachusetts, the increase has been from 28.6 to 41.4 per 10,000."

On Aug. 6 State Superintendent Hotchkiss announced his decision in regard to the application of the Metropolitan Life Insurance Company for permission to acquire real estate for establishing a tuberculosis sanitarium for the benefit of its policy holders and employees, upon which we commented editorially in our last issue. This permission he refuses to grant, on the ground that the insurance laws of New York state expressly prohibit the purchase, holding or conveyance of real property by an insurance corporation transacting business in the state, except "such as shall be requisite for its convenient accommodation in the transaction of its business." This clause, with immaterial modifications, he states, has been in every insurance law since the first of the laws was enacted by the legislature of 1849. In giving out his decision Mr. Hotchkiss makes the following comment: "While I appreciate the practical philanthropy behind the application, the possibilities which lurk therein of the assumption by insurance companies of many functions not strictly incident to their business, suggest that the state may well move slowly in determining whether its creatures, particularly those possessed of such enormous financial power, should be permitted thus to step outside their legitimate field. Still further, while courts in extreme cases of apparent injustice may sometimes strain their jurisdiction or stretch the written law, administrative officers should take the law as they find it, and leave lawmaking to the lawmaking power. The enlightened public opinion of the present day, particularly in a state the legislature of which meets annually, may be relied on quickly to find expression in new laws or approved amendments to old laws. Hence, if this interpretation of Section 20 (2) of the insurance law is not in accord with that of public opinion, the legislature of 1910 will doubtless grant the power which the legislature of 1849 withheld."

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MEDICAL NOTES.

A Bequest for Cancer Research. — It is announced that a fund of $1,250,000 under the will of Henry Barnato is to be devoted to the endowment and building of a hospital in London for the treatment and study of cancer. This hospital is a memorial to the brother of the testator, Barney Barnato, and his cousin, Woolf Joel.

Tuberculosis Schools. — A school for tuberculous children has been in operation for some some months in Providence, R. I. The object of the plan was to provide school facilities in proper surroundings for children afflicted with tuberculosis. To this end a building was used, one side of which had been torn out for the purpose of providing fresh air. It is said that schools of similar sort have been established in other cities.

BOSTON AND NEW ENGLAND.

Acute Infectious Diseases in Boston. — For the week ending at noon, Aug. 10, 1909, there were reported to the Board of Health of Boston the following cases of acute infectious diseases: Diphtheria 36, scarlatina 22, typhoid fever 12, measles 17, smallpox 0, tuberculosis 45.

The death-rate of the reported deaths for the week ending Aug. 10, 1909, was 17.41.

Boston Mortality Statistics. — The total number of deaths reported to the Board of Health for the week ending Saturday, noon, Aug. 7, 1909, was 194, against 214 the corresponding week of last year, showing a decrease of 20 deaths and making the death-rate for the week 16.24. Of this number 98 were males and 96 were females; 191 were white and 3 colored; 135 were born in the United States, 58 in foreign countries and 1 unknown; 43 were of American parentage, 127 of foreign parentage and 24 unknown. The number of cases and deaths from infectious diseases reported this week is as follows: Diphtheria

31 cases and 2 deaths; scarlatina, 22 cases and 0 deaths; typhoid fever, 3 cases and 1 death; measles, 23 cases and 0 deaths; tuberculosis, 54 cases and 16 deaths; smallpox, 0 cases and 0 deaths. The deaths from pneumonia were 7, whooping cough 0, heart disease 18, bronchitis 3 and marasmus 1. There were 14 deaths from violent causes. The number of children who died under one year was 60; the number under five years 77. The number of persons who died over sixty years of age was 45. The deaths in public institutions were 83.

Cerebrospinal meningitis, 1 case.

Deducting deaths of non-residents, the total is 169. The corrected death-rate is then 14.15.

Bequest to Cambridge, Mass., Hospital. — By the will of Mrs. Jane L. Gray, widow of the botanist, the Cambridge, Mass., Hospital receives $5,000 for the maintenance of a free bed.

A Centenarian. — John Thompson, reputed to be in his one hundred and fourth year, has recently died at Methuen, Mass. He was born in Glasgow, Scotland, but practically his entire life had been spent in this country.

A Paper by Dr. Morton Prince. — Dr. Morton Prince, of Boston, has recently read a paper in connection with his studies of morbid psychology before the Psychological Congress, which has been meeting at Geneva, Switzerland.

Tuberculosis Camp at Mattapan. — On Aug. 6, a camp under the auspices of the Boston Association for the Relief and Control of Tuberculosis was opened for the reception of patients. Twenty acres were recently given by Mr. James M. Pendergast for the purpose of establishing a camp to be used by night as sleeping quarters for men discharged as cured from the Rutland Sanatorium and by day by children. The plans for the camp were developed by a committee of three: Dr. James J. Minot, of the Association for the Relief and Control of Tuberculosis; Dr. Arthur K. Stone and Miss Isabel F. Hyams.

Opening of Nurses' New Home.— On Aug. 5, a building erected on the site of the former Massachusetts Eye and Ear Infirmary was formally opened as a home for the nurses of this institution. The building is located at the corner of Cambridge and Charles streets, directly on the Charles River. The guests at the formal opening of the building were received by Dr. Farrar Cobb, Superintendent of the Hospital, and the Superintendent of Nurses, together with members of the Board of Managers. The building is admirably equipped for its purpose and is capable of accommodating forty-five nurses. The cost has been $90,000.

NEW YORK.

A New Public Bath. — A remarkably fine public bath has just been completed on Rutgers Place, in the heart of one of the most congested portions of the city. It covers a plot of fifty-five by one hundred and thirty feet and has three regular stories, with a superimposed story having a pergola and roof garden. The building is fireproofed throughout and has an attractive front of Italian Renaissance design. The entire interior is of buff brick, while the partitions between the baths are of fine Italian marble, and all the floors are composed of Terrazza tile and perfectly drained. Accommodations are provided for several hundred persons an hour, as there are eighty-four shower baths for males and forty-seven for females, together with fifteen large bathrooms with tubs, and a shower room for the use of persons exercising in the gymnasium. The gymnasium is on the top floor and has an area of four thousand square feet, exclusive of two large locker rooms. Every provision has been made to render this feature of the building especially attractive, while in the roof garden above free band concerts are to be given during the open season. As the building is designed to accommodate large numbers of people, it has been found expedient to arrange to heat and ventilate it in such a way as to maintain an even temperature and pure-air conditions throughout. This has been accomplished by means of exhaust fans, blowers and ducts, which have been embodied in the construction in such a manner as to remove all foul odors and dampness. The entire structure is lighted with electricity.

Current Literature.

New York Medical Journal.

July 24, 1909.

1. Loeb, L. *Some Conditions in the Growth of Tumors*
2. Swett, P. P. *Colles's Fracture, with Special Reference to the Lateral Deformity.*
3. Skinner, E. H. *Loose Body vs. Sesamoid Bone in the Outer Head of the Gastrocnemius.*
4. Stitt, E. R. *The Teaching of Tropical Medicine Outside of the Tropics.*
5. Cumston, C. G. *The Treatment of Diseases of the Intestine in the Græco-Roman Period.*
6. Judson, A. B. *The Human Body Viewed as a Machine.*
7. Kerr, L. *The Diagnosis of Congenital Syphilis in the First Weeks of Life.*

8. McCLARY, S. *The X-Ray for the General Practitioner.*
9. WEINSTEIN, H. and CRONSON, R. *Cicatricial Stenosis of the Pylorus.*

JULY 31, 1909.

1. RYAN, L. M. *Compressed Air Disease from a Clinical Aspect.*
2. FOX, H. *Erythema Nodosum.*
3. *COONS, J. J., AND BRATTON, H. O. *Prognostic and Diagnostic Value of the Leucocytes and Differential Count in Acute Abdominal Infection.*
4. McGLINN, J. A. *Frequency of Cancer of the Cervix Uteri.*
5. GREENBAUM, H. S. *Common American Foods.*
6. ROBINSON, B. *Treatment of Epistaxis.*
7. TRACY, S. E. *A Criticism of the Usual Surgical Treatment of Varicocele of the Broad Ligament.*
8. FORD, W. W. *Note on Rhus Toxicodendron.*

3. Coons and Bratton studied leucocytosis in 184 cases of acute appendicitis, examining the blood a few hours before operation in most instances. Their results support Sondern's idea that the total white count shows the degree of body resistance, while the number of polynuclears is an index of the severity of the infection and the amount of toxic absorption. Ten thousand is taken as a high normal white count, 7,500 of which are polynuclears and 2,500 lymphocytes and other cells. For each 1,000 cells over this 10,000 there should be an increase of 1% in the polynuclears; e. g., with a white count of 11,000, the normal percentage of polynuclears is 76 (Gibson).

The writers draw the following inferences from their cases:

1. Polynuclears below 75%: Under these circumstances a leucocytosis generally means either an old infection well walled off, or an acute exacerbation.

2. Polynuclears 75–80%: No definite conclusions are justifiable from the white count alone.

3. Polynuclears 80–85%: There is no immediate danger to the patient unless the total white count is low, suggesting poor resistance. If the general leucocytosis is increasing, immediate operation is advisable; if it is stationary or diminishing, rely on physical signs in deciding about operation

4. Polynuclears 85–90%: This means a severe infection. Operation is indicated if there is a good general leucocytosis.

5. Polynuclears above 90%: Virulent infection, grave prognosis. If the total white count is low, there is little hope of benefit from operation. [L. D. C.]

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION.

JULY 31, 1909.

1. McELROY, J. B. *Tropical Diseases. America's Opportunities and Obligations. Oration in Medicine.*
2. BRIGGS, E. C. *The Present Status of Stomatology.*
3. FOWLER, E. P. *The Physiology of the Eustachian Tube.*
4. *DUEL, A. B. *Symptoms of Intracranial Complications of Purulent Otitis.*
5. RANDALL, B. A. *Indications for Tympano-mastoid Exenteration in Absence of Symptoms of Intracranial Complications.*
6. *CROCKETT, E. A. *Contra-indications to the Tympano-mastoid Exenteration in Chronic Suppurative Otitis Media.*
7. COTT, G. F. *Infectious Labyrinthitis. Two Cases, with Account of Operation.*
8. FOERSTER, O. H. *Pemphigus Neonatorum, or Bullous Impetigo Contagiosa of the Newborn.*
9. SMEAD, H. E. *Mongolian Idiocy.*
10. *DILLER, T., AND GAUB, O. C. *A Case of Successful Removal of Cerebellar Tumor.*
11. SCHAMBERG, J. F. *Lichen Planus Sclerosis, with Report of a Case.*
12. MURRY, W. R. *Vincent's Spirillum and Bacillus Fusiformis in Pseudomembranous Anginas.*

4. Duel divides the intracranial lesions complicating otitis media as follows, and discusses the symptoms, signs and diagnosis of each.

A. Inflammation of the meninges: (1) External pachymeningitis or extradural abscess; (2) internal pachymeningitis or intradural abscess; (3) diffuse lepto-meningitis; (4) serous meningitis.

B. Inflammation of the brain: (1) Encephalitis, (*a*) circumscribed; (*b*) diffuse. (2) Brain abscess, (*a*) temporosphenoid; (*b*) cerebellar — both rare.

C. Inflammation of the sinuses of the dura: (*a*) lateral — jugular bulb, jugular vein; (*b*) superior and inferior petrosals; cavernous.

D. Erosion of internal carotid artery.

4. Crockett discusses very profitably the indications and contra-indications for the radical mastoid operation in chronic suppurative otitis media, and draws the following lessons: It should be performed on patients with double chronic suppurative disease, except in the presence of symptoms indicating danger to patient's life, such as acute extending infectious processes. It should not be performed on the patient's only hearing ear, except under the same circumstances. It should not be performed on young children, that is, under five years of age, under practically any conditions. It should not be performed, except in an emergency, on a patient with syphilis or tuberculosis. It should not be performed on any suppurative middle-ear process of however long duration until the ordinary forms of middle-ear treatment have been faithfully carried out for a period of at least six months, except in the presence of symptoms indicating central involvement, with danger to life.

10. Diller and Gaub report a very instructive case of successful removal of a cerebellar tumor, a myxosarcoma telangiectatum, in which the noteworthy features were: (1) The excellent recovery of the patient after operation and his great improvement in condition; (2) the position of the head, bent forward to the left on the chest and rotated to the right as opposed to the usual drawing backward of the head; (3) the rapid subsidence of optic neuritis after operation; (4) that the optic neuritis was greater on the right side — the side of the tumor — than on the left; (5) the great practical value of exposing the cerebellum over both sides; (6) the fact that considerable manipulation and even destruction of cerebellar tissue is compatible with life; (7) right-sided sweating. [E. H. R.]

THE JOURNAL OF MEDICAL RESEARCH.

JUNE, 1909.

1. *ELSER, W. J., AND HUNTOON, F. M. *Studies on Meningitis.*

1. These studies of meningitis are the result of work done by the commission appointed by the Health Board of New York City for the investigation of cerebrospinal meningitis. They include a comparative study of the meningococcus and allied Gram-negative cocci, a study of the special characteristics of the meningococcus, its agglutination by different sera, its pathogenicity in lower animals, its viability, the mode of dissemination of the meningococcus and a report of experimental meningitis; also a study of the etiologic relations of the meningococcus, pneumococcus and streptococcus mucosus to epidemics of meningitis. The studies are very complete and include a complete bibliography of the subject. The authors present much evidence to show that the meningococcus is transmitted directly through the air, from individual to individual, and that the most important part in the dissemination of this disease is played by so-called meningococcus carriers. The occurrence of adult germ carriers, and the fact that the majority of individuals are naturally immune to infections with this organism, explains many of the peculiarities of epidemics of this disease. They believe that the evidence is in favor of the respiratory tract as the means by which these organisms gain access to the body. The authors were unable to prove that the organisms were excreted by way of the nasopharynx. They find much evidence to prove that the path by which the meningococcus reaches the brain is by the blood stream. They believe that only one other organism is capable of producing epidemics of this disease, namely, the encapsulated streptococcus of Bonomè. In 171 cases of the disease the authors found the organism in the cerebrospinal fluid 141 times, or more than 82% of the cases. With their cultural methods the examination was positive in 85% of the cases. [W. B. R.]

THE LANCET.

JULY 10, 1909.

1. GOWERS, W. R. *Lecture on a Case of Unilateral Optic Neuritis from Intracranial Tumor.*

2. **Sloan, S.** *Ionic Medication in the Treatment of Some Obstinate Cases of Pelvic Disease in Women.*
3. **French, H. S.** *On Spontaneous Cure of Thoracic Aneurysm.*
4. ***Eyre, J. W. H., and Stewart, B. H.** *Treatment of Gonococcus Infections by Vaccines.*
5. **Somerville, T. C.** *Three Cases of Delayed Chloroform Poisoning.*
6. **Renton, J. C.** *Notes of a Case of Splenectomy for Injury.*
7. **Crowe, H. N.** *An Unusual Case of Goitre.*
8. **Christal, C. H.** *Modified Plan for the Preparation of Chromic Catgut.*
9. **Haw, W. H.** *A Medico-Legal Case*

4. Eyre and Stewart present a detailed article on the treatment of various gonococcus infections by vaccines. In acute gonorrhea they believe that a gonococcus vaccine exercises a profound influence over the disease, but that such treatment is not devoid of danger and requires the exercise of considerable caution. A stock vaccine of a dozen different strains works nearly as well as an autogenous vaccine. They believe that small doses repeated at short intervals are more effective than large doses at lengthy intervals. In chronic gonorrhea, with or without complications, a vaccine given in small and gradually increasing doses at frequent intervals is of great value. In orchitis and iritis the relief of pain afforded by this treatment is remarkable. [J. B. H.]

July 17, 1909.

1. **Parsons, J. H.** *Clinical Lecture on Methods of Cataract Extraction.*
2. ***Savill, T. D.** *Clinical Lecture on Senile Epilepsy, and the Vertiginous Attacks which Supervene for the First Time in Advanced Life.*
3. **Paramore, R. H.** *Rôle of the Perineal Body during Labor, and the Conduction of Delivery in Relation Thereto.*
4. **Tilley, H., and Shattock, S. G.** *Case of Endothelioma Myxomatodes of the Maxillary Antrum.*
5. **Warren, R.** *Fate of Damaged Joints.*
6. **Squire, J. E., and Kilpatrick, J. A.** *Pulmonary Tuberculosis Treated by Deep Muscular Injection of Mercuric Saccinimide.*
7. **Iredell, C. E.** *Notes on the Use of X-Rays in the Treatment of Malignant Disease.*
8. **Walters, H. B., Coombe, R., and Solly, E. V.** *Case of Severe Facial Carbuncle, with Ludwig's Angina and Parotitis.*
9. **Wilson, T., and Beatson, R.** *Case of Retinal Detachment in Pregnancy associated with Nephritis.*
10. **McDonagh, J. E. R.** *Case of Acute Lupus Erythematosus.*

2. Savill discusses the etiology of attacks of giddiness, vertigo or faintness which so often occur in elderly people. These attacks, which supervene for the first time in advanced life, he calls "senile epileptic attacks." He mentions the various conditions which cause these attacks, idiopathic epilepsy, hysteria, intracranial syphilis, cerebral tumors, chronic nervous degenerations, cerebral pachymeningitis and uremia. By far the greater number of these attacks are due to circulatory disorders under such conditions as hemorrhage, thrombosis, or embolism, arterial disease, high blood pressure, with cardiac hypertrophy and heart block. These conditions he discusses very briefly. [J. B. H.]

British Medical Journal.

July 10, 1909.

1. ***Barr, J.** *Address on the Treatment of Chronic Degenerative Lesions of the Heart and Aorta.*
2. ***Brunton, L.** *Address on Blood Pressure in Man; Its Estimation and Indications for Treatment.*
3. **Drummond, D., and Morison, R.** *Diagnosis and Operative Treatment of Chronic Gastric and Duodenal Ulcer; An Experience of Three and a Half Years.*
4. **Wilson, T. S.** *Pain in Mucous Colitis and in Irritable States of the Colon in General.*
5. **Redwood, R. V. D'A.** *A Case of Intussusception Accompanied by Polypus and Stricture; Perforation; Resection; Recovery.*
6. **Ross, H.** *Impaction of Gallstone in Small Intestine; Laparotomy; Recovery.*
7. **Pearson, J. S.** *Empyemata Associated with the Bacillus Coli; Treatment by Antitoxin.*

1. Barr, in a general article on the treatment of chronic degenerative lesions of the heart and aorta, discusses, *first*, the work of the heart; *second*, the loss of elasticity in the aorta; and *third*, the velocity of the blood in the aorta, as related to degenerative changes. He divides the various forms of degeneration under headings, depending on the systolic and diastolic blood pressure. If the systolic and diastolic pressures be both high, the cardiac muscle is still healthy and the aorta fairly elastic. Nitrites are of value in such cases, but the general condition of the patient should receive special attention. If the systolic pressure is high and the diastolic pressure low, the patient should be kept on a light, dry diet with no salt and without alcohol in any form. He believes that so-called decalcifying agents such as phosphoric and citric acids and their soluble salts are of great value in the treatment of these conditions. In Stokes-Adams disease, he believes that drug treatment is of practically no avail, but that it is essential to maintain a fair diastolic pressure in both ventricles by means of a tight abdominal belt, or in bed by keeping a heavy shot-bag over the abdomen.

2. Brunton, in a short article, discusses blood pressure in man. He describes the various instruments which are used for estimating blood pressure, and the modifications which have been made in them. He believes that a low tension below 100 in man and 80 or 90 in women is generally due to a weakness after some illness, especially influenza, in cases of commencing phthisis, and in heavy smokers. In such conditions absolute rest in bed is indicated. It is in cases of high tension that the sphygmomanometer is especially useful, giving timely warning of dangers to come. In cases of high tension in middle-aged men, the proteid diet should be much limited and the use of tea, coffee and alcohol restricted. The great thing is to avoid hurry and worry. Such patients can often walk ten miles with advantage, but they must not run twenty yards to a train. Strong emotions of whatsoever kind must be avoided. [J. B. H.]

July 17, 1909.

1. ***Horsley, V.** *Linacre Lecture on the Function of the So-Called Motor Area of the Brain.*
2. **Mann, J. D.** *On the Extremes in Mutability of Symptoms in Disseminate Sclerosis.*
3. **Ross, T. W. E.** *Case of Convulsive Tic.*
4. **Herring, H. T.** *Relative Advantages of Catheterization and Operation in the Treatment of Prostatic Enlargement.*
5. **Pearson, K.** *Home Conditions and Eyesight.*
6. **Keith, S.** *Medicine or Surgery in Early Cases of Cancer.*

1. Horsley, in the Linacre lecture on the function of the so-called motor area of the brain, concludes that this area is really sensori-motor and that the gyrus precentralis is in man the seat of representation of (1) slight tactility, (2) topognosis, (3) muscular sense, (4) arthric sense, (5) stereognosis, (6) pain, (7) movement. [J. B. H.]

Deutsche Medizinische Wochenschrift. No. 26.

July 1, 1909.

1. **Franz, K.** *The Treatment of Abortion.* (Clinical Lecture.)
2. ***Tsunoda, T.** *The Question of Intestinal Lung Anthracosis.*
3. **Homburger, A.** *Organic Disturbances in Functional Psychoses.*
4. **Dold, H.** *A Critical Essay on Cholera Diagnosis.*
5. **Buschke, A., and Harder, H.** *The Provocative Effect of Sublimate Injections and Their Relations to the Wasserman Reaction in Syphilis.*
6. **Igersheimer, J.** *Atoxyl Poisoning with Especial Regard to its Effect on the Eye.*
7. **Hoffmann, W.** *Are the Tablets of Tropakokain and Suprarenalin and Novokain and Suprarenalin used for Spinal Anesthesia Sterile?*
8. **Knauth, C.** *An Essay on the Etiology of Meningitis, and Suitable Measures Pertaining Thereto.*
9. **Klauber, O.** *A Peculiar Form of Chordapsus.*

10. Czaplewski. *Studies in So-Called Forms of Invisible Virus.* (Preliminary Communication.)
11. Rütterman. *Cesarean Section in Placenta Previa, Complicated by Myoma.*

2. Tsunoda reviews enough of the literature on the question of the etiology of dust pigment in the lungs to show that at the present time there are two distinct theories: one that this pigment comes from inhalation; the other that it comes from the intestinal tract. There is a good deal of experimental work to support both views. He then tried a series of experiments which consisted of feeding rabbits with an emulsion of china ink through a catheter. He tried this on apparently healthy and also hungry rabbits, and concluded that in healthy rabbits the pigment did not become absorbed at all, unless given for a long time, one or two months; and in the hungry ones is only taken up by the cylinder epithelium over the follicles of the ileum and cecum. In no case does the pigment go beyond the mesenteric glands, and rarely beyond the intestinal follicles. Thus he concludes that lung pigment is not taken up in this way, and, therefore, he doubts if pulmonary tuberculosis occurs in this way. [C. F., Jr.]

Münchener Medizinische Wochenschrift. No. 28. July 13, 1909.

1. Meisel. *Contribution to the Knowledge of Left-Sided Subphrenic Abscess.*
2. Fränkel, J. *Mobilization of the Thorax*
3. *Moro, E., and Stheeman, H. *Clinical Hypersusceptibility. II. Local Skin Reaction to Atoxyl.*
4. Schenk, F. *The Significance of the Lecithin Precipitate in Cases of Malignant Tumors.*
5. Beckers, J. K. *The Ophthalmo-reaction of Chantemesse in Typhoid.*
6. Kantorowicz, A. *Ferment and Antiferment Treatment of Purulent Processes.*
7. Salzer. *Keratoplasty. Implantation of Cornea from the Horse in the Cornea of the Rabbit.*
8. Bingel, A. *Occurrence of Infection with Para-Typhoid.*
9. Riedel, A. *Fibrolysin, Curative for Obesity.*
10. Fischer, P., and Hoppe, J. *Retention of Veronal in the Human Body.*
11. Gottstein, J. F. *A Case of Isolated Dislocation of the Os Naviculare Tarsi.*
12. Voigt, J. *Suturing with Clamps.*
13. Zabel, B., and Schrumpf, P. *An Improved Mercury Manometer for Determining the Blood Pressure.*
14. Wolff-Eisner, A. *The Significance of Heligoland for the Treatment of Hay-Fever.*

3. Moro and Stheeman report the results of their investigations on a considerable number of cases in which they found a certain parallelism between the tuberculin reaction of v. Pirquet and the cutaneous reaction which often follows the injection of atoxyl. In cases giving a positive reaction to tuberculin they obtained with atoxyl a positive primary skin reaction in 82%, and of those that were negative to tuberculin, 85% gave no reaction to atoxyl. The parallelism has shown itself oftentimes in the intensity of the reactions. Several times, positive atoxyl reactions were followed after the third injection of tuberculin by positive tuberculin reactions. They noticed that the atoxyl reaction reached its height in twenty-four hours and then quickly disappeared, whereas the tuberculin reaction was most marked at the end of forty-eight hours and persisted for some days. The latter was generally followed by scaling off of the skin, but the latter never caused this to occur. [G. C. S.]

Berliner Klinische Wochenschrift. No. 29. July 19, 1909.

1. Bernhardt, M., and Borchardt, M. *Frontal Brain Tumors, with Observations on Cerebral Puncture.*
2. Frotscher and Becker. *A Clinical Contribution to the Diagnosis of Cerebral Syphiloma.*
3. *Marcuse, G. *The Theory of Nephritic Elevation of Blood Pressure.*
4. *Zabel, B. *What do we Learn from Comparison of the Diastolic Blood Pressure Values Obtained by Different Methods?*
5. Fuerstenberg, A., and Trebing, J. *The Lues Reaction in its Relations to the Antitryptic Power of Human Blood.*
6. Lipowski. *A New Basis for the Diagnosis and Treatment of Chronic Obstipation.*
7. Reiche, F. *Exudative Ulcerative Meningococcic Pharyngitis.*
8. Reiter. *Vaccine Therapy.*
9. Klebs, E. *The Therapeutic Employment of Antiformine.*
10. *Mühlens. *Practical Results from the Field of Tropic Hygiene.*

3. From discussion of the theory of causation of increased blood pressure by renal disease, Marcuse derives the following conclusion: "Renal inflammation determines an increased resistance to the blood stream in both kidneys, as a result of which there arises a compensatory hyperemia of the adrenals through the inferior suprarenal branch of the renal artery. This hyperemia, on the analogy of other organs, leads to hypertrophy and exalted function of the adrenals, that is, to increased discharge of adrenalin into the blood, and consequent increase of general blood pressure and hypertrophy of the left heart."

4. From comparison of the results of different methods of determining diastolic pressure, Zabel concludes that each indicates a different function of the blood pressure. The first critical point of diastole is expressed by the beginning of the greater oscillations and the fourth phase of Korotkoff, corresponding to the first partial collapse of the arterial walls, and in its determined value, perhaps coming nearest to the diastolic pressure. The second critical point is made known by the beginning of the greatest oscillations, the third phase of Korotkoff, and the advent of the Ehret phenomenon. It corresponds to the first complete diastolic arterial closure, and might well arise from tension of the cuff surpassing the true diastolic pressure. The values indicated by the various methods are not only dependent on the blood pressure, but are also influenced by external moments. Nevertheless, obtained in the same individual under like conditions, he considers that they might be claimed as a relative measure for the height of the variations of the diastolic pressure, and that in this connection a comparison of the methods may be of value.

10. Mühlens describes recent progress in the prophylaxis and treatment of human trypanosomiasis, malaria, black water fever, relapsing fever, frambesia, tropic ulcer, filariasis, beri-beri, and pappataci fever. [R. M. G.]

Zeitschrift für Klinische Medizin. Bd. 68. Heft. 1 and 2

1. *Gordon, J. M. *Erythemia.*
2. *Klercker, O. *The Excretion of Creatin and Creatinin in Febrile Diseases.*
3. Jacobsohn, L. *Some Interesting Cases of Disease of the Nervous System.*
4. *Pawinski, J. *The Causes of Error in the Diagnosis of Mitral Stenosis.*
5. *Schabad, J. A. *The Treatment of Rachitis with Cod-Liver Oil, Phosphorus and Calcium, and the Influence of these Remedies on the Calcium and Phosphorus Metabolism.*
6. *Rzentkowski, C. *The Action of Amyl Nitrite on Healthy and Diseased Arteries.*
7. *Vas, B. *Metabolism Experiments on Leukemic Patients undergoing Treatment with the X-Ray.*
8. *Solowzoff, A. S. *Functional Disturbances of the Heart in Lobar Pneumonia.*
9. Falk, F., and Kolieb, S. *The Presence of Ferments in Urine.*
10. Pawinski, J. *Should Seneca's Disease be Considered Asthma or Angina Pectoris?*

1. Gordon's article consists of a report of three carefully studied cases of erythemia (polycythemia), followed by a full discussion of the disease and a good bibliography. No new facts are brought out.

3. Using Folin's method, Klercker found an increased creatinin excretion in pneumonia, erysipelas, and, during the height of the fever, in typhoid. This was accompanied by an increased excretion of nitrogen. During convalescence, subnormal values were present. Creatin also was increased at some period of these febrile diseases.

4. Pawinski discusses the well-known fact that the

presystolic murmur in mitral stenosis may disappear during failure of compensation, and describes cases illustrating this point. He also reports one of the rare cases of mitral stenosis without murmur at any period of the disease, the diagnosis being made from the prompt action of digitalis. He considers the causes of presystolic murmur not due to organic disease of the mitral valve, one of which is the formation of thrombi in the left auricle, with consequent narrowing of the mitral orifice.

5. Schabad reports the results of further studies of the effects of phosphorus on the metabolism in rachitis. (For a review of his previous article in *Zeitschrift für Klinische Medizin, Bd. 67, Hft. 5 and 6,* see BOSTON MEDICAL AND SURGICAL JOURNAL, 1909, p. 134.) Having previously demonstrated that phosphorus dissolved in cod-liver oil (*phosphorlebertran*) markedly increases the retention of calcium in rachitis, he then studied the effect of the administration of cod-liver oil alone, and found that it increased the calcium retention, but considerably less than when given with phosphorus. The retention of phosphorus was also increased in both instances. Inorganic calcium, when given with *phosphorlebertran*, was also retained to a large extent, and the author recommends this combination of drugs for the treatment of rachitis.

6. A comparison of the action of amyl nitrite on the blood pressure of persons with healthy arteries with its action in cases of arteriosclerosis showed that in the first case there was very little reduction in the diastolic pressure, whereas in patients with hypertension there was a much greater fall, amounting in one instance to 39%. The work of the heart, as measured by the pulse-rate multiplied by the pulse pressure, was usually increased, from which fact v. Rzentkowski concludes that the fall in pressure is due to rigidity of the mesenteric arteries which have lost their power to contract. He also concludes that the cause of the hypertension lies in disease of the splanchnic vessels. This is not in accord with the present conception of the cause of hypertension, i.e., that it is due in the vast majority of cases to disease of the kidney.

7. The researches of Vas on the metabolism of leukemic patients who were being treated with x-rays showed that under these circumstances there is an increased excretion of uric acid and purin bases, which is accompanied by an increase in the elimination of phosphoric acid and ammonia, and is, therefore, to be ascribed to increased destruction of nucleins, especially of leucocytes. This takes place in both the myelogenous and the lymphatic varieties.

8. Solowzoff employed Katzenstein's method to investigate the efficiency of the heart in croupous pneumonia, and found in all cases a weakened cardiac action, which was greatest two or three days after the crisis, and persisted far into convalescence. The patients all showed, after compression of the femoral arteries, a fall in blood pressure and a rise in the pulse rate, while in health the opposite takes place. Other objective signs of cardiac insufficiency were absent. [W. T.]

DEUTSCHE ZEITSCHRIFT FÜR CHIRURGIE. BD. 99.

HEFT. 1 AND 2. JUNE, 1909.

1. ISTOMIN, E. K. *The Pathologic Histology and Clinical Aspects of Varicocele.*
2. BORST AND ENDERLEN. *Transplantation of Vessels and Entire Organs.*
3. *BÜDINGER, K. *Operation for Recurrent Trigeminal Neuralgia.*
4. *OHM, W. *Bone Felons.*
5. KEMPF, F. *A Case of Gangrene of the Leg after Ligation of the Femoral Artery under Momburg's Anemia.*
6. BOOK NOTICES.

3. Büdinger describes a new operation for neuralgia of the third division of the fifth nerve recurrent after evulsion and other peripheral procedures. Instead of radical removal of the Gasserian ganglion, he recommends entering the foramen ovale (after exposing the base of the skull by the usual incision with temporary resection of the zygoma), and mobilizing the neuroma-like nerve stump. He then extirpates this division of the nerve as far back as the ganglion, and closes the foramen with an autoplastic bone-fragment to prevent regeneration. In a case which he reports, treated by this method, the patient has remained for three and one-half years free from further recurrence.

4. In a brief but comprehensive article, Ohm reviews the subject of bone felon, which he defines as a traumatic osteitis whose origin lies in the subcutaneous tissues. Of the 65 cases which he reports, 33 were conservatively treated with passive hyperemia, for which he claims the advantages that it is painless, that it prevents necrosis or leads to rapid demarcation and mininal sequestration, that it fosters regeneration, hastens repair, and guarantees a good functional result. [R. M. G.]

Correspondence.

THE USE OF TOBACCO BY SCHOOLBOYS.

MONTCLAIR, N. J., July 28, 1909.

Mr. Editor: In reading an editorial in your issue of July 15 inst., on the use of tobacco by schoolboys, I note the following concluding lines: "Smoking . . . is a source of pleasure better postponed till maturity makes its moderate enjoyment possible without detriment." In another place in the same editorial occur these words: "Neither does there seem any reasonable question that the use of tobacco in any form is physically injurious during the period of bodily growth."

From these excerpts one may fairly assume, I think, that you give it as your editorial opinion that the use of tobacco is injurious to the adolescent, but may be harmless to the adult.

I am strongly reminded in this connection of a conversation which occurred some years ago between two or three medical men, including myself, and Dr. Francis Delafield, the well-known retired professor of pathology and the practice of medicine in Columbia University. The professor had inquired after the health of an old surgeon who was somewhat noted for his excessive use of tobacco. The fact had been developed in the conversation that the latter was a sufferer from dyspepsia, and, I believe, insomnia, which some one present was disposed to attribute to his smoking. I then remember saying that I presumed that the moderate use of tobacco by a laboring man might not be harmful; might, in fact, be beneficial, whatever its effect on a sedentary person.

Professor Delafield turned to me and said: "Doctor, no one ever used tobacco in any amount, at any time, without some injury. It is my favorite vice. I wish that I could smoke more." He then added that he had treated, during his professional life, numbers of laboring men for nicotine poisoning. I, after having noted the effects of the use of tobacco upon human beings for years, including its effect upon myself, fully endorse, at this writing, the professor's opinion.

There is no need in this place to detail the clinical symptoms of tobacco poisoning, nor is it advisable to prolong this letter by an elaborate discussion, nor by a citation of the rapidly accumulating evidence that the use of tobacco is injurious to adult man in various ways. I will, however, add that I do not remember to have ever asked a medical man who used "the weed" if he did not consider its use injurious to himself without receiving an evasive or an affirmative answer.

Granting, then, that there is a strong probability that tobacco may injure adults as well as schoolboys, is it not more logical and more scientific not to beg the question in discussing this topic by assuming that adults as a class are or may be immune to injury from addiction to tobacco? One might fancy the Sunday-school authorities and wise parents in China, in discussing their national vice, pointing out to the rising generation the evils of the too early use of opium, and concluding their remarks with the statement that when manhood shall have been reached, the use of the drug will be appropriate and innocuous.

It is this all too prevalent way of dealing with the tobacco question, coupled with the almost irresistable power of example, which makes it well nigh impossible to prevent the youth of our country from acquiring the habit of smoking after having admired it in others. So long as the habit shall be spoken of by high authority as harmful to the weak and immature, but pleasant and profitable to the adult, the small boy will look upon himself as exceedingly manly just as soon as he can smoke without being made sick.

I am aware that this aspect of the question may be called sociological rather than scientific, but it is so exceedingly difficult to make headway against this fashionable indulgence that those of us who would like to see the use of tobacco curtailed earnestly entreat that authoritative and carefully edited journals, like the BOSTON MEDICAL AND SURGICAL JOURNAL, be a little more careful about propagating the doctrine that tobacco loses its dangerous properties just as soon as the smoker becomes a man, from which the youthful mind quickly draws the deduction that the more tobacco any one can use without outward and visible signs of illness, the more manly he is.

There have been, as you know, elaborate and plausible arguments promulgated, I believe, under the influence of the British government, to the effect that opium smoking is, on the whole, beneficial to the Chinese and should be encouraged. So thoroughly were the Englishmen convinced of the truth of this proposition that they went to war with the Chinese to convince them also and incidentally to force them to buy the opium raised in British India.

Man will ever try to delude himself into believing that whatever ministers to his sensual pleasures cannot harm him. Yet it is quite evident that the truth about our personal habits cannot be determined until in the white light of science every question of personal and domestic hygiene shall be thoroughly investigated and followed out to its logical conclusion.

Pending that advance in human knowledge, it would seem more logical to confess our ignorance than to assume one of the most important problems of eugenics to be already proved, namely, what are the consequences, immediate and remote, of the use of tobacco upon man?

Very respectfully yours,
RICHARD COLE NEWTON, M.D.

THE EVILS OF SUGGESTION.

BOSTON, July 30, 1909.

Mr. Editor: Of late much has been said about the curative or beneficial effects of mental suggestion. Nervous symptoms are alleviated, it is claimed. We wish to allude to quite another part of this subject:

The harm that is done to sensitive patients by suggesting that they may have what they do not dream of, and not by suggesting to them that they have *not* what they think they have.

All sick people are made morbidly timid by their physical weakness. The leading question of the doctor evokes a belief in and a search for feelings which they had not suspected.

It is true that the doctor must get a detailed history of the case, but it is also true that great harm is done by awakening fears and arousing the imagination.

" What is the matter? " " That is for you to find out." " But you must tell me how you suffer; where you feel ill."

Let them say that and do not lead them to investigate unsuspected maladies.

Take the heart, for instance.

Many people mistake a distended stomach for heart disease. You should listen to the heart, perhaps, but should not push your inquiries into all the symptoms of heart disease. Make light of what you hear, unless organic change is so evident that gentle warning must be given. People buy thermometers and feel their own pulse and talk of blood pressure until they work themselves into a panic and aggregate all their slight symptoms and become hypochondriacs.

The dread of cancer is a bogie which embitters many a life. If you suspect only, should you tell the patient your own fears? I think not. I differ from those who tell the truth always, and cruelly, as it seems to me. No man is a competent medical adviser until he has been sick himself. Then he realizes how rapidly the mind weakens with the body. Then he appreciates what undue importance the patient places on every word of the doctor.

Let the doctor apply this rule to the patient, and not awaken ideas which can never be forgotten.

Truly yours,
DAVID W. CHEEVER, M.D.

RECORD OF MORTALITY

FOR THE WEEK ENDING SATURDAY, JULY 24, 1909.

CITIES.	Reported deaths in each.	Deaths under five years.	CITIES.	Reported deaths in each.	Deaths under five years.
New York	—	—	Waltham	—	—
Chicago	534	165	Pittsfield	4	1
Philadelphia	—	—	Brookline	2	2
St. Louis	—	—	Gloucester	6	1
Baltimore	210	108	North Adams	9	8
Cleveland	—	—	Northampton	3	1
Buffalo	—	—	Chicopee	14	12
Pittsburg	—	—	Medford	2	1
Cincinnati	—	—	Beverly	4	1
Milwaukee	—	—	Leominster	5	1
Washington	—	—	Hyde Park	2	1
Providence	—	—	Melrose	4	0
Boston	188	56	Newburyport	3	2
Worcester	41	18	Revere	5	3
Fall River	61	46	Westfield	6	3
Cambridge	23	7	Woburn	5	2
Lowell	31	12	Peabody	—	—
New Bedford	24	15	Marlboro	4	0
Lynn	18	7	Attleboro	1	1
Springfield	28	15	Adams	—	—
Lawrence	21	10	Clinton	3	0
Somerville	13	3	Gardner	3	—
Brockton	6	1	Milford	3	1
Holyoke	23	12	Watertown	1	0
Malden	5	1	Plymouth	—	—
Chelsea	12	1	Southbridge	4	2
Newton	4	—	Weymouth	3	0
Salem	17	9	Framingham	—	—
Haverhill	15	1	Wakefield	—	—
Fitchburg	—	—	Webster	—	—
Everett	4	1	Arlington	4	—
Quincy	4	1	Greenfield	0	—
Taunton	18	6			

ERRATUM.

IN the Aug. 5, 1909, number of the BOSTON MEDICAL AND SURGICAL JOURNAL, under "Progress in State Medicine," page 191, line 22, "shall be in danger of injury to their eyesight," should read, "shall not be in danger of injury to their eyesight."

RECENT DEATHS.

DR. GEORGE D. DOWKONTT, founder of the International Medical Mission Society, died on July 31, at the home of his son, Dr. G. H. Dowkontt, in Brooklyn, N. Y. He was born in England, and was sixty-six years of age. He served as a hospital steward in the British Navy, and was graduated from Jefferson Medical College in 1879. Not long afterward he organized the society mentioned, the object of which is to help those preparing for work as medical missionaries.

DR. WILLIAM C. DOANE, of Elmira, N. Y., died on Aug. 2, at the age of eighty-three years. In early life he took much interest in politics. He was one of the committee which wrote the first platform of the Republican party, in 1855, and he campaigned with Greeley in 1856 and with Lincoln in 1860. He held a position in the Department of the Interior in 1861, and was inspector of prisoners under General Grant. Dr. Doane was graduated from the Medical College of Castleton, Vt., in 1846.

DR. JAMES STAFFORD, of Perth Amboy, N. J., died on Aug. 3, at the age of forty-eight years. He was graduated from the medical department of the University of Vermont in 1885, and went to Perth Amboy to reside after serving as assistant surgeon of the Seventy-first Regiment, New York Volunteers, in the Spanish-American War. While on duty in Cuba Dr. Stafford was largely instrumental in putting into force the initial regulations which resulted in stamping out yellow fever in Cienfuegos and Santiago.

Original Articles.

THE INTRAVENOUS ADMINISTRATION OF STROPHANTHIN IN OTHER THAN CARDIAC DISEASE, WITH SPECIAL REFERENCE TO ITS USE IN COLLAPSE IN THE COURSE OF PNEUMONIA.*

BY A. K. STONE, M.D., BOSTON.

Strophanthin is an amorphous or crystalline glucoside derived from the seeds of the strophanthus plant. These seeds in the crude state are used by the African tribes in the concoction of their arrow poison. The seeds apparently are not all derived from the same plants, but often in the same package are found the seeds of several closely allied varieties. The strength of the crystalline and the amorphous derivatives are not the same.

The glucoside strophanthin is soluble in water. The preparation has been on the market for a number of years and has been used in medication by mouth, but on account of its irritant action on the stomach has never come in general use, and the pain which is produced when injected into the tissues has forbidden its subcutaneous administration.

Its first appearance in clinical medicine as a really important preparation was in 1906, when A. Frænkel, at the Congress for International Medicine, reported his experience with the intravenous use of strophanthin. He gave a detailed account of a series of cases of broken cardiac compensation where he had obtained wonderful and immediate results from the action of this drug. Strophanthin (Bœhringer) solved the problem that had long perplexed clinicians and gave a rapidly acting cardiac stimulant to be used in desperate cases where prompt results are required.

The weak points of digitalis are well known, due to the variability of the strength of the leaves dependent on their age and the soil in which they are grown. Digitaline of the French is not a stable preparation, but a glucoside insoluble in water. It seems to yield constant results in the hands of the French physicians, to judge from the recent books published in Paris on heart disease. The Germans for the most part have rejected it, using in place of it digitalin, digalen — also a glucoside — or digitalone, an infusion, or, as recommended by the best clinicians, the *powdered leaves*. But in whatever form digitalis is used, there is always the fact of its slow action to be taken into consideration; so much so that death in some instances may take place before the physiological effects are produced, while in other cases unfavorable results, even to death, may develop from the cumulative action of the drug.

Frænkel found that 1 mgm. of the strophanthin properly introduced into the venous circulation produced no unpleasant reaction and called forth a prompt response on the part of the failing heart, which showed itself by the slowing and strengthening of the beat. The change for the better appeared in from five to fifteen minutes and persisted usually for at least twelve to eighteen hours, and frequently lasted for several days. The blood pressure usually improved, though not excessively, and in many cases a marked diuresis set in.

A patient of mine will serve as an example of one of the very favorable cases. The man had a dilated heart, with signs of broken compensation due to arteriosclerosis without previous valvular lesion or extensive involvement of the kidneys. There was marked edema of the legs and engorgement of the liver. His blood pressure was still apparently high, 176 mm. He was given 1 mgm. of strophanthin intravenously. Fifteen minutes later, the blood pressure had risen to 205, falling a little later to about 200, where it remained. During the next twenty-four hours he voided 200 oz. of urine, and in a few days was up and about the ward with a regular heart beat, ready to be discharged a little later.

Following the report by Frænkel, a number of observers tried strophanthin, so that a considerable literature already has developed. The most complete and interesting piece of work upon the subject is that of G. Liebermeister. For the most part, the writers found that they but confirmed the observations of Frænkel. A certain number of cases responded quickly and satisfactorily to the administration of the strophanthin, but some cases were found not to respond at all, while others, although having no great effect upon the heart, seemed to allow diuretics which had previously been inert to become effective. The cases most favorable for its administration appeared to be those of mitral disease with failing compensation; next, those cases of arteriosclerosis where there was but little renal involvement and where the heart had dilated and become incompetent. Pure renal cases with struggling heart were not only *not helped*, but were often retarded in their progress. It was among the renal cases that a large percentage of the unpleasant results from the intravenous injection have occurred.

A few only of the writers were unable to get the results as presented by Frænkel. These were the men who were especially interested in *digalen* and *digitalone*. Their general results were unfavorable. One thought that the force of action of the strophanthin was excessive to put suddenly upon a weak and flagging heart, and that it was too dangerous a substance to use. The other was unable to satisfy himself that the results obtained were at all like those portrayed by Frænkel, and that when the same patients were put upon digitalis preparations they reacted as it was desirable that they should. Practically all the other observers were in accord with Frænkel, that in strophanthin they had at last found a cardiac stimulant which would act promptly and efficiently, and that in certain selected cases where quick action was imperative there was nothing that would compare with strophanthin.

A number of deaths have been reported as apparently attributable to strophanthin. In some of these, certainly, it is doubtful whether strophanthin was at fault. It must be remembered that persons with advanced heart disease frequently die suddenly. One man had an experience that might have added to the list of deaths. The patient was having the elbow sterilized preparatory to giving an intravenous injection when he fell forward, dead. A few minutes later and the death would have been ascribed to strophanthin. When digitalis is given by the stomach, one must wait a number of hours in order to get the reaction, and this is still further delayed the sicker and weaker is the patient. Before the cardiac reaction is obtained, the patient may die; and if the digitalis is pushed in the vain desire to get a speedy reaction, when it finally is obtained we may have toxic symptoms which are not always recognized, and the death, if it then occurs, is often said to have taken place in spite of the exhibition of digitalis, when it is because of it. Patients frequently come to the hospital with marked signs of digitalis poisoning, and it is usually desirable in hospital practice to keep the patients quiet for several days without digitalis in order that the cumulative action of possible previous doses may wear away.

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* Read at the meeting of the American Climatological Association at Fortress Monroe, Va., June 5, 1909.

The action of strophanthin is practically the same as digitalis; the pulse is slowed and becomes more powerful. If pushed, great slowing of the heart is produced, with symptoms of heart block, then fall in blood pressure and rapid, irregular heart, and death. In several cases where death has occurred in the course of the administration of strophanthin, repeated and frequent doses have been given or, still more frequently, strophanthin has been given to patients who have already had digitalis pushed to the limit of safety, and the sudden addition of the strophanthin has been to induce collapse and death in a short time. I found eight cases of death recorded, and know of two others. Personally, I have seen no serious symptoms myself, more than a moderate retardation of the pulse, with a sense of faintness or weakness, which lasted for about twenty-four hours, a condition which showed plainly that no more strophanthin or digitalis medication could be borne by that patient.

In the introduction of the strophanthin into the vein, great care must be taken that the solution shall be injected into the blood stream. If it gets into the surrounding tissues or into the vein wall it is so irritant that the resulting inflammatory reaction is very disagreeable. Any vein that can be most easily got at can be used, and used repeatedly without any discomfort to the patient. For the majority of cases the median basilic vein at the bend of the elbow will be found to be the one of easiest access. A bandage applied above the point of injection will engorge the vein and make the introduction of the needle more easy.

One cardiac patient of mine received forty-five different intravenous injections of strophanthin during a period of four months.

Although the majority of cases reported upon by the various writers have been cardiac, and although it is without doubt that the greatest usefulness of the strophanthin administered intravenously is in cases of broken compensation, nevertheless, it has been tried in a variety of other conditions with a varying amount of success. The failures have, from the nature of things, far exceeded the successes, as for the most part it was tried in practically hopeless or at least most desperate cases. Liebermeister, in a series of pneumonia cases, although he had no striking results, stated his belief that its use would enable a certain number of severe cases to be carried along until the patient was able to eliminate the toxin of pneumococcus and to get on the sure road to recovery.

My own experience has confirmed this opinion of Liebermeister, and it has seemed that if the physician was on the spot at the critical moment, lives might be saved by the prompt administration of this drug.

My first patient was a single man of thirty-seven years of age — not an alcoholic subject. He entered the hospital with a pneumonia at the right base which had evidently started about four days before entrance. The consolidation gradually extended so as to involve the whole of the lower and middle lobes of the lung. On entrance, his heart was in good condition, with sounds of good quality. Later, there was delirium, hiccough, and, while the heart acted fairly well, the blood tension was low and the pulse was not strong. On the morning of July 20, which was about the twelfth day of the disease, the heart suddenly became intermittent and of very poor quality; in fact, he was practically pulseless. The blood pressure was 115 mgm. One milligram of strophanthin was given intravenously; five minutes later, the blood pressure was 10 mm. greater. Thirty minutes later, it had risen to 130 and remained there for twenty-four hours. The heart became regular and the pulse returned to the wrist, remaining of very fair quality through the next day. A second injection was given twenty-four hours after the first. From this time on, though very weak, there was an uninterrupted, slow convalescence.

The urine, which had been 40 to 50 oz. in amount the day after injection, jumped to 90 oz. and remained above 60 oz. in amount for over a week.

The second case was that of an unmarried man of twenty-eight years of age; he had been a heavy drinker. He had been sick five days on entrance. The pulse was full and bounding, equal and regular. There was consolidation of the lower right lobe. The patient looked gray and very sick and very delirious. The next day after entrance he was given strophanthin, which had no apparent action on the course of the disease or on the general condition of the patient. Three days later, early in the morning, as the house officer was going by the ward, the nurse ran out and said that the patient was dying. Immediately going into the patient's room, the man seemed to be gasping his last and the pulse could barely be felt. An intravenous injection was given at once, with the result that the pulse reappeared and gradually became stronger and stronger. When I saw the man on my visit, he had a fair pulse and his condition seemed no more desperate than it had on the day before. About twelve hours later the pulse became weaker and he again received a milligram of strophanthin and the next day was doing very well, and gave no further cause for anxiety.

Following the administration of the strophanthin, the urine immediately on the following day came up from 40 to 65 oz. in amount and remained high during the following week.

The next patient was on the service of Dr. Vickery, by whose courtesy this and the two following cases are reported. He had a chill and typical pneumonia history of three days' duration before entrance. The heart was not enlarged. The sounds were of good quality and the rate of 128. The right lower lobe was involved.

The following night the patient was reported to the house officer at 1 A.M. as having a very weak pulse. He was found to be cold, moist, cyanotic, with labored breathing and pulse not to be felt. A quarter of a milligram of strophanthin was given at 1.25 A.M. A fair reaction followed and the pulse could be felt. This lasted, however, only a short time and at 4 A.M. he was again reported as pulseless. This time ½ mgm. was given and was followed by marked improvement. The temperature fell gradually to normal. The convalescence was prolonged by the continued weakness of the heart, although at no time did it again give indications of acute failure.

In a very similar case the patient who had been sick for five days previously to his entrance to the hospital developed, on the night of entrance, symptoms of acute cardiac exhaustion which responded to nothing in the way of ordinary stimulation. At 2 A.M. he was given ½ mgm. of strophanthin intravenously, and immediately the pulse became stronger and there was marked improvement, which lasted until the following evening, when the pulse became much more rapid. No relief was obtained from the usual methods of stimulation, or at most but temporary improvement appeared. At 2 A.M. the heart suddenly went to pieces and he died within a few minutes after the change came, and before the house officer was able to arrive. The autopsy showed a lobar pneumonia with a flabby heart, due to cloudy swelling.

In the last two cases smaller doses were given by the house officers than seems to me to have been desirable, as in neither case had digitalis been used, but at this time there was a feeling in the hospital that a full milligram was not a really safe dose for a patient. This, I think, was founded on insufficient evidence, and from my own observations I feel that in such cases as collapse in the course of pneumonia it is better if there are no contra-indications to use the full dose of a milligram.

Whether a large initial dose would have saved the last patient, or whether a second administration of strophanthin would have prevented the fatal collapse, of course are but matters of conjecture.

In a case of attempted suicide by means of carbolic acid poisoning, combined with gas poisoning, the patient had a very rapid, almost tic-tac, heart, which was regular, but the sounds were very faint, the pulse of small volume and poor tension. The stomach was washed; strophanthin was given in a half-milligram dose and the pulse soon became markedly stronger, and the next morning was very good. There was suppression of urine, but after twelve hours, 15 oz. of urine were drawn and after this the urine rose to 40 oz. in the next twenty-four hours.

A sudden post-operative collapse, with an almost imperceptible pulse of about 150, became fairly strong and 120 in rate within five minutes after the administration of a milligram of strophanthin, and from that time on the pulse grew stronger and the patient was no longer a source of anxiety.

The last case that I shall recount was that of a man of forty-seven who entered the hospital delirious, very sick and with a deathly gray color. He was delirious,— chronic alcoholism was the diagnosis,— and he was immediately put upon the "dangerous list." Two days after entrance, everything seemed to be going to pieces. He was given a subpectoral infusion of salt solution and his stomach was washed out. As a result, the blood pressure rose from 50 mm. of mercury to about 70. But the patient otherwise appeared no better. Late in the afternoon he was given 1 mgm. of strophanthin intravenously, and shortly after the blood pressure rose to 90 mm. and gradually increased from that time on till five days later it was 132 mm. The stimulation of the strophanthin appeared to be sufficient to turn the tide toward recovery. Up to that time death had appeared to be the inevitable outcome of his condition.

I have thought it worth while to narrate these cases, not to advocate the use of strophanthin as a specific for desperate cases of pneumonia, but because they seem to point out that in certain cases of collapse, due to cardiac weakness, the physician has in the strophanthin a drug which will act so promptly and powerfully and enable the patient to rally, and the heart to resume its work. The large amounts of urine which have been passed by these patients, which are much greater than the ordinary diuresis following the crisis of a pneumonia, make it seem that the strophanthin has also to do with the production of what Meltzer has called the "life-giving diuresis," by means of which the toxic products are more rapidly eliminated than would otherwise be the case.

When a patient has grown weaker and weaker in the course of his disease, whether it be pneumonia or typhoid fever, the cardiac stimulant of the strophanthin will apparently have little effect upon the gradually flagging heart action.

That I have been able to report this favorable series of cases from a short period of hospital service, I am sure has been due to the enthusiasm, promptitude and good judgment of the house officers, Drs. Kinnicutt, Spooner and Saddler, in whose hands was the responsibility of carrying out the details from my general directions regarding the administration of the strophanthin.

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STUDIES IN PSYCHOPATHOLOGY.

The Psychotherapeutic Value of the Hypnoidal State.

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I.

Hypnosis has long ago been brought before the medical profession as a state in which maladies of a functional, or rather, of a purely psychic, origin, such as the various forms of hysterias, obsessions and phobias, can be alleviated and even permanently cured. The works of Braid, Charcot, Liebault, Bernheim, Forel, Vogt, Prince, Breuer, Freud, Schreck-Notzing, Janet, Bechterev, Babinsky and others are well known to the student of abnormal psychology. Recently, however, medical men of reputation, such as Dubois, Freud, Prince, Mills, Putnam, Taylor, Donley and many others, could not help coming to the conclusion that the hypnotic state has rather a limited therapeutic sphere. We cannot possibly accept the popular notion of hypnosis being a panacea for all mental ailments, and we must acknowledge the fact that the hypnotic state has rather a narrow range of therapeutic application. This narrow sphere becomes still more limited by the circumstance that many patients positively refuse to be hypnotized or "mesmerized," as they term it, being afraid of occult influences. Then, again, a great number of patients cannot be easily controlled, or are difficult to hypnotize. There is no denying the fact that there exists a strong feeling against psychopathology and psychotherapeutics among people unacquainted with the recent scientific work accomplished in the domain of abnormal psychology. The inimical attitude against the use of hypnosis as a therapeutic agent in psychopathic diseases is not only entertained by the layman, but is also shared by many representative men of the medical profession. The layman thinks that there is something uncanny in hypnosis, while the conservative medical man wisely shakes his head, treating the whole matter of psychotherapeutics with a grin of good-humored contempt. It is certainly a pity that hypnosis should still continue to be the sum and substance of medical psychotherapeutics.

Some thirteen years ago I demonstrated, in a series of experiments carried out at the Psychological Laboratory of Harvard University and at my psychopathological laboratory, the presence of suggestibility in the normal waking state. In the same work, "The Psychology of Suggestion," I have also studied the conditions under which normal suggestibility can be most favorably revealed and influenced. Normal suggestibility is really not anything specially new. Empirically, this has been practiced by teachers, educators and by medical men from time immemorial. It has been utilized in an unsystematic, unscientific way, often producing harmful results. It is, however, an extremely powerful factor in the life of man. The medical man should familiarize himself with its use, as he should have some knowledge, not only of psychotherapeutics, but also of psychopathology, which is at the basis of a scientific treatment of mental diseases. This does not mean that every medical practitioner should become an expert in psychotherapeutics. That would be asking too much of the medical man, busy as he is with general physical diseases. It would be like asking of him to become a specialist in ophthalmology, otology or in brain surgery. He should, however, know something about it. The medical schools should teach psychology, psychopathology and psychotherapeutics, and the medical student should have a general understanding of the science of mental life, just as he has a knowledge of surgery, gynecology and of neurology. The medical student should form some acquaintance with the science of mental life while he is in school, and should know that the various forms of abnormalities of the mind, the various mental aberrations, belong to the domain of science and not to religion. The treatment of mental diseases in all their forms must be under the scientific control of medicine and not under the dominion of dogmatic theology. Not the clergyman, not the Christian Scientist, not the mental healer, but the scientifically trained medical man is the one who should deal with mental troubles. Not prayer, but knowledge, based on patiently-studied facts, should be at the basis of psychotherapeutics.

In proportion as the medical profession avoids not only the use, but also the knowledge, of psychopathological methods, to that extent and, in fact, far beyond it, do pseudo-religion and quackery in their worst forms seize on psychotherapeutics as the fit domain for exploitation of the ignorant and the credulous. Much of the mental healing of the past and of the present is based on the utilization of the principles of normal suggestibility in a crude empirical fashion with great detriment to the physical and mental life of society. Christian Science, with its latest fashionable edition of church healing, "the God be with us" mental epidemics, New Thought fads and psychotherapeutic crazes, are so many survivals and revivals of savage superstition, — a disgrace to civilized humanity. It is unfortunate that the United States should be the storm center of therapeutic epidemics. It is still more unfortunate that a journal of an American medical association should refuse to publish work on psychopathology and psychotherapeutics.

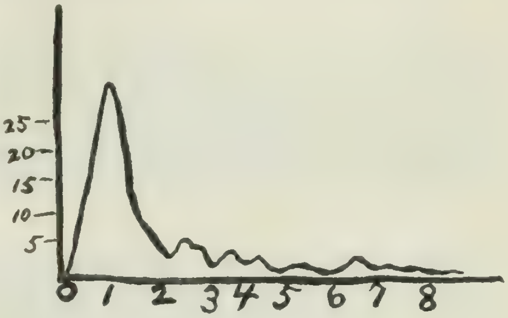
To return to our subject, — the hypnoidal states. Hypnosis meeting with so many difficulties, is it possible to affect and modify pathological mental states and their consequent symptoms, psychic and physical, outside the hypnotic state? The problem is practical and requires a solution. In "The Psychology of Suggestion," I pointed out the conditions of normal and abnormal suggestibility. Among these conditions, monotony and the limitation of voluntary movements play a very important rôle. Any arrangement of external circumstances tending to produce monotony and limitation of voluntary movements brings about a subconscious state of suggestibility in which the patient's mental life can be affected with ease. I find that in that subconscious state, consciousness is vaguer than in the waking state, and memory is more diffused, so that experiences apparently forgotten come in bits and scraps to the foreground of consciousness. Emotional excitement becomes calmed, voluntary activity is somewhat passive, and suggestions meet with little resistance. The induced subconscious state is a rest state, a state of physical and mental relaxation. It is a state of rest and relaxation that is specially amenable to psychotherapeutic influences. The important results obtained by me led me to a closer study of what I then thought was a peculiar mental state designated by me as the *subwaking, or the hypnoidal, state.*

The subwaking, or hypnoidal, state is essentially an intermediary state belonging apparently to the borderland of mental life. On the one hand the hypnoidal state closely touches on the waking condition; on the other, it merges into sleep and hypnosis. A close study of the hypnoidal state shows that it differs from the hypnotic state proper and that it can by no means be identified with light hypnosis. In my years of work on patients and subjects, I have observed the presence of the hypnoidal state before the development of hypnosis and also before the onset of sleep. When again the hypnotic or sleep state passes into waking, the hypnoidal state reappears. The hypnoidal state then may be regarded as an intermediate and transitional state. A somewhat related state has been long known in psychological literature as the hypnagogic state which precedes the oncome of sleep and is rich in hallucinations known under the term of hypnagogic hallucinations. In coming out of sleep, a closely-related state may be observed, a state which I have termed hypnapagogic. In both states, hypnagogic and hypnapagogic, dream-hallucinations hold sway. The hypnagogic and hypnapagogic states do not belong to light hypnosis, as it can hardly be claimed that men fall into light hypnosis twice or possibly more than that every day of their life. We do not go into light hypnosis with every nap we take. We do, however, go into the hypnoidal state when we pass into sleep or come out of sleep. Every drowsy state has the hypnoidal state as one of its constituents; every sleep state is preceded and followed by the hypnoidal state.

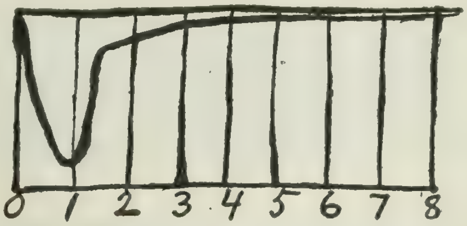
Hypnosis may be regarded as belonging to the abnormal mental states, while the hypnoidal state is more closely allied to waking and sleep and, as such, belongs to the normal physiological mental states. At first, I regarded the hypnoidal state as peculiar, but as I proceeded with my observations and experiments I could not help coming to the conclusion that the hypnoidal state is found in all the representatives of animal life and is as normal as waking and sleep.

The hypnoidal state may be said to partake not only of the nature of waking and sleep, but also to possess some characteristics of hypnosis, namely, suggestibility. It is clear that from the very nature of its mixed symptomatology the hypnoidal state is variable and highly unstable. The hypnoidal state may be regarded more in the light of an equivalent of sleep. Like sleep, the hypnoidal state has many levels of depth. It differs, however, from sleep in the rapidity of oscillation from level to level. In the experiments of various investigations, the depth of sleep is found to be represented by a rapidly rising curve during the first couple of hours and a gradually descending curve during the rest of the hours of sleep.

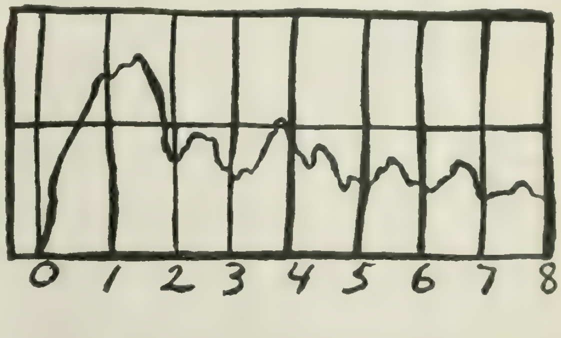
Michelson[1] measured the depth of sleep by the intensity of sound stimuli that can awaken the sleeper. The stimulus was the fall of a ball of a definite mass through a definite distance. Plotting the hours of sleep on the abscissa and the sound stimuli in thousands of grammocentimeters, he finds the curve of sleep is represented as follows:



Kohlschütter,[2] who also worked with sound stimuli, represents the sleep curve as follows:



Sante de Sanctis[3] and Nevroz worked with the esthesiometer on the senses of touch and pressure; they found that the sleep curve should be represented as follows:



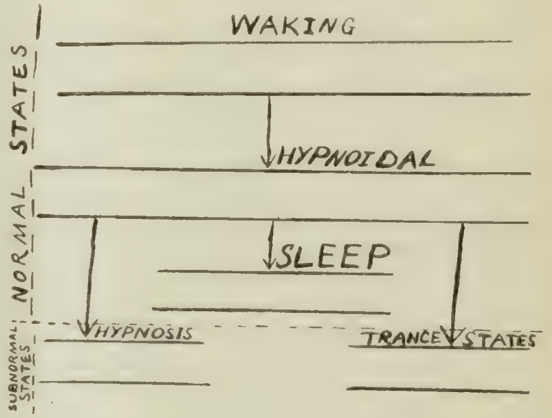
No such regularity of curve can be found in the hypnoidal state. The depth of the hypnoidal state changes very rapidly, and with it the passive condition and suggestibility of the patient.

For many years my investigations of the hypnoidal state were carried out on subjects and patients, adults and children. The work was entirely limited to the study of such states as found in man. Having found that during the hypnoidal state the condition of suggestibility is quite pronounced for therapeutic purposes, and having effected many cures of very severe psychopathic maladies ranging throughout the whole domain of hysterical affections, neurasthenia, obsessions, drug habits, especially alcoholic ones, the hypnoidal state has become, in my practice, quite an important therapeutic agent. Lately, Dr. John E. Donley and others have attained some excellent results with the hypnoidal state in their treatment of various functional psychopathic maladies.

Thus far, the work with the hypnoidal state was confined entirely to observations and experiments on human subjects and patients, and also to the treatment of man's psychopathic ailments. Recently, however, I undertook a series of experiments on sleep, both from a phylogenetic and ontogenetic standpoint, following up the conditions and manifestations of sleep in the ascending scale of animal life, from the frog and guinea pig, through the cat, the dog, to the infant and the adult. This extensive series of experiments was carried out by me at the physiological laboratory of Harvard Medical School and also in my own psychopathological laboratory.[4] The results are extremely interesting. The experiments clearly prove that the hypnoidal state is by no means confined to man, but is also present in animals. This is very important as it shows indubitably how widely spread the hypnoidal state is throughout the domain of animal life. Moreover, the experiments clearly prove that the further down we descend in the scale of animal organization, the more prominent, the more essential, does the hypnoidal state become. The conclusion is forced upon me that *the hypnoidal state is the primitive rest-state out of which sleep has arisen in the later stages of evolution.* We may say that sleep and hypnosis take their origin in the hypnoidal state. Sleep and hypnosis are highly differentiated states; they have evolved out of the primitive, undifferentiated, hypnoidal state which is essentially a subwaking rest-state characteristic of early and lowly-organized animal life. *The hypnoidal state is the primordial sleep-state.*

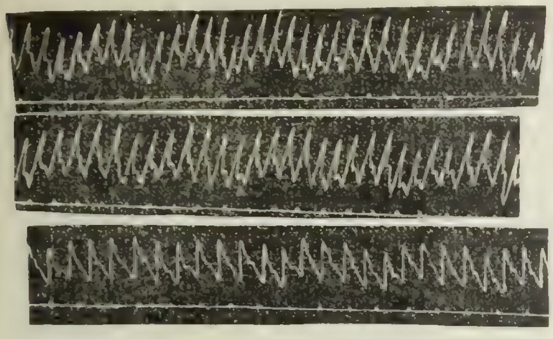
The development of the hypnoidal state into sleep has proven itself useful in the struggle for existence of the higher animals; it has, therefore, become fixed as the rest-state characteristic of the higher representatives of animal life. Hypnosis, as well as other trance-states, variations of the primitive hypnoidal rest-state, have become eliminated as useless and possibly harmful to the normal life adjustments of the higher animals and can only be induced under artificial conditions in but a fraction of the human race. The hypnoidal state is the normal rest-state of the lower vertebrates and invertebrates. The rest, or sleep state, of the lower animals is a sort of a passive waking state, — a subwaking state which has survived in man as the hypnoidal state. Of course, the state has been largely modified in man by the course of evolution, but it can still be clearly detected, just as the tail of the simian can be clearly discerned in the human coccyx, or as the structure of the prehensible hand of the quadrumana can be still clearly traced in the foot of man. Waking, hypnoidal and sleep-states may be termed *normal* states, while *hypnosis* and various other trance-states may be termed *subnormal* states.

The relation of the hypnoidal state to waking, sleep, hypnosis and other subconscious states may be represented by the following diagram:



The hypnoidal state is normal, it is present in all the representatives of animal life. Sleep, hypnosis and trance-states are variations of the fundamental hypnoidal state. The sleep-state has proven useful and has become normal in the higher animals, while hypnosis and the various forms of trance-states, likewise variations of the fundamental hypnoidal state and characteristic of man, have not proven of vital value and have fallen below the normal stream of consciousness with its concomitant adaptive reactions.

The hypnoidal state is necessarily brief, variable and unstable. They who have observed the rest-states of the lower metazoa can form a clear idea of the nature as well as of the biological significance of the hypnoidal state in the life of the lower animals. The animal is at rest for a brief period of time as long as it remains undisturbed by external conditions of its environment, or by internal conditions, such as hunger, sexual impulses or other internal disturbances. Soon the animal begins to move, sluggishly at first, and then more quickly, and, if there are no disturbing stimulations, comes to rest, to be again disturbed from its rest-equilibrium by the varying conditions of its environment. The resting state is brief, irregular, in fits so to say, and differs from the waking state in but a slight relaxation and in comparatively slow reactions to stimulations and in a passive condition of the muscular system. Respiration becomes a little more regular and diminished in rate, the heart beat is slightly decreased and general katabolic activity is somewhat reduced. This is well shown by the following carotidographic and pneumographic tracings:



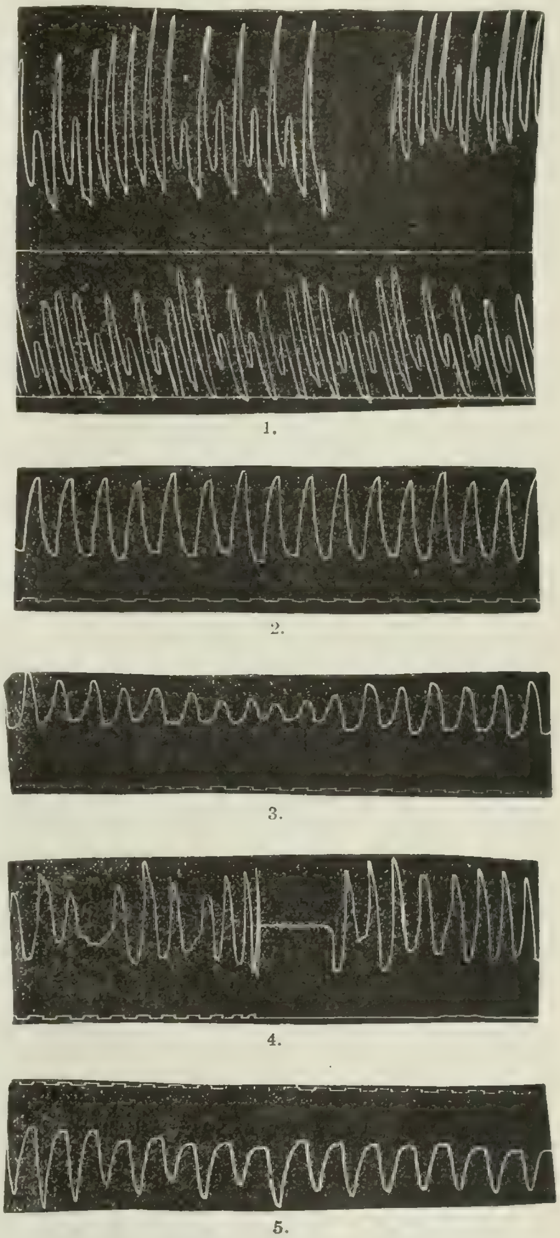
Tracings from carotid artery of man in normal and hypnoidal states. Upper tracing, waking, pulse irregular and quick. Second tracing, hypnoidal, pulse regular and slow. Third tracing, after hypnoidal, pulse more regular and of higher tension.

The animal, however, is quite alive to what is going on all around. The animal rests watching for danger. The resting and active states alternate periodically, if possible, but usually quite irregularly. The resting state is but a passive condition in which the animal may be considered to hover between waking and what we describe in the case of the higher animals as sleep. Sleep in its proper sense does not exist among the lower representatives of animal life.

This state of hovering between waking and sleeping, the characteristic of the hypnoidal state, is no doubt of paramount importance in the life-existence of the lower animals, considering the numerous dangers to which they are continually exposed. The animal must always be on the watch, either for food or for foe. It can only rest or " sleep " with its eyes wide open. The hypnoidal " sleep " can be best characterized as a *subwaking* rest-state.

I demonstrated in my experiments that the animal while in the hypnoidal, subwaking rest-state is apt to fall into a cataleptic state, especially when the movements are suddenly and forcibly inhibited. This cataleptic state, which reminds one of the hypnotic state, may be observed in the lower animals, such as the frog, the snake, the lobster, the bird and, to a slighter degree, even in the higher animals, such as the guinea pig, the cat, the dog, especially in the young ones, such as the kitten, the puppy and the infant. There is little doubt that the cataleptic state into which animals fall during the hypnoidal rest-state is of some protective value in their life. The animal " freezes," " feigns death " and is thus either enabled to remain undetected by the animal on which it feeds or, what is still more important, is enabled to remain unnoticed by its enemy and thus escape certain death. The subwaking, hypnoidal state may be regarded as the fundamental rest-state of lower animals and is characterized by a mixed symptomatology of waking, sleep and hypnosis. The condition of the various states is well brought out by the following pneumographic tracings. (Figs. 1, 2, 3, 4, 5.)

The reader who is interested in the more detailed discussion I refer to my more complete work on the subject of subconscious states and sleep. I can only here outline the main characteristics of the hypnoidal state in so far as those traits are of importance to a clear understanding of the nature of the hypnoidal state in its relation to psychopathology and psychotherapeutics. It is the psychopathological and psychotherapeutic value of the hypnoidal state that I have chiefly in view in this paper. My main concern here is psychotherapeutics, but I also want to impress on the mind the important fact that the hypnoidal state is both of anamnestic and therapeutic value. The hypnoidal state is a powerful instrument in the tracing of the past history of the growth and development of the symptoms of psychopathic cases[5] and practically is of far greater value, inas



1. Tracings from frog in waking and hypnoidal states. Upper, waking; lower, hypnoidal.
2, 3, 4, 5. Tracings from man in waking, hypnoidal and hypnotic states. 2, waking; 3, hypnoidal, superficial, slow and regular; 4, sleep; 5, hypnotic, deep, slow and regular.

much as the hypnoidal state has proven to be an easy, extensive and very efficacious agency in effecting a cure and bringing about beneficial results in otherwise uncontrollable cases.

For the present, we can only say that the hypnoidal state is found in man but in a rudimentary condition; it is a vestige of a man's primitive, animal ancestors. The hypnoidal state is brief, variable and forms the entrance and exit of repose, the portals of sleep. The primordial rest-state has shrunk to a transitory, momentary stage in the alternation of waking and sleep. The subwaking, hypnoidal rest-state shrinks with the increase of security of life.

While in the hypnoidal state the patient hovers between the conscious and the subconscious, somewhat in the same way as in the half-drowsy condition one hovers between wakefulness and sleep. The patient keeps on fluctuating from moment to moment, now falling more deeply into a subconscious condition in which outlived experiences are easily aroused, and again rising to the level of the waking state. Experiences long submerged and forgotten rise to the full light of consciousness. They come in bits, in chips, in fragments, which may gradually coalesce and form a connected series of interrelated systems of experiences apparently long dead and buried. The resurrected experiences then stand out clear and distinct in the patient's mind. The recognition is fresh, vivid and instinct with life, as if the experiences have occurred the day before. It is not a matter of hallucination of memory or of illusion of recognition, since the lost experience can in many cases be confirmed by some member of the family or by some intimate friend. It is this characteristic of getting access to subconscious experiences lost to the patient's personal consciousness that makes the hypnoidal state such a valuable instrument in the tracing of the origin and development of the symptoms of the psychopathic malady.

From a practical standpoint, however, the therapeutic value of the hypnoidal state is by far the most important. Our experiments have revealed to us the significant fact that the hypnoidal state is the primordial rest-state; sleep is but a derivative form of rest. In many conditions of disease it is advisable, as Lauder Brunton insists, to have the patient revert to a more simple and more primitive mode of life. Similarly, in psychopathic diseases a reversion to a simple primitive state proves to be of material help to the patient. Now in plunging the patient into the hypnoidal state, we have him revert to a primitive rest-state with its consequent beneficial results. The suggestibility of the state, if skillfully handled, is apt to increase the therapeutic efficacy. Relaxation of nervous strain, rest from worry, abatement of emotional excitement, are known to be of great help in the treatment of nervous troubles of the neurasthenic or of the so-called "psycho-asthenic" variety. That is what we precisely observe in the treatment of psychopathic diseases by means of the agency of the hypnoidal state, the efficacy of which is all the greater on account of the presence of the very important trait of suggestibility. The most important fact, however, is the access gained through the hypnoidal state to the patient's stores of subconscious reserve neuron energy, thus helping to bring about an *association* of disintegrated *dissociated* mental systems.

I strongly suspect that Weir Mitchell's rest-cure has derived a good deal of its therapeutic value from the purely empirical use of the subwaking, hypnoidal rest-state. Similarly, it is highly probable that Breuer and Freud's success in the treatment of psychopathic cases is not so much due to their cathartic method or to Freud's special "psycho-analysis" as to the unconscious use of the hypnoidal subwaking rest-state. The hypnoidal state has been recently used by other investigators, among whom I may mention the name of Dr. John E. Donley, to whose valuable contribution[6] on the hypnoidal state I take the special pleasure to refer all those who are interested in the subject of psychotherapeutics. I am firmly convinced that the hypnoidal state, if rightly and carefully used, will prove to be an important factor in the domain of theoretical and practical psychopathology.

I may well take here the opportunity to say a word or two about Freud's psycho-analysis. The so-called psycho-analytic method is not a new discovery made by Breuer and Freud. Every psychopathologist of note in studying his clinical material has made it one of the important points to follow up the origin and full history of the symptoms of the case under investigation and treatment. In this respect one cannot help agreeing with Dr. Morton Prince, who, in his paper on "The Unconscious,"[7] has so well criticised the untenable position taken by Freud and his followers. "The principle of dissociation (forgetting) of complexes (mental systems?) and their reproduction by artifice has been utilized by all students of the subconscious for many years and was established by Janet long before Freud's investigation." Dr. Prince, in fact, is quite severe in his estimation of Freud's work. "Freud's theories, which have so deeply impressed the Zürich school, are severely impaired by defects which would seem to have followed from his entire disregard or unfamiliarity with the methods and results of experimental psychopathology. If we are to establish sound principles underlying the mechanism of the mind, we must correlate the findings of all methods of research, experimental as well as clinical, and give due consideration to the results obtained by all competent investigators." In short, psycho-analysis, in the sense of tracing the history of the symptoms, has been used long before Freud by investigators in the field of abnormal psychology. Breuer and Freud claim that psycho-analysis is in itself a "cathartic" or therapeutic agency. It is as reasonable as to claim that anamnesis is itself a cure. In my own work I have insisted again and again on the important psychopathological principle, namely, that *re-association of dissociated systems effects a cure of the psychopathic disease*. This, however, does not mean that the cure is effected by informing the patient of anamnestic data, by the tracing of the origin and history of the symptoms. The cure is effected by so-called "suggestive methods" during the hypnotic state, the hypnoidal state and by various other "associative methods" which I shall discuss elsewhere. It is ridiculous to ascribe healing effects to psycho-analysis, which has no more therapeutic virtue than the taking of cultures or the records of pulse and temperature possess the power of curing diphtheria, typhoid fever or tuberculosis. I may also add that Freud's sexual theory of his "Angstneurosen" and of hysteria is grotesque, while his Talmudic ingenuity of "Traumdeutung" and of so-called "psychopathology of daily life" is arbitrary, fanciful and reminds one of ancient oneirology and astrology.

From this lengthy digression we may return to the hypnoidal state. How is the hypnoidal state induced? The hypnoidal state is induced by what I term the method of hypnoidization. The term is unfortunately awkward and is apt to give rise to misunderstandings, as it may convey the wrong idea of induction of hypnoidal states, by which are meant hysterical and allied conditions. This, however, is not what I intend to indicate by the term "hypnoidization." By hypnoidization I mean the induction of the hypnoidal state, which is by no means an hysterical state. Recently, Dr. Morton Prince suggested the term "hypnoidilization," which would clearly indicate the induction of the hypnoidal state. Unfortunately, the term "hypnoidization" was coined by me some fourteen years ago. The term has since passed into literature and is more often used by writers in its correct denotation and connotation, although occasionally it is apt to give rise to misunderstandings. It is, therefore, best to leave the term unchanged. There is nothing rigid about the method of hypnoidization. In fact, the method is quite elastic, it admits of many modifications. The principal object consists of bringing about the conditions of monotony and limitation of voluntary movements as well as the other conditions which I have found requisite for normal and abnormal suggestibility.

The procedure of hypnoidization is quite simple and may be described as follows: The patient is told to close his eyes and keep very quiet. He is then asked to attend to some monotonous stimulus, such as the beats of a metronome, or listen to a continuous note produced by a tuning fork, or to smell some pleasant odor, or simply to submit himself to a gentle massage in which touch and pressure are of uniform intensity. This should be carried out in a room where it is dark and quiet. Fatigue, physical and mental, especially emotional, is a favorable condition. A prolonged warm bath with relaxation is favorable. A predisposition to sleep is helpful. It is, therefore, best to make the first attempts at hypnoidization late at night, when the patient is both tired and sleepy. In most cases, darkness, quietness, repose, fixation on a bright point and listening to the monotonous buzzing of an inductorium are conditions favorable to the induction of the hypnoidal state, even at the very first attempt.

Dr. John Donley gives the following account of the method of hypnoidization:

"Hypnoidization has two things to recommend it — facility of induction and successful results. The technic is simple, — there need be no mention of hypnosis and hence no stirring up of apprehension in the mind of even the most timorous patient, — while the effects produced are comparable, in many respects at least, with those of hypnosis. It is not and perhaps cannot be maintained that in hypnoidization we possess a complete substitute for hypnosis; but so far as a limited experience (some thirty cases) allows of our drawing any conclusion, we feel that hypnoidization is quite worthy of more attention and study than it has hitherto received.

"Many variations of the particular procedure (as described above) are, of course, possible, and the one which the writer has found generally useful is the following: The patient is first placed at ease by a few minutes' conversation, during which he is instructed regarding what is about to be done. He is then requested to lie upon a couch, the head of which has been placed close to a faradic wall plate. With his eyes closed, he is directed to listen to the monotonous vibration of the ribbon rheotome and to concentrate attention either upon nothing at all or upon the particular idea or group of ideas and images suggested to him by the physician. At the beginning of the experiment, the patient may be somewhat tense and ill at ease, but a few minutes suffice to render him relaxed and to place him in the mental state to which Sidis has given the name 'hypnoidal.' It is during the continuance of this state that one may obtain information valuable for diagnosis and give suggestions useful for therapeusis."[8]

Once the hypnoidal state is induced by any of the various methods of hypnoidization, we can either attempt to follow up the history and the development of the malady, or we may chiefly work for the therapeutic effect and treat the present symptoms. It is, however, advisable from a purely practical therapeutic purpose to combine the two procedures, as the cure is then far more effective and far more stable. In cases when the history of the origin and development of the disease could not be traced, on account of the age or unintelligence of the patient, the therapeutic effects alone of the hypnoidal states have been utilized. The results are not as satisfactory as far as scientific information is concerned, but they are nevertheless of great benefit to the patient.

(To be continued.)

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STENOSIS OF THE LARYNX.

BY RICHARD H. JOHNSTON, M.D., BALTIMORE, MD.,

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E. McC. was brought to the Presbyterian Hospital March 15, 1908, with the following history: The latter part of December, 1907, she had laryngeal diphtheria which required intubation. She was intubated with a metal tube which she wore thirteen days. Jan. 10, 1908, the tube was removed to be cleaned, and before it could be replaced the child ceased to breathe, so that a rapid tracheotomy had to be done. From this time on the parents noticed that breathing through the larynx gradually became worse. On her entrance into the hospital, obstruction of the tracheal canal caused immediate cyanosis, which showed that she was getting no air through the larynx. March 16, under chloroform anesthesia, the larynx was examined by direct laryngoscopy in the extended position. When the epiglottis was lifted, we saw at once that the larynx was completely closed by new formed tissue between the vocal cords. Careful examination with a small probe revealed a tiny opening in the most anterior part of the larynx which was not sufficient to admit air. Since the patient had an opening in the trachea, we decided to attempt dilatation with urethral sounds from below upwards. We soon found that there was danger of making a false passage because the new tissue above the tracheal wound was thick and dense. A few days later, the patient was again anesthetized, the direct laryngoscope was introduced, and with Jackson's long laryngeal knife an incision was made between the cords and through the subglottic space to the tracheal canula. A tupelo tent was then inserted to assist in the dilatation. This little operation was followed by prompt and decided reaction; the temperature went to 104° and the breathing suggested pneumonia. We were forced to abandon treatment for a few days. When the little patient was again in good shape, the same treatment was repeated, with the result that the smallest intubation tube passed into the larynx. A very short tracheal canula was left in the tracheal wound as a safety valve in case the intubation tube should be coughed out. The temperature promptly went up again and fell to normal when the tube was removed. Several weeks passed before the patient could tolerate the tube. Alum-vaseline applied to the intubation tube seemed to have a favorable effect on the tissues. Every two weeks the child was extubated and the tube cleaned and re-introduced. At each extubation the short tracheal canula was removed and a long one put into the trachea; granulation tissue was always found at the inner end of the short canula, so that usually some force had to be used to push the long canula through into the trachea. When the intubation tube was removed, the patient became dyspneic and cyanotic, so that rapid work was necessary. After a time, the two-year hard rubber tube was introduced and worn comfortably. The patient left the city for her home in South Carolina the latter part of August, at which time she was still wearing the two-year tube and the short canula. In four and a half months the larynx, from a condition of complete stenosis, had been successfully opened and an intubation tube introduced. The physical condition of the child was good, and we confidently expected ultimate recovery from retained intubation tubes. At her home, treatment was continued by her uncle. In October, the short tracheal canula was removed and the wound allowed to heal. Early in November, against my advice, the patient was extubated and the tube left out eighteen hours. Dyspnea then became urgent and the surgeon succeeded in passing the smallest intubation tube only after several attempts. The stenosis was dilated gradually until a three-year tube was worn in comfort. The patient made favorable progress; when the tube was removed, breathing through the larynx was quiet, but the experiment of leaving the tube out for any length of time was not repeated. In March, 1909, it was noticed that the patient was not well; she seemed out of sorts and disinclined to play. Removal of the tube revealed nothing abnormal in the throat. Examination of the blood showed malarial organisms and quinine was administered. Despite prompt treatment, pernicious malarial fever developed with a fatal termination two or three days later.

H. S., six years old, was brought to the Presbyterian Hospital early in January, 1909, by Dr. Twigg, of Cumberland. She was referred to me by Dr. H. Harlan. In Septemper, 1908, the mother noticed that the child's breathing was slightly forced, especially after taking active exercise. She grew gradually worse and late in November she was intubated by Dr. Twigg for supposed diphtheria, though she had no other symptoms. When the tube was removed, the dyspnea promptly returned. When she came to the city, she was refused admittance to one of our general hospitals because of probable recent diphtheritic infection. Dr. Dunott sent her to Dr. Harlan, who, in turn, referred her to me. When I saw her, dyspnea was marked, all the muscles of the neck and chest being involved in the respiratory act. Since the child had had indefinite symptoms since September, it was impossible to say with any degree of certainty what the cause of the trouble was. Examination of the larynx was made in the flexed position without anesthesia. The patient was placed on the table, her feet, hands and head firmly held, the direct laryngoscope introduced and the larynx satisfactorily inspected. We saw at once a web of tissue stretching between the true cords anteriorly, which flapped like a sail before the wind when the patient cried or struggled for air. Posteriorly, there was a small opening through which she was breathing. We succeeded in passing a four-year intubation tube by exercising slight force, and the dyspnea immediately disappeared. Twelve hours later, the patient coughed the tube out. Dr. Ellingwood then introduced a five-year tube. When I reached the hospital that afternoon, I was informed that the larger tube had come up a few minutes before and that the patient was breathing badly. I decided to intubate carefully with a six-year tube, which showed no disposition to become displaced. The mother was allowed to take the child home with instructions to return in a month. She remained away five weeks and then hurried back because breathing was so difficult. When the tube was removed, it was filled with thick, dried secretion. With the tube out, the patient breathed much better. The tube covered with alum-vaseline was re-introduced. The mother was instructed to report every two weeks, which she did until April 15, on which date the tube was removed for the last time. The child breathed so well, I decided not to intubate again, but to keep her in the hospital and watch her a few days. Examination with the mirror showed the larynx well open. The voice, which before had been a whisper, returned, and the little patient played about the hospital with no signs of dyspnea. She was sent home apparently cured; the mother was told to bring her back at once should any shortness of breath develop. Since she has not returned, we must assume that there has been no further trouble.

In December, 1908, I examined a Bohemian child, fourteen months old, at the Garrett Hospital at the instance of Drs. J. Staige Davis and John Rührah. The patient had been intubated three months previously for laryngeal diphtheria, from which she made a good recovery. A few weeks before I saw her, she developed dyspnea, which had gradually grown worse. Examination of the larynx was made in the flexed position without anesthesia. The vocal cords moved normally. In the subglottic space we saw a dark-gray mass apparently springing from the anterior wall of the larynx. Behind, there was a small opening through which the patient breathed. We thought it possible to pass a small intubation tube, but before this could be done, the mother, who was ignorant, took the child from the hospital and did not return.

Complete stenosis of the larynx is one of the most difficult conditions the laryngologist encounters. All such patients wear tracheal canulæ and it seems as if the easiest treatment is dilatation from below upwards. Personally I am afraid of this method of procedure, for, if the tissue is hard and unyielding, there is great danger of making a false passage. If there is an opening in the larynx, however small, the sound will probably find it and pass through without damage. This method of treatment is not strictly scientific, for we are working in the dark. In my opinion this treatment should not be resorted to until a careful examination is made under direct laryngoscopy, which will give us valuable information as to the location and character of the pathological lesion and the size of the opening if there be one. With this knowledge we may be able to resort at once to intubation, which is the logical method of treating incomplete stenosis. In complete obstruction we may succeed in establishing an opening through the direct laryngoscope which must be kept open by intubation. After months of treatment we may remove the tube and find to our disappointment that the patient is not cured. Rogers, who has perhaps had more experience with such cases than any one else in this country, believes that practically every case can eventually be cured by retained intubation tubes. One of his patients wore a tube five years and recovered with a singing voice. He is opposed to any form of external operation and dispenses with the tracheal canula as soon as possible, on account of the probability of tracheal stenosis from the prolonged wearing of the canula.

It will be noted that two of the three cases cited above followed diphtheria; such sequelæ have been seen many times following intubation, but they are not always the fault of the operator. We cannot say that a stenosis was caused by intubation, since such cases were observed in diphtheria before the introduction of this method of treatment. Statistics, however, seem to indicate that pressure necrosis is responsible for many stenoses following diphtheria. If a tube too large for the child be introduced, as sometimes happens, it is easy to understand that pressure on the true cords will cause necrosis and the subsequent formation of granulation tissue which might give rise to stenosis. It is probable that metal tubes exercise more pressure than the hard rubber ones. In the treatment of obstruction the hard rubber tubes are preferable to metal because they exert the same amount of pressure and possess a certain power of absorbing the pathological tissue. In subglottic stenosis following diphtheria, autopsies show ulceration on the anterior cricoid wall where the intubation tube comes in contact with it. The formation of new tissue is directly connected with the ulcers. Galatti thus describes the autopsy findings: The larynx was of normal size. The mucous membrane was pale; on both false cords were shallow, depressed scars; 1 cm. below the true cords corresponding to the cricoid cartilage the lumen of the larynx was greatly narrowed and the mucous membrane changed into scar tissue. The perichondrium of the cricoid cartilage at this point was thickened with scar tissue and adherent to the mucous membrane. Bokay, in his exhaustive treatise, "Die Lehre von der Intubation," describes four personal autopsies in which the stenosis was in the subglottic region corresponding to the cricoid cartilage. He makes the statement that laryngoscopy in this class of cases has no practical value because the children are so unruly it is scarcely or not at all possible to see the larynx. He refers to Hagenbach in this wise: "One who has had a large experience in examining the larynges of young children will occasionally succeed in making a diagnosis." Bokay then says that in his experience Kirstein's autoscope is not a diagnostic help; he believes that Killian's direct laryngoscope will give no practical results on account of the difficulties in using it. Since his book was published, in 1908, it is evident that the simplicity of direct laryngoscopy in the flexed position is unknown to him. Dillon Brown estimates that stenosis following intubation occurs in one case out of every seventy-five to one hundred. If these figures are correct, it behooves the laryngologist to learn how to examine for the condition and to treat it successfully. That many such cases have been treated by the general surgeon in the past is a reproach to laryngology. Now that we have simple methods of examining these little patients, we have no excuse for turning them over to the surgeon. If we can impress the profession generally with the fact that, in the early stage, when the difficulty in breathing appears, it is of paramount importance to have the larynx examined to find out the cause of the trouble, we will be able to cure a certain number of patients before complete stenosis occurs. After complete closure of the larynx, the difficulties are increased and the treatment prolonged months or even years. In direct laryngoscopy in the flexed position we have a safe, easy and simple method of diagnosis which, of course, leads the way to successful treatment; it has made the examination of the larynx in children simplicity itself. The progressive laryngologist of the future must assume the responsibility of these cases; he must know how to manage them and be ready to perform certain neck operations which are liable to arise at any time in the course of treatment, especially in the complete stenoses.

Clinical Department.

A TUBAL ABSCESS OF UNUSUAL POSITION ACCOMPANIED BY A BACTERIURIA OF RENAL ORIGIN.

BY ARTHUR L. CHUTE, M.D., BOSTON.

The following case which came under my care in November, 1906, is of interest not only because of the very unusual position of a tubal abscess, but also from the fact that both kidneys, without giving evidence of any infection, were excreting great numbers of organisms.

The patient, a woman of twenty-eight, had been delivered of her first child toward the latter part of September. The labor was a long one and the child was stillborn. According to the history, delivery was followed by a serious post-partum hemorrhage, and later by an attack of sepsis, lasting some ten or twelve days. After delivery, it was noticed that there was a visible mass to the left and below the umbilicus. This was supposed to be a much-enlarged uterus, and the patient, to whom the mass was very evident, was assured that it would gradually disappear. As it, however, did not disappear, she was treated locally for subinvolution, but without effect on the mass. This mass had not changed perceptibly in size; it had been painful at times and at all times tender. It occupied the place where this patient, when about seven months pregnant, had had an attack of very acute pain, lasting some hours and requiring morphia. There had been discomfort at this point during the rest of her pregnancy.

This woman had come under the care of the physician with whom I saw her but four days before. During these days she had complained of lack of appetite, marked abdominal distention, and of considerable abdominal pain and tenderness. Her bowels had been very difficult to move. There had been no elevation of temperature, but a poor pulse of about 100. There had been no chills.

The urine had been turbid and extremely small in amount. The actual amount was unknown, but she had voided urine in small quantity but twice in one period of twenty-four hours. There had been some edema both of the face and the extremities, and very marked pallor and shortness of breath on exertion. Under diuretics, the edema had disappeared and the amount of urine increased. The distention had not been affected.

When seen by me, she had a temperature of about 100° and a weak pulse of 100. There was a mass in the left semilunar line as large as a good-sized orange. The upper limit of this mass was just below the level of umbilicus. Though there was moderate distention, the mass was perfectly evident on simple inspection. There was tympany over it. It was immovable and moderately tender. Vaginal examination showed a uterus that was unusually high, but not much enlarged or fixed. No connection could be made out between the uterus and the mass. Nothing could be felt in either broad ligament.

The urine, which was turbid, was found to be filled with an organism having the morphology of a streptococcus, and with the exception of a very few leucocytes it contained no other formed elements. The ureters were simultaneously catheterized and showed no obstruction at any point. Both specimens of urine were found to be equally filled with organisms. I had supposed that I should find the bacteria limited to the side of the mass, which I suspected was in some way connected with the left kidney or ureter. A blood count showed a leucocytosis of 18,500. After free catharsis, there was a small area of dullness over the mass.

An incision over the most prominent part of the tumor showed a mass covered with thickened omentum that lay just to the inside of the descending colon and was adherent to it. The uterus was pulled up and tilted to the left by the left tube, which disappeared into the mass about three fourths of an inch from its junction with the uterus. A portion of the left ovary projected from the mass above. The left broad ligament was stretched out in such a way as to cover the true pelvis on the left. The ureter could be easily seen coursing through the lower part of the ligament.

In attempting to separate this mass from the colon, an abscess cavity was opened and some drams of offensive pus escaped. The cavity was drained by a tube and wicks. No attempt was made at its removal. After the operation, drainage from the cavity was profuse. Gas was passed by rectum and feces as a result of enemas. The distention, however, increased and there was marked peristalsis. On the second day, there was pain in the right iliac region, with rigidity at this point. On the third day, a fecal fistula appeared, evidently from a perforation of the colon at the point where I had attempted to separate it from the mass. Though the fistula discharged profusely, it did not affect the distention to any considerable degree.

On removing the gauze that had been used to wall off the pelvis, there was a gush of amber-colored fluid from the right side of the pelvis. This fluid was clear and not offensive. Unfortunately, no cultures were taken of it.

The patient died on the fourth day after operation, apparently as a result of the localized peritonitis in the right pelvis and the chronic sepsis from which she had been suffering. No autopsy was obtained.

The position of the tubal abscess was unusual and the cause for this unusual position interesting. Apparently, the attack of pain when she was seven months pregnant was due to a salpingitis that was followed by the formation of adhesions that fixed the tube in its abnormal position. The post-partum hemorrhage can probably be attributed to the difficulty that the uterus found in shutting down after delivery, held as it was by the fixed tube. Whether the uterine sepsis was an infection from above, the result of the salpingitis, or whether the tubal abscess was due to an ascending infection and the result of the uterine sepsis cannot be told. It is perfectly possible that they bore no relation to one another. I was unable to determine whether the abscess was actually of the tube or whether the cavity was just outside the tube. The chronic septic condition that this patient showed made it seem probable that the suppuration had been present for a considerable time.

A point that was of particular interest to me was the bacteriuria, proven to be of renal origin. This was equal, or approximately so, on both sides. The bacteriuria was not due, apparently, to any actual infection or inflammatory condition of the kidneys, at least so far as could be judged from the evidence afforded by the urine. It is questionable whether it had anything to do with the marked functional disturbance of the kidneys that was shown by the edema and the very small quantity of urine this patient had passed for a day or two previous to the time that I saw her; this may have been due entirely to her septic condition.

It seems probable that the organisms were taken from the blood stream and filtered through the normal renal tissue. It is of course possible that the organisms did not pass through the renal epithelium in any such number as they were found in the urine, but were for the most part the result of a multiplication that took place in both renal pelves. The conditions under which this excretion of organisms by the kidney takes place, and the influence, if any, that it has upon the original septic process are as yet little understood.

It is to be regretted that in this case the kidneys could not be secured for study; also that I did not get cultures from the urine, the abscess cavity and the blood. Without such information, as only a study of these points could give, it is impossible to say that the organisms in the urine and those in the abscess cavity were identical, or that the organisms actually passed from the circulation through relatively normal kidneys. However, I believe that such evidence as we have is highly suggestive that this was the case.

A CASE OF LEPROSY.

BY C. E. WELLS, M.D., STATE HOSPITAL, TEWKSBURY, MASS.

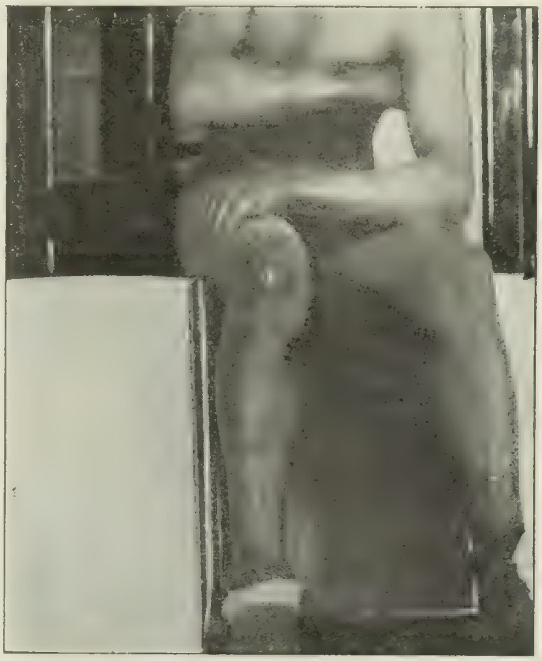
A case of leprosy, admitted to the Massachusetts State Hospital some months ago, is of interest because of the rarity of the condition in this section, and as illustrating the ease with which it may be diagnosed if the possibility of leprosy is kept in mind when examining an obscure case of skin disease. The case in question exemplified the mixed type of the disease, which is the rarest of its forms.

Case history. — The patient was a Greek male, twenty-five years old, who had been employed as a cook during his two years' residence in the United States. His history was somewhat meager on account of his limited command of English, but it appeared that his family history was negative. He had sores in his nose, with excessive secretions, over a year before entrance, and lesions on his face, arms and legs of about six months' standing.

Physical examination.— Showed a well-developed and well-nourished man, 5 ft. 4 in. high. Temperature, 97.6; pulse, 70. The mucous membranes were pale. There was slight conjunctivitis, but no keratitis; a free bloody nasal discharge was present. On either side of the nasal septum were ulcerations, and a small ulcer was situated at the junction of the right ala with the cheek. On both cheeks were numerous pinkish papules, which were grouped, slightly elevated, on an indurated base, some covered with small crusts that were easily removed, having a dirty-reddish base, ranging in size from pinhead to a split pea. The eyebrows were nearly all gone, but the scalp was not involved. Both ears were filled with hard nodules about the size of peas, which were covered by pink, shining skin not adherent.

The hands were dry, scaly and of a brownish color, with very little subcutaneous fat. The left hand and forearm were anesthetic except the palm, and there were small warty nodules on the back of the fingers and on the hypothenar eminence. There were two tubercules 1 cm. and 2 cm. in diameter over the ulna about 5 cm. above the wrist, and a similar one 8 cm. above these. The right hand was similar in color and general appearance to the left. There were nodules on the backs of the fingers, and a cut on the tip of the forefinger with some loss of tissue. The radial nerve was palpable for its entire length, as a cord about the size of a lead pencil with several nodules along its course. There was less anesthesia than in the left forearm.

The chest and abdomen were negative. Both thighs showed numerous papules and brownish macules scattered over the anterior surface. A few of the papules were crusted. Over the right patella were four healed ulcers, resembling old syphilitic ulcers, about 3 cm. in diameter, and several similar ulcers about 6 cm. below the knee on the outer side of the leg. Over both tibiæ were several brown pigmented macules, irregular in outline. The feet were dry and scaly, with a few shot-like nodules under the skin on the dorsum, just behind the toes. Anesthesia was well marked in both feet, the right leg and thigh, while the left leg was fairly sensitive to pin pricks.



Smears from the nasal secretions and sections of nodules from the ear and of the tubercles of the leg showed the lepra bacillus in large numbers. No reaction followed the administration of a diagnostic dose of tuberculin.

The blood count showed: Hemoglobin, 100%; red cells, 5,400,000; white cells, 17,600.

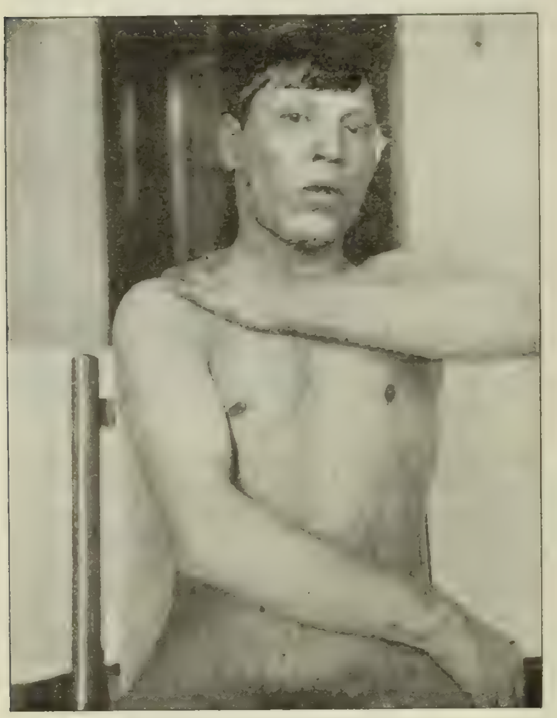
Differential count: Polymorphonuclears, 73+%; large mononuclears, 12+%; small mononuclears, 11.5%; transitionals, 2.5%; eosinophiles, 0.5%; unclassified, 2.5%.

Leprosy manifests itself in three forms:

I, Nodular; II, Maculo-anesthetic; and III, Mixed, the classification depending largely on the relative prominence of certain symptoms which are found in all types.

I. *The nodular form* is the commonest, especially in Europe and temperate climates generally, comprising from 50% to 75% of all cases. It manifests itself as erythematous patches, which appear in from a few months to several years after exposure, and persist for a varying time up to a year or even longer. The stage of nodulation follows, the nodules appearing as minute pink papules, which develop to the size of a split pea or even larger, some cases having shown them as large as a hen's egg. Their presence on the face, together with a thickening of the skin and deepening of the natural wrinkles, give rise to the so-called "leonine face." The hair of the scalp is preserved, but is lost elsewhere, and the nails become thin and brittle, or horny, often being lost entirely, though they may be restored. The ears project conspicuously, the lobes are long and pendulous, and numerous hard nodules appear just beneath the skin, to which they are not adherent. This type of the disease is soonest fatal, the average duration being eight years.

II. *The maculo-anesthetic form* is commonest in all tropical countries, where it comprises two thirds of all cases. Three stages are described: *Development*, lasting about two years and characterized by pain and tenderness, hyperesthesia and lancinating pains, especially marked along the course of the ulnar, median and peroneal nerves. The *spreading stage* is characterized by an eruption in the form of discrete patches, 3 to 6 cm. in diameter, with well-defined edges, appearing most frequently on the back, arms, thighs, around the knees and elbows, on the face and over the course of nerves, especially the musculospiral, very rarely on the palms and soles. They may itch or burn, but are often anesthetic. They spread peripherally, and frequently coalesce, forming large white, wrinkled areas. Later the nerves become thickened and nodulated, pain and hyperesthesia gives place to anesthesia, and marked atrophy occurs. The *permanent stage*, following the onset of atrophy, lasts for about ten years. The eruption is stationary, usually having involved nearly the whole body, and giving the classical snow-white appearance. Paralysis may occur and ulcerations are common, though less extensive than in the nodular form. Moist or dry gangrene may appear and spread slowly, causing marked deformities, although the patient usually presents a far less repulsive picture than in the nodular form.



III. *The mixed form* comprises one sixth of all cases. Heredity plays a more important rôle than in the other types, a majority of the patients giving a positive family history. It presents characteristics of each of the other types in varying degrees, usually beginning as the maculo-anesthetic type, nodulation and ulceration appearing after a few months. The nodules appear on the site of the early macules, or, possibly oftener, on the nasal septum, where ulceration is a frequent early symptom. The duration of this type is about fifteen years.

The *lepra bacillus* is a short rod resembling the tubercle bacillus in many respects, notably in its acid-fast properties, but differing from it in being present in the lesions and nasal secretions in large numbers, and in differences in cultural reactions. In the lesions it is usually extra-cellular, but may also be found within the cells. It is thought that inoculation occurs most frequently through the mucous membrane covering the cartilaginous portion of the nasal septum. The incubation period varies from a few months up to many years, well-authenticated cases of sixteen and thirty-two years having been recorded.

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REPORT OF TWO UNUSUAL CASES OF SARCOMA.

BY WALTER A. SMITH, M.D., SPRINGFIELD, MASS.

Miss C., seventy-three years, teacher. April 17, 1909.

Family history. — Not important.

Past history. — Always well and strong. Fifty-one years ago, a small lump in the right side of the neck was excised without an anesthetic. The physician who performed the operation is now dead; there is no pathological report of the specimen removed, and the patient is ignorant of the character of the growth at that time.

There was no return of the trouble until nine years ago, when a bunch began to grow at the site of the old scar. This growth was removed in Boston. At the time of its removal, the patient states the tumor was the size of an orange. There is no pathological report of this specimen obtainable.

Two years later, seven years ago, another bunch appeared in the same place and was removed in Boston. No pathological report can be found.

On Dec. 4, 1906, she was admitted to the Wesson Memorial Hospital, Springfield, Mass., for a growth in the right side of the neck, extending from the median line in front to the median line in the back. Nearly the entire surface of the growth was sloughing with an intensely fetid odor. The tumor was removed in one mass with a wide skin margin by Dr. W. A. Smith. The external jugular vein and the facial artery were ligatured and divided; the submaxillary gland and all palpable lymphatic glands were dissected out. It was impossible to close the wound, which, however, healed promptly by granulation without skin grafts. The tumor weighed one pound and was a round-celled sarcoma.

On June, 1908, the patient was again admitted to the Wesson Memorial Hospital, presenting in the old scar a tumor the size of an egg. The tumor mass and several glands were removed by Dr. W. A. Smith and the wound sutured. The incision healed by first intention and the patient was discharged in ten days. The pathological report was sarcoma.

Present illness. — Patient states that in the last few months, a bunch has appeared just back of the old scar and has grown rapidly in size. It causes no discomfort and is not tender. She has not lost weight.

Physical examination. — Fairly developed and nourished. General examination normal.

The whole right side of the neck is extensively scarred from previous operations. In the posterior triangle, and extending forward to the linear scar of the last operation, is a hard nodular mass about the size of an egg adherent to the skin and deeper structures, not tender nor ulcerated.

Ether and operation by Dr. W. A. Smith. An incision three inches long was made over the tumor, which was found just beneath the skin. The mass was shelled out by blunt dissection, leaving the internal jugular vein exposed for a distance of two and one-half inches. The vein was found to be considerably enlarged. The wound was closed with interrupted sutures of silk-worm gut and a dry sterile dressing applied.

Photograph of growth just prior to operation.

The wound healed by first intention and the patient was discharged April 27, 1909, ten days after operation. The first operation without an anesthetic is an event rarely heard of these days. It is unfortunate that the nature of that first growth is unknown, but it is nevertheless remarkable that such a malignant growth should persist so many years without showing symptoms of grave internal metastases or of cachexia and general impairment of health.

Mrs. S., seventy-two years. Housework. April 27, 1909.

Family history. — Not important.

Past history — Always well and strong.

Present illness.— Patient states that six weeks ago she accidentally struck her knee against a projecting stick in a wood pile. She noticed a trivial abrasion which she thought nothing of. Two weeks later she noticed a hard lump on the injured knee at the site of the abrasion, which had healed promptly. The lump has grown rapidly in size until it is now about the size of an egg, bluish-black in color. It causes no pain and is only slightly tender. Otherwise she feels well. She was admitted to-day to the Wesson Memorial Hospital.

Physical examination. — Well developed and nourished. General examination normal.

Arising from the skin over the right patella is a hard, nodular, almost black, warty growth as shown in the accompanying photograph. The growth is only slightly tender and is freely movable over deeper structures. There were no glands detected in the groin.

Ether and operation by Dr. W. A. Smith. The growth was excised in one mass with wide skin inclusion, leaving a wound too gaping to be closed with sutures. It healed rapidly by granulation. The patient was discharged from the hospital May 18, 1909.

Pathological report. — Small round-celled sarcoma.

The apparent etiology — trauma — is suggestive. The rapidity of growth without obvious metastases is remarkable.

I am indebted to Dr. Allen G. Rice for assistance in operating and in the preparation of this report.

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Medical Progress.

REPORT ON OBSTETRICS.

BY ROBERT L. DE NORMANDIE, M.D.

LIGATION OF THE UTERINE ARTERIES FOR PLACENTA PREVIA.

Miller[1] recommends ligation of the uterine arteries in placenta previa. The technic is as follows: Patient is carefully prepared. Cervix is pulled down as far as possible by tenacula. The left uterine artery is palpated by the left index finger and a catgut ligature is passed from below upward, in order to avoid the possibility of including the ureter outside of where the artery divides into the circular artery of the cervix. The right uterine is then tied in the same manner, palpating it with the right index finger. He reports 11 cases, now 14,[2] with 2 maternal deaths, but these were in cases where there was such a profound degree of anemia that death was only a matter of a few hours under any circumstances. All of the babies were lost. In only 4 was there any sign of life before the ligating was attempted. After the ligation of the vessels, dilatation is accomplished by the regular methods. Miller uses a full curve, sharp needle and prefers to have the patient under an anesthetic, though he says it is not painful and can be done without. He summarizes his paper by declaring that the procedure is simple, devoid of danger, does not remove or permanently injure any of the essential organs of generation; does not decrease the possibility of future children; controls immediately and absolutely all ante-partum bleeding from the placenta; that collateral circulation is not established until after delivery may be successfully attempted; that the necessity for haste is removed, thereby allowing a careful technic to be carried out. Post-partum hemorrhage from the placental site is absolutely controlled. The fetal mortality will undoubtedly be increased by this method, but as he feels that the life of the fetus in these cases is of very slight consequence compared with the maternal life, he hopes that this procedure will become a reasonable one in the management of complete placenta previa.

In relation to Miller's method of procedure, it is interesting to note the opinions expressed at the American Gynecological Society's meeting this year, as reported in the *Surgery, Gynecology and Obstetrics*.[17] At that meeting, there was a symposium on Cæsarean Section: Indication in Placenta Previa. The readers were almost unanimous in their remarks that Cæsarean section was not justifiable in by far the majority of cases.

Very rarely there may occur cases where it is advisable. Such cases will occur where the cervix is rigid, the patient in excellent condition and where the hemorrhage has been slight, and finally where the baby also is in good condition. The speakers recognized that conditions might be present whereby Cæsarean section would be indicated, but practically all refused to advocate this as a general procedure. Mason and Williams[18] have recently analyzed 155 cases of placenta previa occurring at the Boston Lying-In Hospital, and their conclusions are that it is not any particular method of delivery which will give the best results, but that *early* delivery is essential. They go further, and in their last conclusion say that, in primiparæ, Cæsarean section should be the operation of choice. It is rather hard to see why they should take that radical stand, because in their analysis there are no cases where a Cæsarean has been done for this condition. Recently speaking with a prominent practitioner, he made the remark that Cæsarean section was the only treatment for placenta previa, and noted the fact that good reports were coming from this operation. He did not note, however, that the reports in the majority of cases were coming from trained abdominal surgeons and not from obstetricians. There is no doubt but that the abdominal surgeon had better deliver a placenta previa by Cæsarean section rather than by the subpubic method. The bad results of placenta previa have come because of the neglect of the patients, because the reason for the first hemorrhage was not ascertained, and, if ascertained, palliative measures were followed. At the American Gynecological meeting the feeling there was clearly expressed that early operative interference from below gave the best results, but that occasionally Cæsarean section might be indicated. The speakers there had had no experience with Miller's method, and, until further reports are received upon this procedure, it must be regarded as on trial.

SURGICAL TREATMENT OF THE UMBILICAL CORD.

Ballantyne[8] writes that the umbilical cord is not treated in a proper surgical aseptic method. He quotes C. Keller as showing that 2% of the total mortality of children during the first month of life is due to umbilical infection. Ballantyne feels that the premature infant is more liable to infection than the full-term child because of the persistent permeability of the umbilical vessels. For these reasons he determined to carry out a series of experiments which should more nearly attain to the standards of surgical asepsis. The first five methods he used can hardly be called surgical, for these left more or less of the umbilical cord to separate by putrefaction, and the process of cicatrization was apparently lengthened. The last method, which he tried on four babies, and the one surgical method employed, was as follows:

A circular incision was made at the juncture of the skin with the sheath of the cord. The vessels were dissected clear from the jelly and tied separately. The cord was then severed flush with the skin. The edges of the skin were then sutured in one case with silk-worm gut and in the other cases with catgut. This procedure required ten minutes. No jaundice occurred and the weights of the babies were well maintained. By the fourth day in all cases union had taken place by first intention. Ballantyne says the greatest objection to this method is the length of time it required and the fact that the mother is not watched at a critical time in the third stage of labor.

Granted that there is a certain percentage of mortality among children from umbilical infection, it does not seem advisable to advocate the procedure that Ballantyne has suggested. There is no question but that a certain number of cases by this method would become infected by this surgical procedure. The present usual method of looking after the cord, unsatisfactory as it is in a small proportion of cases, in by far the large majority of cases gives a good result, and, if infection occurs, it is probably due to improper and careless technic of the present method. Ballantyne's procedure would, in my opinion, if adopted in general, increase the mortality among the children very materially, and would soon be abandoned. A truly surgical method for treating the cord is out of the question, and we must carry out the present method more carefully rather than to search for any marked different procedure.

PYELITIS OF PREGNANCY TREATED WITH COLON VACCINE.

Hicks[3] reports a typical pyelitis occurring in pregnancy. Catheter specimen of the urine from the right ureter showed a pure colon bacillus infection. Patient was given 10 ccm. of colon vaccine and temperature dropped at once, and within a few hours patient was absolutely without pain. Pus continued in the urine until four days after the delivery, which occurred at full term. Hicks thinks that constipation plays an important part in the etiology and that the infection is due to the infection of the renal pelvis by the colon bacillus by means of the lymphatics. He does not accept the ascending theory because he cannot see why the infection should be so much more frequently right-sided, and because the bladder shows no infection. He favors the use of the vaccine, and if, in spite of the medical treatment, urotropin and potassium iodide, combined with rest, this fails, he then advises emptying the uterus. This he thinks, in the majority of cases, is an unnecessary procedure.

MOTOR CAR MISCARRIAGES.

Davis[6] reports two cases where automobile riding was the cause of the miscarriage. Both patients were in the early months of pregnancy. Davis says that the reason why motoring is dangerous in early pregnancy is because of the series of frequent small jars to which the patient is subjected. The front seat is better than the rear because there are fewer shocks. The characteristics of this type of abortion are the slow, insidious onset, without bright hemorrhage or pain. As a general rule these abortions are incomplete, and, to obtain the best results, a curettage should be done. Davis feels that the pregnant woman will not give up the use of the motor because of the pregnancy and, therefore, a physician can only advise what he holds to be the safest course. Davis says going at a speed of ten miles is probably safe. Smooth roads, short rides on the front seat only, should be attempted. In the latter months of pregnancy, with reasonable precautions, motoring is without doubt exceedingly useful.

Among general practitioners there is much diversity of opinion as to the harmfulness of a pregnant woman motoring. At the present time no absolute rules can well be formulated, as the number of cases reported is comparatively few. All we can do is to advise and put the burden of obeying on the patient. Where a woman has previously aborted early in pregnancy, then the use of the motor car should be interdicted absolutely. The other points, except one, Davis covers, and that is, a pregnant woman should avoid motoring during the days of each month which would correspond to the menstrual period were she not pregnant.

APPENDICITIS COMPLICATING THE PUERPERIUM.

Judd[7] writes that many cases of appendicitis complicating the puerperium have been overlooked owing to the similarity of this condition to the symptom-complex incident to labor and the puerperium. He considers in his paper only those cases of appendicitis occurring between childbirth and ten days post-partum. He finds in the literature twenty-two cases occurring within this time limit. Two thirds of the cases developed during the first four days. Infection does not necessarily come from the uterus. Parturition may act mechanically by direct pressure or by traction on adhesions, stirring up an old process into activity. This especially is true whenever there is history of previous attacks of appendicitis. He feels that not a few physicians have been regarded as careless when in reality the source of the infection is not *from* the delivery, but aroused into activity *by* the delivery. The signs and symptoms of appendicitis in the puerperium are the same as in the non-puerperal conditions, but the difficulty is to interpret their significance correctly. He advises early operation.

GLYCOSURIA IN PREGNANCY.

Williams[4] analyzes the various kinds of sugar in the urine occurring in pregnancy, namely:

(*a*) Lactosuria; (*b*) transient glycosuria; (*c*) alimentary glycosuria; (*d*) recurrent glycosuria; (*e*) diabetes.

He goes over the literature of each kind and discusses their characteristics. The mere reduction of Fehling's solution by the urine of a pregnant woman is of but little diagnostic or prognostic value. Williams says that as much harm has been done by this test as the good which has come of it. Given the presence of sugar, one must determine whether it is glucose or lactose. Practically this is done by applying the fermentation test. If lactose is present, the condition is unimportant and of no practical significance. Williams regards it more difficult to determine whether or not glycosuria is a true diabetes. If the diabetes is known to exist before pregnancy, then the diagnosis is clear. If the glucose is detected first during pregnancy, then the interpretation is less clear. If the urine shows large amounts of glucose, and the patient presents typical diabetic symptoms, then a tentative diagnosis of diabetes may be made. If a transient alimentary glycosuria be present, the sugar content is low and symptoms are absent. This differential diagnosis will not always prove absolute, and subsequent events are necessary to settle the diagnosis. The occurrence of glycosuria is often of slight clinical significance, but in any case must the patient be carefully watched. Pregnancy may occur in diabetic women, or diabetes may manifest itself first in pregnancy. In either condition it is a most serious complication. Williams feels that the prognosis in pregnancy is not so alarming as frequently stated. If the diabetic symptoms cannot be controlled by suitable dietetic and medicinal treatment, then he favors induction of abortion and premature labor, even if serious symptoms are not present.

VAGINAL CÆSAREAN SECTION.

Peterson[5] reviews the indications for vaginal Cæsarean section and divides them into three groups: First, where there is abnormality of the cervix; second, where the mother's life is in danger, the uterus is to be emptied quickly, and the cervix is rigid; third, when the life of the fetus is threatened, rapid extraction necessary, and the cervix is unyielding. The rigid condition of the cervix is present in all of the groups. He goes over the indications for group one in detail. In group two, he includes eclampsia and placenta previa. He feels that eclampsia "has furnished and probably will always furnish the largest number of cases calling for the employment of vaginal Cæsarean section." He feels that there is less danger of sepsis in the vaginal Cæsarean section than there is by manual dilatation, and he condemns the use of the powerful instruments for dilatation. He regards all such mechanical dilators as unscientific and should not be employed when we can accomplish the same ends by means of clean-cut incisions. He reviews the number of cases which have been reported for eclampsia and reports four which he has done himself. For placenta previa, he feels that vaginal Cæsarean section will seldom be necessary because of the fact that a rigid cervix is a rare occurrence in placenta previa. Other conditions may call for a rapid delivery, and he feels that vaginal Cæsarean section is of less shock than the abdominal route. The third group is composed of all conditions where operation is demanded on account of the life of the fetus, and where rapid delivery is called for. He explains the technic of vaginal Cæsarean section by a series of pictures, semi-diagrammatic, but they serve well their purpose. His description of the operation is clear and his points are well made. His description, however, makes it appear as if it was a very simple procedure. That all operators are agreed is doubtful.

THE REPAIR OF LACERATIONS OF THE CERVIX DURING PUERPERAL CONVALESCENCE.

Hirst[9] believes that there is no valid reason why injuries of the cervix or the anterior vaginal wall should be allowed to persist uncorrected. He says that the injuries cannot be repaired before the fifth day because of the danger of infection. The objections to this primary or better called intermediate repair of the cervix, Hirst does not regard as valid, for he does not believe that these injuries will heal spontaneously, or that the stitches will loosen because of the involution of the cervix. The diagnosis of cervical tears he makes by sight, not relying upon touch. Two drawings in his article illustrate his technic, which, roughly, is a continuous chromic catgut suture, starting, after the denudation, at the upper end of the tear on the vaginal aspect of the anterior lip. The needle is then brought out just short of the mucous membrane, but somewhat nearer the external os than the point of the insertion. The needle is then inserted on the posterior lip just short of the mucous membrane and is brought out opposite the point of insertion on the anterior lip but in the raw surface. These sutures are continued now only in the raw surface, except for the last two insertions of the needle, which take in the mucous membranes until the level of the external os is reached, when the muscle is united, but the mucous membrane of the vaginal aspect of the cervix is still gaping. The mucous membrane is then whipped over and the suture is tied at the upper angle, only one knot being necessary. The cervical canal should have a caliber just sufficient to admit the forefinger. Hirst states that he has carried out this procedure for the past three years. It is to be regretted that he did not publish definite statistics in this article, for by means of these many points would be cleared up which are now open to question.

MYOMA AND PREGNANCY.

Smyly[10] writes of the effect of pregnancy on myomatous tumors and, conversely, of the tumors on pregnancy, childbirth and the puerperium. In the first division, the tumors, he says, are drawn upwards and change in size and consistency because of the development of the tissues and because of the edema. This latter condition causes rapid enlargement and the tumors lose their globular shape and become flattened. Necrotic changes in pregnancy are rare, but are common during puerperium, when sloughing and general sepsis may occur. In the puerperium, tumors return to their original condition, and rarely they have been known to disappear entirely. In the second division, during pregnancy, these tumors rarely give rise to serious complications. A considerable number of cases have been reported, however, where hemorrhage, abortion, placenta previa and other complications have been referred to this condition. Many patients with small myomatas go through their pregnancy without any complications.

The question of diagnosis in such a condition is most important, for a large number of uteri have been removed with no knowledge of the pregnancy. The mistake in diagnosis is due to the fact that the symptoms present are common to both conditions. Hemorrhage may be present, especially in the early months; therefore, Smyly warns us to remember what Olshausen says, " that rapid enlargement of a myomatous uterus accompanied by hemorrhage should always excite suspicions of pregnancy." Tumors of the fundus of the uterus rarely cause trouble during labor. Occasionally, they may give rise to inertia. Large tumors in the lower segment and adherent are the ones that cause serious, oftentimes insuperable, obstacles to delivery. Malpresentations are frequently found. Placenta previa occurs with such relative frequency as almost to prove the existence of cause and effect. There is more trouble in the third stage of the labor than in either of the others, because of the imperfect contraction and retraction which takes place. Inversion of the uterus is a well-known complication, and hemorrhage may come any time after the labor is completed, and it is, therefore, difficult to say when the patient is safe.

The treatment of these myomatous uteri depends much upon the position and size of the tumor. Interference during pregnancy is seldom necessary, although one may be forced to operate on account of extreme pressure symptoms or other urgent signs. At labor, dragging the fetus by the obstruction Smyly in general condemns, and he regards Cæsarean section alone as seldom sufficient. Pan-hysterectomy is often best because infection may already be present. If, however, the fetus is known to be dead, removal of the uterus unopened is indicated. Smyly reports a case in his own practice, a breech presentation; patient in labor four days with inefficient pains. Night of the fourth day, he made his first examination and found the os dilated three quarters, and, to the left, a tumor the size of his fist. He did a version, lost the baby, but apparently caused no serious injury to the maternal soft parts. Post-partum hemorrhage followed and the patient ran a temperature for some days. Vaginal and intra-uterine douches were used and she eventually got well. Smyly writes that the puerperal condition was due entirely to the tumor, for he feels that the tumor acted as a ball-valve, obstructing the lochia, and absorption and a septic condition followed. At a later period he removed the tumor by abdominal section. Shortly after that she again became pregnant and delivered herself normally of a full-term child.

It seems hardly fair to put the entire cause of the trouble on this tumor. In this vicinity, it would not be regarded wise to allow a patient to go into labor four days at least without knowing what the condition was. Undoubtedly, she was septic from his manipulations and the long labor, and it is strange to see why he should drag the fetus by the obstruction when in his article he condemns such a procedure.

RUPTURE OF THE UTERUS AND ITS TREATMENT, BASED ON A SERIES OF FOURTEEN CASES.

Kerr,[11] in an admirable article, reviews the subject of rupture of the uterus. He considers the subject from a practical rather than a scientific point of view. The etiology he considers from three classes: those cases occurring during pregnancy, early in labor, and after a protracted labor. Those cases occurring after a protracted labor naturally are the most common, and in order to understand it fully, he reviews the anatomical features of the uterus, especially the lower uterine segment. The differentiation of the uterus into the upper and lower uterine segment he enters fully into, and takes the conclusions of Van Rosthorn. The lower uterine segment and cervix he regards as playing an entirely passive part in labor, regarding the body of the uterus as the only active part. He takes up the formation of the retraction ring, quoting freely from other authors, and giving in each case the reference. Pelvic deformity, malpresentations, malpositions of the child, and hydrocephalus are conditions which chiefly favor the occurrence of rupture of the uterus. The extreme type of pelvic deformity he does not regard as giving many cases of rupture of the uterus, for this condition is early appreciated and labor is not allowed to go on indefinitely. He feels that in cases where there is a slight contraction of the pelvis and patients have had several children, the danger of rupture of the uterus increases with each succeeding pregnancy, for the reason that where there has been a marked thinning of the lower uterine segment once, the condition is reached much earlier at each subsequent pregnancy. Simple rigidity of the cervix is not sufficient to cause rupture of the uterus. He calls attention to the fact that unrecognized lacerations at previous labors play a most important part in rupture of the uterus at subsequent pregnancies. Rupture may take place spontaneously; and Kerr calls attention to such a case. He recognizes the difference between rupture of the vaginal vault and rupture of the uterus. The former is especially liable to occur in cases of transverse presentations and where the abdomen is pendulous. It is generally caused by violence when the hand is being forced into the uterus. Clinically, Kerr divides rupture of the uterus into complete and incomplete. By the former, he means that lacerations extend into the peritoneal cavity, while the latter stops short of the peritoneum. Complete rupture is more common than incomplete, although it must be remembered that incomplete rupture is oftentimes not appreciated and, therefore, never reported. The clinical features of rupture differ greatly according to whether it occurs in pregnancy, early in labor, or after labor has been in progress some time. In the two former, there is seldom much warning of the accident, while in the latter there are premonitory symptoms which, if properly observed, should lead the physician to anticipate rupture. He warns us that the classical symptoms which are so characteristic as to make the diagnosis comparatively easy are frequently absent. Careful observations and examination of the patient alone will give the correct diagnosis. He feels that a profuse external hemorrhage in these cases is not the usual happening, but rather a slow hemorrhage into the abdominal cavity or in the loose cellular tissue above the uterus.

Rupture of the uterus during pregnancy or early in labor is rare. The symptoms present are sometimes slight, other times typical of internal hemorrhage. Symptoms before or after rupture which occur late in labor or during delivery are much more important. Restlessness, constant pain over the lower part of the uterus becomes marked and the contractions tend to become more and more tetanic. The pulse increases in rate and the lower uterine segment steadily increases; that is, Bandl's ring becomes higher and higher. (Increasing tenderness on palpation is also a most suggestive and, to me, an important sign which must not be overlooked.) The prognosis he regards as much more favorable under active treatment than when the condition is treated expectantly, for the mortality now has been reduced to between 50 and 60%, when formerly it was 90%. In the treatment, he speaks about the necessity for prophylaxis and the need of watching for all premonitory symptoms, especially in contracted pelves. He recognizes that there is considerable difference of opinion as to the best treatment of rupture. If the child is undelivered, and the head is readily reached, he then delivers by forceps or perforates; if the child is free in the abdominal cavity, then he advises abdominal section at once. Kerr believes, in cases of incomplete rupture and the child delivered, that plugging the tear is the best course. In complete rupture, pan-hysterectomy he believes theoretically to be the soundest treatment and ultimately will give better results. At the present time, plugging and drainage give the best results.

TUBERCULOSIS IN PREGNANCY.

Partridge,[12] in a short and superficial article on tuberculosis and pregnancy, comes to the following surprising conclusions which his article does not substantiate. Pregnancy aggravates but little the symptoms of tuberculosis. Incipient cases usually go through pregnancy well, while advanced cases do poorly. Cured cases seem to be uninfluenced by pregnancy; interruption of pregnancy is only exceptionally indicated. If Partridge has any number of cases from which he draws his conclusions, he would do well to publish them, for the consensus of opinion at the present time is undoubtedly against his conclusions. Miller[13] takes the opposite and very radical view, and from his study of statistics he concludes (1) that interference is not only justifiable, but urgently demanded, in all cases prior to the twentieth week, as soon as a diagnosis is made, if a febrile process exists with a high temperature and a rapid decline which is not controlled by proper hygienic and dietetic treatment. (2) In all cases where the primary lesion first appears prior to the twentieth week of pregnancy. (3) In all cases prior to the twentieth week if more than one lobe is involved, and the disease is extensive enough to be alarming under any circumstances. (4) When the disease is complicated by a grave hyperemesis, disease of the heart, kidney or intestinal tract.

Edgar definitely states that gestation exercises a distinctly unfavorable influence on tuberculosis, and that after delivery there is often marked acceleration of the disease. He apparently favors intervention when pregnancy is not far advanced. Williams, in his textbook, has but little to say upon the question, and he concludes that " it is generally conceded that its effect is almost always harmful and that the strain incidental to labor and the extra drain upon the system pulls patients down still further so that the final result is usually hastened. Lawrason Brown[14] says that if pregnancy causes no nausea and vomiting, it seems to exert little, if any, influence upon pulmonary disease. Parturition, he says, is always to be regarded seriously, and he calls attention to the apparent indifference of many physicians to this fact. Repeated pregnancies, even in cured patients, he considers dangerous, and notes the fact that after labor pulmonary tuberculosis may run a very rapid course. There are wide differences of opinion in recent medical publications. The study of a large series of cases, alone, will give accurate data upon which to base our conclusions. At the present time there seems to be a wide variance as to the danger of a tubercular patient becoming pregnant, but nevertheless, it seems clear that the majority of writers are of the opinion that the end result is almost always dangerous for the mother, even if occasionally the disease apparently stops or does not advance during pregnancy.

HEART DISEASE AND PREGNANCY.

Cameron[15] reviews the subject of heart disease and pregnancy in a very thorough manner from the standpoint of the obstetrician. He remarks that teachers and textbooks have devoted too little time and attention to the subject and that it is a common belief that heart disease is rare in pregnancy, and if pregnancy does occur, cardiac troubles improve, oftentimes do not become worse. He warns his readers that it is impossible to base a prognosis merely upon the valvular disease present. General health, nutrition, condition and action of the kidneys, amount of compensation present, patient's ability to remain quiet in bed, and the way in which she responds to treatment, all of these are of more importance than the mere type of lesion present. The usual degree of danger is put down in the following order: Mitral stenosis, aortic insufficiency, mitral insufficiency. In mitral stenosis, he says the danger lies in the over distension of the right heart, brought on by the frequent bearing-down pains of the second stage and later by the blood from the utero-placental vessels being poured into the veins during the third stage. He regards that a short second stage, preventing and moderating the bearing-down pains, is the best treatment. Free bleeding from the uterus will oftentimes relieve the cyanosis. If it does not, venesection will tide the patient over the critical period. Ergot should not be given. Perfect rest, with morphia, is necessary, and stimulation of the heart. Mitral insufficiency, he regards as the commonest of the heart complications of pregnancy, and the treatment of these cases is much the same as in mitral stenosis. The first stage should be allowed to go on. As soon as possible in the second stage, delivery should be effected by artificial means. Free bleeding should be promoted. Convalescence requires careful feeding, tonics and prolonged rest in bed. Aortic insufficiency, he regards as comparatively a rare complication of pregnancy, and the reason for it is the fact that the degenerative changes in the aorta and its valves do not usually occur until middle life. In this form, Cameron believes that whenever symptoms of danger manifest themselves, the uterus must be emptied at once, whether the child is viable or not.

When the patent has a heart lesion, she should be kept under observation and a guard maintained over the compensation. If compensation is good, Cameron believes that the patient may be allowed to go on to term, while if the heart symptoms are marked and compensation broken, the first endeavor must be to build up the compensation by absolute rest in bed and appropriate medical treatment. If compensation cannot be obtained, it is best to induce labor as soon as the child is viable. Clinical experience shows that with only moderate compensation better results are obtained by inducing labor than by allowing the patient to go on to term with the chance of a large child and a difficult operation. With a grave lesion and compensation not maintained, pregnancy must be ended whether the child is viable or not. When labor comes on, allow the first stage to terminate naturally unless urgent symptoms arise. In the second stage, delivery should be speedily accomplished. Cameron believes it is better to allow the placenta to separate naturally, for extraction of the placenta may prove dangerous and the patient suddenly collapse. To do away with the ill-effects of the intra-abdominal pressure after the conclusion of the second stage, it has been recommended to apply a firm binder or to put a sand bag on the abdomen immediately after delivery. Cameron does not believe even in mild cases that the child should nurse. Careful management during the puerperium is necessary. In regard to the question whether a young woman with a pronounced valvular lesion should marry, Cameron feels that the physician's duty is to warn such patients of the risks of marriage and that pregnancy will certainly aggravate and shorten life. He ends his article by an analysis of thirteen hospital cases which appeared in the Montreal Maternity Hospital.

THE GENERAL PRACTITIONER'S TREATMENT OF ABORTION AND MISCARRIAGES.

Taussig[16] feels that the mismanagement of abortion and miscarriages by the general practitioner is responsible for much pelvic trouble, and that more time should be given in the medical schools and in textbooks to the instruction of the general practitioner in a simple outline of treatment. He has formulated the following rules; rules, however, that are not for the trained specialist, but for the untrained practitioner. (1) The more limited the training, the oftener the employment of rest and of the tampon is indicated. (2) Try to train the finger to do the necessary manual extraction. (3) Where asepsis is impossible, do only what is unavoidable in the way of operative interference. (4) In country practice, on account of the danger of hemorrhage, empty the uterus at once by operative procedure. (5) In progressive inevitable abortion, do nothing unless complications occur. (6) In a case of hemorrhage or retained secundines, try a uterine or vaginal pack first. (7) In septic abortions, empty the uterus promptly with least possible disturbance.

The outline of treatment to be followed according to what the duration of the pregnancy, stage of abortion, cervical dilatation is, he tabulates and says that if this table is conscientiously followed, he feels that there will be marked improvement in the management of miscarriages. His rules are for the most part excellent, but his advice about packing the uterus for retained secundines is to my mind a most questionable procedure for the class of practitioners for whom he is writing. Such a procedure would, it seems to me, probably end in the very pelvic inflammatory condition which he is trying to avoid.

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Tuberculosis in California. — Tuberculosis is a cause of more deaths in cities than in the rural districts in California. Of the deaths recorded, 15% of those in cities in 1908 were from tuberculosis, while 14.1% of all deaths were from this cause in the remainder of the state. Eight cities show a percentage above the average of 15, and 11 cities have a lower average. —*Jour. Am. Med. Asso.*

Reports of Societies.

THE AMERICAN GYNECOLOGICAL SOCIETY.

THIRTY-FOURTH ANNUAL MEETING, CELEBRATING THE CENTENNIAL OF MCDOWELL'S OPERATION, HELD IN NEW YORK CITY, APRIL 20, 21 AND 22, 1909.

(Continued from No. 7, p. 230.)

DISCUSSION.

Dr. Joseph Taber Johnson, of Washington, D. C., agreed with the author, and said that as gynecologists and obstetricians we had much to do with the effects of badly managed cases of abortion. The dispensary and charity hospital class of patients, who came for diagnosis and treatment, attributed their present ill-health to their last abortion, and by questioning them it was found that their cases were badly managed in the great majority of instances.

As to whether the curette or the finger should be used to scoop out of the uterus the remains of an abortion, he agreed with the essayist that in the first six weeks, when the neck of the uterus was dilated only a little, it would be doing violence to the part to attempt to dilate to such an extent as to permit the index finger to pass into the uterus and scoop out what remained there. On account of the great damage done by the curette, he advocated in the series of cases which the essayist had detailed, after the sixth week, the seventh and eighth weeks, that the woman be anesthetized and the finger introduced into the uterus instead of the curette, and the remnants of the after-birth or membrane removed. The finger was a much more intelligent instrument than the curette.

Dr. William H. Wathen, of Louisville, Ky., said the placenta should always be removed immediately after the delivery of the child, because delay in this regard was dangerous and one never knew when danger was going to come. Speaking of perforation of the uterus with a curette, not only did practitioners perforate this organ, but they did not know when they used this instrument whether they had removed all the secundines or not. The curette should not be used under any circumstances to remove retained secundines, except in exceptional cases, but one should rely on the educated finger.

Dr. Thomas J. Watkins, of Chicago, said he not only followed out the old method of the use of the vaginal pack in cases where the uterus could not be emptied without a great deal of traumatism, but packed the uterine cavity. This should be done in all cases where the uterus could not be emptied without considerable traumatism, and especially where the cervix was not well dilated. This treatment could be extended even to the cases of infection.

Dr. Malcolm McLean, of New York, wanted to know how a man's finger had become so elongated and prehensile that he could reach the corners of the uterus and safely feel that he had removed all detritus. There were undoubtedly men, such as Dr. Wathen, who could do this. He could not. He thought the mistake was made very frequently by good operators, who thought they had emptied the uterus by the finger, but nature came to their rescue and emptied it afterwards of pieces of afterbirth which otherwise might give trouble.

Dr. Eugene C. Gehrung, of St. Louis, said that if we waited three or four hours after the expulsion of the ovum, we would have very great difficulty in inserting the finger, while if it was done immediately it could be effected with great ease. When the finger was inserted into the uterus, if one took care to put the other hand on the fundus of the uterus, and pressed the area over the finger, the little spaces in the uterus could be cleaned out. He had succeeded in removing retained pieces of placenta in this way.

Dr. Joseph E. Janvrin, of New York, agreed with Dr. Watkins in regard to the propriety and the effectiveness of passing a small wad of gauze up into the cervix and tamponing the vagina thoroughly to excite contractile pains. This had been his method of treatment for many years.

Dr. Taussig, in closing, said that he presented his paper, not as a subject for discussion by the Fellows as regards their own technic, but with regard to the technic that they would advise the general practitioner to use, and he thought in this respect they should be very clear and definite in instructions. The tampon, the curette, the finger, each should be used in certain instances, and the general practitioner should be impressed with the exact indications for each of these methods.

LATERO-LATERAL ANASTOMOSES OF ILEUM AND SIGMOID FLEXURE FOR CHRONIC MUCOUS COLITIS.

Dr. George H. Noble, of Atlanta, presented a preliminary report of twenty-seven cases in which he had resorted to this operation. The results showed cures in the majority of cases, considerable improvement in others, and little improvement in a small percentage of them. Mucous discharges were cured in the first series of older cases, and decreased in those recently operated on. Colic and soreness of abdomen had been cured or relieved in almost all cases. Headaches from intestinal toxemia had also been relieved and the general health of the patients improved to a greater or less extent. The operation did not cure constipation in all cases, but in face of this fact, patients with constipation reported either cures or improvement in the mucous colitis.

The author pointed out the principles involved in the operation and gave a short history of the surgical treatment of chronic colitis.

In addition to this operation it was very essential to correct complicating lesions which either led to constipation or interfered with a free outdoor life. It was likewise essential to regulate the diet in order to secure good results in all cases.

DISCUSSION.

Dr. Egbert H. Grandin, of New York, said a simpler method sometimes answered for the cure of mucous colitis than anastomosis of the ileum and sigmoid flexure, and this was the removal of the appendix. Since it had been his custom to take the appendix out, as a routine measure, whenever in the course of an abdominal section for other lesions the condition of the patient allowed the extra few minutes, he had noticed frequently that mucous colitis had disappeared. The removal of the appendix in one case cured a mucous colitis of twelve years' standing.

Dr. Lewis S. McMurtry, of Louisville, said that since a large number of men had been in the Philippines and contracted dysentery, this subject had received more consideration and had developed the rather surprising fact that as far north as Cincinnati amebic dysentery was indigenous. He had had an opportunity to give some attention to this subject, and had been surprised at the number of cases of amebic ulceration of the colon that had been discovered in people who had never been out of this country, nor even in any tropical climate. They had been treated for years in various ways, but they would not come under the class of cases discussed by Dr. Noble with a view to surgical treatment in the manner he had indicated. By position, inverting the patient, and using an instrument which would allow the colon to be examined and illuminated a good distance, the characteristic ulceration of this form of lesion of the intestine would be discovered, and it was almost incurable by enemata and by systemic treatment. No operation had been more useful in the treatment of this class of cases than appendicostomy. He had seen in the hands of his colleagues half a dozen of these cases that had been treated by this operation in the last year, with good results. The scrapings from these ulcers, when examined, had been found to be literally alive with amebæ.

Dr. Franklin H. Martin, of Chicago, said that perhaps there was a similarity between the operation described and the one suggested by Arbuthnot Lane, namely, the removal of the colon for the treatment of constipation. This operation provided a remedy for that part of the colon which was dead, leaving a portion of it unused by the Arbuthnot Lane operation.

Dr. J. Riddle Goffe, of New York, said, with reference to the presence of amebic dysentery below the Ohio River as having been discovered in the last few years, he had heard the explanation that it had been brought back by soldiers from the Philippines and might have become indigenous at the present time from that cause.

Dr. Noble, in closing, said he purposely avoided saying anything about amebic dysentery and similar conditions from the fact that the treatment of them was so well known, and that so many operations had been done for their relief.

As to the remarks of Dr. Martin, such a radical operation as the removal of the colon would hardly be justifiable in mucous colitis. That operation belonged to another disease.

Dr. Thomas J. Watkins, of Chicago, described the operative treatment of extensive cases of uterine prolapse and cystocele.

Dr. William M. Polk, of New York, described the suprapubic operation upon the pelvic floor for procidentia uteri.

THE CHOICE OF TIME OF OPERATION FOR PELVIC INFLAMMATION OF TUBAL ORIGIN.

Dr. F. F. Simpson, of Pittsburg, said that in his judgment abscesses easily accessible for evacuation without traversing the free abdominal cavity were often best treated by early drainage. In other instances, delay with definite but simple treatment would probably prove the better course. Many patients would thus have the normal functions of their organs restored and avoid operation. For the remaining cases which demanded operative relief, the writer was in the habit of choosing a time. *First*, when the patient had recovered from her acute illness, and when her margin of reserve strength had been raised to its highest point of efficiency. *Second*, when her temperature had been normal for a minimum period of three weeks. *Third*, when the inflammatory exudate about the diseased tube had been completely absorbed. *Fourth*, when a careful pelvic examination was no longer followed by a decided or persistent rise of temperature.

DISCUSSION.

Dr. Herman J. Boldt, of New York, said it was dangerous to operate during an acute suppurative salpingitis, as in ninety-nine cases out of a hundred it was possible to wait until the acuteness of the attack had passed. As to how long that took was a question; it would depend entirely on the condition of the patient. One might operate in the interval, if there was sufficient indication for operation. Whenever the Fallopian tubes were distended with pus to such an extent that one could readily palpate them through the cul-de-sac of Douglas, the tube should be opened and the pus evacuated.

Dr. J. Wesley Bovee, of Washington, D. C., said he would not be so conservative as the essayist to wait three weeks without a single rise of temperature during that time before operating. His experience with such appendages had been that they did not return to normal; that rarely did they get into a condition for functionating, and that in most cases in which vaginal incision had been done for the emptying of pus the appendages and tubes required removal subsequently, and with them the uterus in some cases.

A METHOD OF OBTAINING MORE RELIABLE KNOWLEDGE OF THE EXACT AREAS OF PAIN COMPLAINED OF BY PATIENTS AFFLICTED WITH VISCERAL DISEASE.

Dr. Philander A. Harris, of Paterson, N. J., said that when a patient complained of pain she was at once asked by the nurse to indicate the exact area of pain, and also to point to the center or point of most severe pain. The nurse then marked the outer boundaries, as well as the center or centers of pain complained of, employing therefor a definite code. All markings were maintained on the body until they were transferred by the doctor to the history book or sheets. The nurse in entering upon her notes descriptions of pains thus avoided the necessity of reference to anatomical regions. He gave a description of the marking code. He presented a copy of the standing instructions to nurses for the prosecution of this work, and showed photographs from life of patients thus marked.

FURTHER REASONS FOR EXAMINING AND REMOVING THE APPENDIX BEFORE CLOSING THE ABDOMEN.

Dr. A. Lapthorn Smith, of Montreal, said that (1) abdominal section had now a very low death-rate. The few deaths which occurred were due to something going wrong, the cause for which had not always been discovered, even after the abdomen had been reopened. He believed that this unknown cause was in many instances a chronic appendicitis, which either suddenly became acute or which caused obstruction of the disabled intestine by adhesions. (2) The death-rate from puerperal sepsis was now very small, and the few deaths which took place could not always be attributed to infection by the doctor, nurse or even by the patient herself. The author gave instances to prove that the abdomen should be opened and the appendix examined in every serious case, as he believed that many supposed deaths from puerperal sepsis were really due to perforated or gangrenous appendix. (3) The removal of this dangerous and useless organ, when it could be done without adding materially to the danger of the laparotomy, would insure the patient against a serious risk at a subsequent confinement.

OVARIAN TUMORS COMPLICATING PREGNANCY, LABOR AND THE PUERPERIUM.

Dr. Herbert R. Spencer, of London, England, reported forty-one cases of these tumors. The youngest patient was twenty, the oldest forty-three, the average thirty. As to the result of ovariotomy to the mothers, all the patients recovered except one, who died of intestinal obstruction caused by adhesion of a coil of intestine to the pedicle. The treatment of ovarian tumors complicating pregnancy, labor and the puerperium had been by some writers considered too much from a surgical standpoint. The obstetric aspect was not less important and in some cases was the dominant factor. Amongst the 15 cases which he had personally treated during pregnancy there were 3 cases of contracted pelvis which necessitated induction of premature labor in two of the cases and would have done so in the third had the patient not aborted.

During the first half of pregnancy ovarian tumors should be removed wherever their situation and whatever their size. As to the exceptions, the following tumors should not usually be removed: (1) Lutein cysts complicating hydatidiform mole; (2) bilateral tumors causing no symptoms, if the patient was childless, or, if operated on, part of an ovary should be left behind; (3) primary adherent malignant cysts; (4) secondary malignant cysts.

During the second half of pregnancy all large ovarian tumors and ruptured inflamed and strangulated tumors should be immediately removed.

During labor the best treatment was abdominal ovariotomy, immediate in the case of large tumors, at the end of the first stage or after delivery in the case of small tumors. In the puerperium, ovarian tumors should be removed as soon as practicable, when possible within twenty-four hours of delivery. If there was doubt as to the aseptic condition of the uterus, a delay of a week or two might be advisable, unless indications of strangulation or infection of the tumor arose, when the tumor should be immediately removed.

OVARIAN TUMOR WITH TWISTED PEDICLE COMPLICATING PREGNANCY.

Dr. Edward P. Davis, of Philadelphia, reported a case of ovarian tumor with twisted pedicle in a Polish woman, married, pregnant for the third time. His study of the subject led him to the belief that but one course of treatment was justifiable in cases of ovarian tumor with twisted pedicle complicating pregnancy, namely, removal as soon as the diagnosis of the condition could be made, or as soon as indications of this condition were present. The complication of twisted pedicle was so serious as to demand immediate operation. If an exact diagnosis before operation was impossible, the conditions which simulated twisted pedicle in themselves demanded operation. In the absence of an exact diagnosis, the obstetrician should operate in the interest of the patient.

EPHRAIM MC DOWELL, THE FATHER OF OVARIOTOMY.

Dr. J. Riddle Goffe, of New York, selected this as the title of his presidential address. He gave a complete and valuable historical sketch of McDowell and his operation, and closed his address in the following words:

"A hundred years — a century — have rolled by since that day, and yet the luster of McDowell's achievement has grown steadily brighter to the present time. It was a fertile seed which, planted in appropriate soil, has risen to a mighty tree. It has manifold branches and has borne abundant fruit.

"McDowell did not live to see his operation adopted as a recognized surgical procedure, but he did have the satisfaction of knowing that Dr. Johnson, the editor of the *Medico-Chirurgical Review*, who declared in 1825 that he did not believe the operation had ever been done successfully and probably never would be, the following year published in the same journal a recantation, in which he said: 'A back settlement of America — Kentucky — has beaten the mother country, nay, Europe itself, with all the boasted surgeons thereof, in the fearful and formidable operation of gastrotomy, with extraction of diseased ovaries. In the second volume of this series we adverted to the cases of McDowell, of Kentucky, published by Lizars, of Edinburgh, and expressed ourselves as skeptical respecting their authenticity. Dr. Coates, however, has now given us much more cause to wonder at the success of Dr. McDowell, for it appears out of five cases operated on in Kentucky by McDowell, four recovered after the operation, and only one died. There were circumstances in the narrative of the first three cases that caused misgivings in our minds, for which uncharitableness we ask pardon of God and Dr. McDowell, of Danville.'

"A broad and searching examination of all the claims put forward by aspirants or their friends to the honor of antedating McDowell has proved them, one and all, entirely groundless. The wide dissemination of the facts upon which this decision rests, and the ripening influence of time have brought the members of the professional world into accord upon this subject, so that I think I am safe in saying that in this centennial year McDowell is universally recognized throughout the world as the originator of the operation, and entitled to be proclaimed the Father of Ovariotomy.

"McDowell was born Nov. 11, 1771, and died Jan. 25, 1830, in the fifty-ninth year of his age.

"Peace be to his ashes and glory be to his name."

The next order was a symposium on

Anesthesia.

THE NURSE AS AN ANESTHETIST.

Dr. J. Montgomery Baldy, of Philadelphia, said that a perfect solution of the problem of giving anesthetics would be a medical man of a high grade of intelligence, with a well-grounded medical and surgical education, an especial education in anesthetics, supplemented by a natural inclination in this direction as against any other. Are the attractions of anesthesia sufficient to overcome the disadvantages of the scientific narrowness and lack of opportunity for distinction and income to hold a sufficient number of men of this type, or even of great worth, in this field? The answer seemed apparent. Possibly the future might increase the number, but at present they were so scarce as to be readily counted. The great city of Philadelphia did not, to his knowledge, contain one. Personally, his own inclination, governed largely by the means at hand, and by past experience, lay in the direction of women as anesthetists; in other words, trained nurses. The education of the trained nurse lay largely on medical and surgical lines, and she had, therefore, unless we except the woman physician, a sounder basis than had other women on which to begin. Of this latter class, the women physicians, he could readily see that some would and will be available for the service, but in most instances many of the most serious objections obtained in their case as did in the case of men physicians.

To the nurse, anesthesia would prove a stepping-stone to something better than she had originally chosen, a higher and more dignified position, and would appeal in its own way to her ambition and pride just as did the superintendency of a training school. The field would prove interesting, and his experience had shown him it would be the right kind of choice, stimulate her to an effort to improve and perfect herself, and to an earnest study of the whole matter in hand. In this way would be eliminated the inattention to the anesthetic, with its attendant annoyances and dangers, there being no desire for, or chance of, an assistantship or future chiefship. In this way might be secured a sure method of always having the anesthetist on hand, as she lived in the institution and was ready for an emergency.

ADMINISTRATION OF ANESTHETICS.

Dr. Herman J. Boldt, of New York, said the competency of the anesthetizer was more important to the surgeon in many instances than the competency of his first assistant.

As to the safest anesthetic, it had been demonstrated that of ether, chloroform and the A. C. A. mixture, ether was the least dangerous to life. This was shown in an investigation of about 386,000 anesthesias collected by him for a paper in 1897. It would be misleading, however, to make this statement without modifications. Some patients did not take ether well. They fell into a condition that rendered a continuance of its administration very hazardous, but they would tolerate chloroform with no untoward symptoms whatever during anesthesia.

The belief that ether was more injurious to the kidneys than was chloroform did not coincide with the author's experience. In nearly every instance of ether or chloroform narcosis, there had been subsequent transitory albuminuria of mild degree, with renal elements in the urine. The casts were usually noted for periods of from three to fourteen days after the anesthetization.

To assert that any one anesthetic was devoid of risk, or that any one method of administering an anesthetic was entirely free from danger, was to assert a fallacy. The author believed that nitrous oxide gas mixed with oxygen was the safest anesthetic of any at our command, and the time for which it might be administered was almost unlimited.

Speaking of the legal aspects of administering anesthetics, Dr. Boldt said that in very many localities it was legally permissible to have a non-medical person take charge of the administration of the anesthetic, and that, too, where the requirements to practice medicine were as strict as in the state of New York. If the statute could not be so amended that a non-medical person might administer the anesthetic without the surgeon being held responsible, then a law should be passed which would compel all institutions where anesthetics were used to employ a thoroughly-qualified anesthetist, whose duty it should be to be present and to give instruction at every anesthetization (for not less than one hundred consecutive anesthesias) to every interne who was assigned to such duty. This would mean extra expense to the hospitals, yet in justice alike to the patient and to the surgeon there should be such a law.

ANESTHETICS IN HOSPITALS AND PRIVATE PRACTICE.

Dr. James T. Gwathmey, of New York, said the administration of anesthetics as a specialty was recognized in only a few of the larger cities of America to-day. So intense had been the interest in surgery that anesthetics had been used only as a means to an end, and this fully explained the attitude of the profession on this subject in America at the present time. The advancement in anesthetics in England had been rapid.

In the light of recent discoveries no surgeon was justified in adopting some one anesthetic and method of administration exclusively. There were four general anesthetics in common use, and there were three methods of administration. These anesthetics and methods were mentioned. Nitrous oxide gas and oxygen was the only non-poisonous anesthetic available to-day. Unfortunately, it was considered by men of large experience adapted to only about 30% of the surgical cases that came to us, namely, weak, anemic men and middle-aged women. These patients should have the benefit of this anesthetic whenever possible. Nitrous oxide gas and oxygen, supplemented by ether, could be used in at least 60% of all cases. Nitrous oxide gas and oxygen could and should be used as a preliminary to ether in at least 80% of the surgical cases. Oxygen administered with warm chloroform, either by the closed or open method, doubled its value as regards life, and given in this way it was as safe as ether and air. Ethyl chloride was used principally as a preliminary anesthetic or for very short operations, and while not as safe, generally speaking, as nitrous oxide gas, was safer than this gas in certain selected cases.

The problem to-day was not the matter of life and death upon the table, but what methods and combinations would give the best results and leave the patient just as we found him. To do this, the anesthetist should be responsible with the surgeon for the preliminary medication, to quiet the nerves of the patient, in addition to the usual routine procedure. He should also be informed and consulted if the patient was nauseated after the operation. In the vast majority of cases, we now had no nausea or vomiting, but we should not be satisfied until we could assure all patients that they would come out of the anesthetic in an absolutely quiet and natural state.

THE PROPER AND IMPROPER METHODS OF ADMINISTRATION OF GENERAL ANESTHETICS.

Dr. S. C. Gordon, of Portland, Me., read a paper on this subject, in which he said that the first and most important point to be observed in the administration of an anesthetic was a proper preparation of the patient, both physically and mentally. The dread of the anesthetic was oftentimes much greater than that of the operation, and much might be done to prevent this. Second, there was usually too much haste in its administration, and too large a quantity was used. Inhalers were very faulty in construction. The simplest was always the best. The drop method of administration was the true one. The cover of the mask should be porous and allow the transmission of air through it during respiration. Third, careful attention should be paid on the part of the anesthetist, who should have an acquaintance with ordinary, normal condition of pulse and respiration — a medical man or trained nurse preferred.

RENAL EXCRETION DURING THE ADMINISTRATION OF CHLOROFORM AND ETHER IN GYNECOLOGICAL SURGICAL OPERATIONS.

Dr. J. Wesley Bovee, of Washington, D. C., read a paper with this title, in which he summarized as follows:

1. From the study of sixteen cases, it would appear that the rate of excretion of urine was markedly lessened under anesthesia produced by ether or by chloroform.
2. That such diminution was greater from chloroform than from ether.
3. That while chloroform produced a diminution in urea output, this continued to maintain a nearly normal proportion to urinary excretion, while ether produced a greater proportionate lessening of urea than of the urine.
4. That these two anesthetics, when carefully and skillfully administered, had little effect on the production of casts and albumin in the urine, inducing it in some, stopping it in others, and in others either not producing it or not materially modifying such production.
5. The Trendelenburg position greatly retarded the rapidity of urinary output.

THE ADVISABILITY OF MAKING THE PRACTICAL ADMINISTRATION OF ANESTHETICS A REQUIRED PART OF THE MEDICAL COURSE.

Dr. Reuben Paterson, of Ann Arbor, Mich., read a paper on this subject, saying that the necessity of such instruction was shown by the experience of the past. There was inconsistency in requiring proficiency in the so-called scientific branches of medicine, while the student was allowed to graduate without having given an anesthetic.

(*To be continued.*)

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THE REPORTING OF UNSUCCESSFUL CASES.

It is somewhat proverbial that medical literature abounds in publications of successful results, particularly from the therapeutic standpoint. It is natural that men should be eager to present to the world their successes rather than their failures, and furthermore, that a certain over-enthusiasm should see results where none actually exist. It is not to be questioned, therefore, that many papers are continually appearing written with an entirely conscientious motive, but which present an exaggerated or wholly distorted statement of the actual facts. This is notably true in the exploitation of new remedies and of new forms of treatment of recognized diseases. In the hands of one man certain drugs or combinations of drugs or other therapeutic measures apparently attain results which are absolutely incapable of verification at the hands of other equally conscientious investigators. Doctors, unfortunately, are no more completely endowed with the judicial faculty than persons in other walks of life, and it is certainly not strange that distortions of facts, put out with apparent scientific accuracy, are everywhere in evidence. The situation would be the more unfortunate were it not for the fact that a certain healthy skepticism serves continually as an offset to over-enthusiasm. The result is that many discussions occur and controversies are raised which have small permanent significance and which yield nothing of value in the search for ascertained truth.

In view of this very general and, in certain respects it must be admitted, praiseworthy enthusiasm to ventilate new theories and exploit new methods, it would be well if leaders in the profession gave more attention to the publication of their mistakes and failures. Certainly there is no more valuable lesson to the practitioner than a complete realization of his errors. In fact, by this means alone is further knowledge possible. In spite, however, of the manifest truth of this statement, it is relatively rare that surgeons or physicians publish detailed reports of their mistakes and of the lessons which these mistakes inculcate. We too commonly see reports of "so many successful cases," with a certain inevitable emphasis on the word "successful." Such papers naturally have their value and also their manifest dangers. The ease of certain surgical procedures is, for example, greatly exaggerated in the minds of less trained practitioners through the report of a large series of successful operations. A certain false security is thereby encouraged, to the end that operations of significance are no doubt performed by really incompetent persons. There is unquestionably a false emphasis in all such publications, tending to increase the reputation of the writer, but not to render the public more secure. We have no proper balance to this very natural tendency to publish our successes except through the more frequent publication of the errors and failures which likewise mark the path of every successful practitioner. Such papers, written by men of experience and standing, would do much toward overcoming the tendency to over-security and would certainly serve an educational purpose which the ordinary publication so often fails to attain. No greater benefit could be secured for the medical public than a series of papers illustrating the dangers and pitfalls of medical practice, written by men to whom the actual experience has come.

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HAND DISINFECTION IN OUT-PATIENT CLINICS.

A recent issue of the New York *Times* prints a letter criticising the medical examination of immigrants at Ellis Island, in which the correspondent says that he saw the examining physician pass directly from diseased to healthy eyes without washing his hands. The possibility of transmitting trachoma and conjunctivitis by such means is present, though perhaps not great; and the criticism, if true, reflects adversely on the care and professional responsibility of the official n question. It further suggests the constant ikelihood of spreading infection in hospital out-patient clinics, where many patients are examined and treated in succession with hastily and sometimes imperfectly cleaned hands and instruments. In this connection it is interesting to call attention to the experiments in hand disinfection reported by Dr. Harrison in the issue of this Journal for July 22, 1909 (pp. 122–123). In brief, he showed that whereas several minutes of scrubbing are required to make the bare hands surgically clean, a half-minute's scrub in running water is sufficient to sterilize whole or carefully patched rubber gloves. This suggests that the use of rubber gloves makes it possible, without undue expenditure of time, to maintain asepsis and prevent the risk of carrying infection in examining and treating large numbers of cases, and emphasizes their importance in minor as well as in major surgery.

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TRAINING OF PARENTS IN THE CARE OF CHILDREN.

One of the most important and significant of modern efforts towards the physical betterment of the race is the systematic instruction of mothers among the poorer classes in the proper care and training of their children. In New York City, the Health Department, co-operating with a number of charitable organizations, has established a visiting service of physicians and nurses to supervise and direct the hygiene of child-life in the slums, particularly in the matter of bathing, fresh air and diet. Such work should in time produce tangible results. In Boston, the Municipal League and the Instructive District Nursing Association, in similar conjunction with the Boston Lying-In Hospital, have undertaken both ante-partum instruction and post-partum guidance of mothers in fostering the best development of their children, in the interests of good citizenship as well as of physical improvement. The social, economic and moral welfare of the body politic is after all rooted in the bodily vigor of the individual, the establishment of which begins with the education of prospective parents in their new duties to the future generation.

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MEDICAL NOTES.

BOSTON AND NEW ENGLAND.

Acute Infectious Diseases in Boston. — For the week ending at noon, Aug. 17, 1909, there were reported to the Board of Health of Boston the following cases of acute infectious diseases: Diphtheria 32, scarlatina 17, typhoid fever 16, measles 11, smallpox 0, tuberculosis 66.

The death-rate of the reported deaths for the week ending Aug. 17, 1909, was 17.07.

Boston Mortality Statistics. — The total number of deaths reported to the Board of Health for the week ending Saturday, noon, Aug. 14, 1909, was 221, against 217 the corresponding week of last year, showing an increase of 4 deaths and making the death-rate for the week 18.50. Of this number 132 were males and 39 were females; 216 were white and 5 colored; 151 were born in the United States, 66 in foreign countries and 4 unknown; 43 were of American parentage, 141 of foreign parentage and 37 unknown. The number of cases and deaths from infectious diseases reported this week is as follows: Diphtheria, 32 cases and 0 deaths; scarlatina, 14 cases and 0 deaths; typhoid fever, 17 cases and 1 death; measles, 7 cases and 0 deaths; tuberculosis, 65 cases and 19 deaths; smallpox, 0 cases and 0 deaths. The deaths from pneumonia were 16, whooping cough 0, heart disease 20, bronchitis 1 and marasmus 2. There were 14 deaths from violent causes. The number of children who died under one year was 17; the total number under five years 89. The number of persons who died over sixty years of age was 47. The deaths in public institutions were 84.

Cerebrospinal meningitis, 4 cases and 2 deaths.

Of the above the following were non-residents: Consumption: 3 cases and 2 deaths.

Deducting deaths of non-residents, the total is 182. The corrected death-rate is then 15.23.

State Board Examination. — At a recent examination of the Massachusetts State Board of Registration in Medicine, of 119 who were examined, 80 secured the right to practise in this state, of whom 7 were women.

Enlargement of Boston Insane Hospital.— In accordance with recent legislation concerning the enlargement of the facilities for the treatment of the insane in Massachusetts, the State Board of Insanity and the Governor and Council have taken for the purposes of the Boston State Hospital a large amount of land in Dorchester, adjoining the present hospital grounds. The assessed value of this property is about $131,000, but the settlement of individual claims will undoubtedly not accord with these general figures.

Bequests. — By the will of John Edward Brown, of Chicago and Boston, who recently died in Providence, R. I., $100,000 is left to the Perkins Institution for the Blind in South Boston, and $20,000 to the Gwynne Temporary Home for Children and to the Industrial School for Crippled and Deformed Children.

By the will of the late Col. Albert H. Pope, of Cohasset, ten shares of the Pope Manufacturing Company stock are given among other institutions to the Associated Charities of Boston, the Boston Floating Hospital and the Fresh Air Fund.

Restriction of the Sale of Cocaine. — Increased effort has recently been made by the Boston Board of Health to check the illegal sale of cocaine in the city. Apparently the habitual use of this drug as a narcotic is on the increase, for the amount imported and disposed of during the past year is in considerable excess of what should properly be required for legitimate medical purposes. The physical and moral detriment caused by such use are well known, and the danger to the community of unrestricted exposure of cocaine on the market is obvious. Public sentiment as well as medical opinion will approve and encourage every attempt to remove from those unaccustomed to resist it the temptation to form so ruinous a habit.

NEW YORK.

Italian Medical Society. — The New York Italian Medical Society has just been incorporated. The object of the organization is stated to be to maintain professional decorum and standard among its members and among other members of the medical profession, and particularly those who are Italians or Italian-Americans.

Hospital Musical Association. — During the present summer a Hospital Musical Association has been organized, the purpose of which is to provide cheerful music at regular periods for the inmates of the hospitals, asylums, homes and similar institutions. The first of the concerts provided by the Association was given at the Home for Incurables, Fordham, and was thoroughly enjoyed by the patients. The expenses of the undertaking are met by contributions and membership dues.

Nassau Hospital. — After a meeting, on Aug. 11, of the executive committee of the managers of the Nassau Hospital, at Mineola, Long Island, which provides for the hospital needs of the County of Nassau, it was announced that provision had been made for the employment of a competent bacteriologist, whose services are to be free to the physicians of the county. It was also given out that two wards of the hospital will hereafter be open free to physicians of the county for the accommodation of their patients unable to pay and that a 40 horse-power automobile ambulance had been presented by one of the patrons of the institution.

Surgical Operations on "Mauretania." — Rather curiously, operations for appendicitis were performed in midocean on board the Cunarder *Mauretania* on both her last incoming and outgoing passages. In the first instance the patient was one of the stokers, and the operation was performed by the ship's surgeon, Dr. B. Sydney Jones, assisted by Drs. Walter B. James and Francis P. Kinnicutt, of New York, who were passengers. Unfortunately, surgical interference was too late and the man died. The operation on the outgoing voyage was done by Dr. Louis L. McArthur, of Chicago, who was on his way to attend the International Medical Congress at Budapest, and he was assisted by Dr. Jones, the ship's surgeon, and Dr. Binney, of Kansas City. The patient was a young lad, and on arriving at Liverpool he was removed to a hotel in a favorable condition. On both occasions the captain of the steamer offered to slow down the speed, but the sea was so smooth and the vibration so slight that this was not necessary.

Report of the Junior Sea Breeze Hospital. — A report just issued by the Junior Sea Breeze, a summer hospital for infants and young children, shows very satisfactory results for the present season. This institution, which is maintained by John D. Rockefeller, through the New York Association for Improving the Condition of the Poor, is situated on the bank of the East River, on a portion of the property occupied by the Rockefeller Institute for Medical Research. An efficient portion of the work is the employment by the Association of district nurses, who conduct the Health Department's campaign against infant mortality in four districts covering a considerable section of the city in the vicinity of the hospital. Patients are received, however, from all parts of New York. The number of deaths at the institution has been much smaller than last year, although about twice as many dispensary cases have been treated as up to the same period of 1908. The resident physician, Dr. D. S. Conley, states that although the cooler weather is something of a factor in this reduced mortality, the explanation is to be largely looked for in the work of the district nurses, who visit the homes of the poor in a systematic way and send the babies to the Junior Sea Breeze before they are dangerously ill, so that the number of serious hospital cases is thus materially diminished.

Death-Rate in July. — The death-rate in the city in July reached a low record for that month, a result probably due to a considerable extent to the unusually cool weather prevailing. The mortality represented an annual death-rate of 15.87, as against 15.29 in June and 17.87 in July, 1908 (exactly two hundred points lower). The corrected rate, excluding non-residents and infants under one week old, was 15.04. In the week ending July 10 the rate was only 14.37 (corrected rate 13.56), which would be a very creditable showing at any season of the year, and which is 3.51 points lower than the rate for the corresponding week of 1908. The weekly average of deaths from measles declined from 32.75 in June to 20.75 in July; the weekly average from scarlet fever, from 21.5 to 8; from diphtheria and croup, from 34.5 to 29; from pulmonary tuberculosis, from 172.25 to 147.75; from acute bronchitis, from 11.25 to 9; from pneumonia, from 75.5 to 46.25; from bronchopneumonia, from 90.5 to 68.25; from cancer, from 69 to 68; from apoplexy, congestion and softening of the brain, from 19 to 16; from organic heart diseases, from 114.25 to 101.5; from Bright's disease and acute nephritis, from 108.25 to 87; and from cirrhosis of the liver, from 23.75 to 18.25. Among the few diseases in which there was an augmented fatality were the following: The weekly average of deaths from typhoid fever increased from 7.25 to 9.5; from malarial fevers, from 1 to 1.25; from whooping cough, from 8.25 to 10.5; from diarrheal diseases, from 63 to 280.25; and from diarrheals under five years of age, from 58.5 to 266.25. It is to be noted, however, that the weekly average of deaths from diarrheal diseases in children under five in July of last year amounted to a much higher figure, 376.75.

Current Literature.

MEDICAL RECORD.
JULY 10, 1909.

1. Bulkley, L. D. *Leprosy.*
2. Rogers, C. C. *Diagnosis and Localization of Appendical Abscesses.*
3. Carter, H. R. *Notes on the Sanitation of Yellow Fever and Malaria. From Isthmian Experience.*
4. Davidson, A. J. *The Importance of the Early Recognition of Bone Tuberculosis.*
5. Gardiner, J. P. *The Report of a Peculiar Case of Meningitis.*

JULY 17, 1909.

1. *Bainbridge, W. S. *The Enzyme Treatment for Cancer.* (Final Report.)
2. *Neustaeder, M. *A Contribution to the Study of Tremors.*
3. Coffey, R. C. *Gastric Surgery of the Present Day.*

4. Hayden, J. R. *The Treatment of Specific Urethritis (Gonorrhea) in the Male.*
5. Rudisch, J. *A New Sphygmomanometer.*
6. King, R. W. *A Simple Method for Preparing a Useful Stain.*

1. The author presents the results of treatment of cancer with enzymes. He describes the method of administration, the material used, and gives the results of work on the blood and urine of cases during treatment. The enzymes were used in many different forms. He gives a summary and conclusions based on a large number of cases showing the futility of the treatment.

2. Neustaeder describes his method for obtaining tremors. He publishes diagrams of the characteristic tremor curves in many conditions. He believes that these curves may be of great assistance in diagnosis of cerebral lesions. [W. B. R.]

New York Medical Journal.

Aug. 7, 1909.

1. Rathbun, N. P., and Dexter, T. H. *Preliminary Remarks on the Bacteriology of Gonorrhea.*
2. Talbot, P. T. *A Study of the Leucocytes in Tropical Malarial Infections.*
3. Benedict, A. L. *Achylia Gastrica and Insufficientia Pylori.*
4. Knapp, M. I. *Does Zymosia Gastrica Solve the Soil Problem of Tuberculosis?*
5. Knowles, F. C. *Herpes Simplex.*
6. Louria, L. *The Symptomatology and Diagnosis of Pancreatic Disease.*
7. *Pratt, J. A. *Tuberculous Infection through the Tonsil and Adenoid.*
8. Huey, A. J. *A Case of Nasal Tuberculosis Terminating in Tuberculous Meningitis.*

7. Pratt believes that tonsils and adenoids are important ports of entry for tuberculosis of the cervical glands, the larynx and the lungs, and, therefore, that they should be removed in all tuberculous cases to eliminate present and future source of infection. [L. D. C.]

The Journal of the American Medical Association.

Aug. 7, 1909.

1. Munro, J. C. *A Brief Consideration of the Pulmonary Complications of One Thousand Laparotomies.* (Chairman's address.)
2. *Soper, H. W. *The Colon Tube and the High Enema.*
3. *Borden, C. R. C. *Otologic and Rhinologic Complications of Skull Fracture.*
4. Casselberry, W. E. *Tuberculosis of the Larynx. The Type which is Capable of Recovery or Arrest and the Principles of Treatment.*
5. Bogue, E. A. *Enlargement of Nasal Sinuses in Young Children by Orthodontia. Results in a Number of Cases.*
6. Gilmer, T. L. *Conservative Surgery for the Treatment of Diseases of the Mandible.*
7. Noel, L. G. *Anesthetics for Dental Surgery.*
8. *Teter, C. K. *Thirteen Thousand Administrations of Nitrous Oxide with Oxygen as an Anesthetic.*
9. *Anders, J. M. *Hemoptysis Due to Tuberculosis.* (A Preliminary Study.)

2. Soper shows by skiagrams that only in rare cases does the so-called high rectal tube pass up into the sigmoid. In abnormalities of the sigmoid it may pass further than seven inches into the rectum before bending on itself, but not in the common case. The use of flowing liquids ahead of the tube only adds to the illusion that it is going higher. The short tube of six inches is the best.

3. Borden's analysis of over four hundred cases of fracture of the base of the skull brings out the following interesting and important points: The sella turcica, petrous portion of the temporal, great wing of the sphenoid and the orbital plates of the frontal are the places most often involved. Fractures are not necessarily caused by extremes of violence. Hemorrhage from the ear is one of the most common symptoms because of the anatomical nature of the temporal bone. The parietal bones are the most frequently injured. In 408 cases, 202 patients had hemorrhages from one ear and 19 from both ears. Hemorrhages from the ear, either large or small, are not important as influencing ultimate prognosis. The pupillary reactions are extremely variable and a surprisingly large number have normal pupils. In 339 cases, 161 had normal pupils. Widely dilated fixed pupils are of the most grave prognosis. Of 8 patients with this condition, 7 died. Decidedly the worst pupillary symptom is wide dilatation of one and contraction of the other to a pin point. The slow pulse is surprisingly rare. In 400 cases it was below 60 in only 14. Delirium is common and varies from mild forms to maniacal attacks.

8. Teter claims thirteen thousand successful administrations of nitrous oxide and oxygen anesthesia covering a period of nine years for practically every kind of an operation to its completion. The chief points of value in his paper about this method of anesthesia are the following: Nitrous oxide and oxygen given at ordinary temperature will require on an average 250 gallons of nitrous oxide and 40 gallons of oxygen for an hour's anesthesia, but when administered warm, or at about the temperature of the blood, only 150 gallons of nitrous oxide and 40 gallons of oxygen are needed. Ordinarily the patient ought to show symptoms of recovery within sixty seconds after a profound anesthesia of two hours, and will be conscious within three minutes. Much surgical shock will, however, delay the period, but recovery can be hastened by administration of pure oxygen for a few inhalations. If administered skillfully it is about ideal for thoracentesis, for a small amount will produce anesthesia and a large per cent of oxygen can be given the starving lung. In brain work also Dr. Teter has had good success. The aged, as a rule, are good subjects for this form of anesthesia. Continuous auscultation of the heart with a stethoscope is a method practiced by Dr. Teter. Rigidity, often so difficult to overcome, is treated by administration one-half hour before anesthesia of morphine $\frac{1}{8}$ to $\frac{1}{4}$ gr. and atropine $\frac{1}{150}$ to $\frac{1}{100}$ gr. About 10% of patients must be controlled in this way. This is unsafe in other than expert hands, however, because the morphine plus nitrous oxide so depresses respiration, and it is safer for the unskilled to use either in combination with nitrous oxide and oxygen. The apparatus should have two gas and two oxygen cylinders attached so that the supply is at all times sufficient. Means of warming the gas should be provided. The two gases should not be mixed in the bag, but just before entering the inhaler. A transparent face piece is advisable. The principal danger of nitrous oxide is asphyxia. Tetanic cramps in the extremities are sometimes noticed in patients in bad condition or those of a neurasthenic temperament. Nitrous oxide does not reduce hemoglobin, it does not cause increased hemolysis, and it has no permanent clinical effect on the blood. It does, however, increase blood pressure in the veins. Its administration should be free from the subsequent nausea and vomiting common to other anesthetics.

9. Anders, in his second statistical study of hemoptysis in tuberculosis, reaches the following conclusions: There are two types of cases (*a*) those caused by congestion of the bronchial mucosa and lung tissue and (*b*) those due to ulceration or erosion of blood vessels or rupture of miliary aneurisms. The local action of the tubercle bacilli is most probably a factor in producing hemorrhage. Fatal bleedings usually proceed either from a ruptured aneurism in a lung vessel or erosion of a pulmonary vessel. Hemoptysis occurs in about 41% of cases. It is manifest earlier in life in the female than in the male, but after the thirtieth year the preponderance is in the male. Profuse and fatal hemorrhages are less common in the female. Contrary to the previous views of other writers, Anders' talks show that hemoptysis is most prevalent in the months of December, January and February. Other writers claim the spring months. Recurrence of hemorrhage occurs in about 51.5% of the cases. In 69% hemoptysis occurred in the first or early part of the second stage or stage of softening (ulceration). [E. H. R.]

Journal of Infectious Diseases.

April, 1909.

1. *McNeal, W. J., Latzer, L. L., and Kerr, J. E. *The Fecal Bacteria of Healthy Man.*

2. *McCoy, G. W. *The Virulence of Old and of Recent Cultures of Bacillus Pestis.*
3. *Ellis, A. G. *An Experimental Study of Joint Affections Induced by the Typhoid Bacillus.*
4. *Jackson, D. D., and Melia, T. W. *Differential Methods for Detecting the Typhoid Bacillus in Infected Water and Milk.*
5. McClintock, C. T., and Clark, L. T. *Autolysis of the Gonococcus.*
6. Dixon, R. L. *Proliferation of the Epithelium Induced by Soudan III, Scharlach Roth and Paraffin, and the Effects of Roentgen Irradiation on the Same.*
7. Davis, D. J. *Immune Bodies in Urinary Infections with Colon Bacilli, and Treatment by Inoculation.*
8. Rosenow, E. C. *Immunological and Experimental Studies on Pneumococcus and Staphylococcus Endocarditis.*

1. The article contains an account of very careful work on the fecal bacteria of healthy men. The authors find that a homogeneous suspension of the bacteria in feces may be readily prepared by making it sufficiently dilute (1:100), and that in such a suspension the bacteria can be counted microscopically with a fair degree of accuracy. They also used the gravimetric method of Strasburger, which they describe in detail, with modifications suggested by their work. They also used the Winterberg and Eberle-Klein methods of determination of the number of bacteria. In the case of normal adult men, eating an ordinary mixed diet, they find the average number of fecal bacteria excreted daily is about 33 x 10^{12}; the average daily bacterial dry substance, about 5.34 gm.; and the daily bacterial nitrogen, 0.535 gm., making up nearly 50% of the total fecal nitrogen. The different methods may vary considerably in their results in certain conditions. They find about 70% of all the bacteria Gram negative. They believe that the direct quantitative determination of the fecal bacteria furnishes evidence of the extent and nature of the bacterial growth in the intestine, and that this seems to be a delicate index of intestinal conditions.

2. The author injected typhoid bacilli directly into the knee-joint of rabbits and produced a purulent or seropurulent exudate. In three instances there was more or less extensive necrosis of the interarticular ligaments; in one, erosion of the semilunar cartilages. In three cases there was destruction of the overlying soft parts and erosion of the articular surface of bone, in each instance the head of the tibia being affected. In three cases the muscles bordering the joint showed hyaline degeneration, accompanied or not by areas of necrosis.

3. The authors describe a method for finding typhoid in water and milk. They use a preparation of lactose bile, which inhibits the growth of B. coli, incubate this, and transplant in varying dilutions on Hesse agar.

4. The article consists in the report of work on the different immune bodies in urinary infections in eight cases. The authors conclude that on account of the variation in the members of the colon group the homologous germ should be used for inoculation; that in certain cases the patients' serum may show a marked diminution or total absence of lytic bodies for the homologous bacilli, as compared with normal serum, while the specific opsonins may be present in abundance. In certain cases opsonins seem to play little or no part in the destruction of colon bacilli in the urine. Opsonification, bacteriolysis and agglutination in certain cases do not run parallel.

8. Rosenow's article contains an account of studies he has made in a number of cases of pneumococcus and staphylococcus endocarditis, including experiments with animals. He found the left side of the heart alone affected ten times in his cases and seven times in the animal experiments; the right side alone in three cases and in five animals; both sides in one case and two animals. Most of the lesions were in the mitral and tricuspid valves. He was able to produce valvular lesions without previous injury to the valves, by inoculation of bacteria derived from his cases, before they had lost by cultivation their special characteristics which they had developed in the patient's blood. He concludes that the reason that certain bacteria more frequently attack the valves upon the left side of the heart than the right after birth, and the right more often than the left in the fetus, may be owing, in part at least, to the fact that abundant supply of oxygen favors the development of certain special characteristics of the bacteria that favor the production of endocarditis. Embolic origin may explain the greater frequency of endocarditis of the mitral and tricuspid valves as compared with aortic and pulmonary endocarditis. A close relation exists between the biological characters of the bacteria and their ability to produce endocarditis in the class of cases observed. The bacteria isolated, while having little or no pathogenic power to animals, and being susceptible to phagocytosis, present definite evidence of being immunized against the antibodies of the individual host, thereby perhaps overcoming the resistance of the latter. The injection of dead bacteria in endocarditis has little or no influence upon the course of the disease, although late in the course temporary improvement may follow the injections. Blood cultures are the best means of making an early diagnosis in acute endocarditis. They should always be made for identification and study of the infecting organism as well as for prognostic reasons. [W. B. R.]

The Lancet.

July 24, 1909.

1. Turner, G. R. *The Desirability of Early Operation in Acute Cases of Appendicitis.*
2. Jones, E. *Modern Progress in our Knowledge of the Pathology of General Paralysis.*
3. *Pernet, G. *The Intramuscular Treatment of Syphilis, with Special Reference to the Insoluble Preparations of Mercury.*
4. *French, J. G. *An Investigation into the Action and Uses of Fibrolysin in Middle-Ear Deafness.*
5. Warren, R. *The Fate of Damaged Joints: A Study of Cases of Injury, principally Fractures, Involving Joints Treated in the Massage Department of the London Hospital.*
6. Morton, E. R. *"Painful Heels."*
7. Mills, G. P. *Purpura Hemorrhagica, with Abdominal Crises due to Intestinal Effusion.*
8. Warden, A. A. *Note on the Treatment by Radium of Lymphatic Obstruction (Cervical, Submaxillary and Axillary) in a Patient Suffering from Filaria Nocturna.*
9. Greenwood. *District Medical Officers and the Report of the Royal Commission on the Poor-Laws.*

3. Pernet discusses in detail the various methods used in the intramuscular treatment of syphilis. He describes the different preparations of mercury, their advantages and disadvantages, syringes, and the various complications and untoward results which may arise.

4. French has used injections of fibrolysin in middle-ear disease. In 52 cases of deafness plus tinnitus the hearing improved and noises diminished in 16. In 16 cases of deafness without tinnitus, 10 showed improvement. Post-suppurative cases gave by far the best results, especially when the injections are commenced immediately after the cessation of the discharge. In otosclerosis there was little or no improvement. He injects twice a week 30 minims of fibrolysin into the upper arm and insufflates by means of an eustachian catheter 5 minims into each middle ear. [J. B. H.]

British Medical Journal.

July 24, 1909.

1. *Osler, W. *The Treatment of Disease.*
2. Williams, D. J. *"Hercules and the Wagoner," with Remarks on the British Medical Association.*
3. Taylor, W. *Report of a Case of Esophageal Diverticulum.*
4. Green, A. *Remarks on Common Types of Sore Throat.*
5. *Smith, J. H., and Candler, J. P. *The Wassermann Reaction in General Paralysis of the Insane.*
6. Bannerman, J. *Pneumonia Migrans Involving the Whole of Both Lungs, followed by Empyema: Recovery.*
7. Trewby, F. *The Causes of Obstruction Producing Cyanosis during the Nasal Administration of Nitrous Oxide.*
8. Wood, C. G. R. *The Treatment of Some Chronic Inflammations of the Eye.*
9. Brodribb, A. W. *Hydatid Disease: Recurrence: External Rupture: Recovery.*
10. Barber, M. C. *Intra-Abdominal Hemorrhage Associated with Labor.*

1. Osler, in a most delightful manner, discusses the general subject of treatment of disease, reviewing the development from the past, and the present tendencies. He describes an ideal course for the medical student of the future and speaks briefly on the place of mental healing and suggestion in this.

5. Smith and Candler describe the Wassermann reaction with special reference to its use in general paralysis. In 59 out of 64 cases of this disease, 92.1%, in which he tested the spinal fluid by this means, the result was a positive one. The fluid in 30 control cases was negative in every case. Their results on the whole agree with those of the French authors. [J. B. H.]

Deutsche Medizinische Wochenschrift. No. 27. July 8, 1909.

1. *Wolff, M., and Reiter, H. *Opsonines and Pulmonary Tuberculosis.*
2. Korschun, S., and Leibfried. *Complement Binding in Recurrent Typhoid.*
3. Schirmer, O. *Römer's Specific Therapy for Incipient Senile Cataract.*
4. *Hübner, A. H., and Selter, H. *The Much-Holzmann Cobra Venom Reaction in Blood of the Insane.*
5. Bratz and Schlockow. *A New Method of Treatment for Epilepsy.*
6. Schönwerth, A. *Ileus after Subcutaneous Traumata.*
7. Mezincescu, D. *Syphilis of the Testicle in Rabbits after Inoculation with Syphilitic Virus.*
8. Citron, H. *A Method for the Quantitative Determination of Urinary Sugar.*
9. Károly, C. *A New Spectroscopic Hemochromogenous Test for Blood in the Stools.*
10. Vulpius, O. *A Knee-Joint for Artificial Legs.*
11. Engelen. *A Soft Rubber Pleximeter.*

1. Wolff and Reiter have done considerable work in testing out the different aids to diagnosis in tuberculosis. They think that the opsonic index is one of the most valuable aids for diagnostic purposes and also to some extent for prognostic purposes. They think that the subcutaneous inoculation method is the best for diagnostic purposes, and next to that the index determination, which they consider more reliable than the eye and skin tests.

4. Much and Holzmann, a short time ago, reported that cobra poison did not have a hemolytic effect upon the red blood corpuscles of persons suffering from maniacal depressive insanity and dementia precox. Hübner and Selter took up this test and found that this fact also occurred in other sicknesses of the psychical group, and further that it did not always occur in these two classes of cases. Therefore, they warn against putting too much reliance, if any, in this test as a diagnostic aid. [C. F., Jr.

Berliner Klinische Wochenschrift. No. 30. July 26, 1909.

1. Ritter, C. *The Treatment of Acute Infectious Processes with Maximum Preservation of Function.*
2. Loewy, A. *Blood and Circulation in a Case of Polycythemia Rubra Megalosplenica.*
3. *Zaloziecki, A. *The Nature of the So-Called "Psychoreaction" of Much.*
4. Sartorius, R. *Cases of Induced Insanity.*
5. Friedberger, E., and Yamamoto, J. *The Action of a Neutral Red Salve on Experimental Vaccine Infection in the Rabbit.*
6. Fabian, R., and Knopf, H. *Collargol Treatment.*
7. Hamburger, C. *The Coloring of Living Human Eyes for Physiologic and Diagnostic Purposes.*
8. Wynhausen, O. J. *The Quantitative Functional Test of the Pancreas.*
9. *Hirschberg, M., and Liefmann, H. *The Bacteriology of the Stomach.*

3. From a study of the so-called Much-Holzmann psychoreaction in the sera of 104 normal persons and 81 patients from Flechsig's psychiatric and nerve clinic at Leipzig, Zaloziecki finds that the reaction occurs in health as well as in all varieties of mental disease, and that it is almost constant in the newborn. Comparing the tests made before and after physical exercise, he finds that the appearance of the reaction in the blood seems to be associated with muscular activity. Hence, he believes that the reaction is without significance in the diagnosis of psychic disease.

9. From a careful cultural investigation of the gastric flora in health and in various forms of functional and organic gastric disease, the authors conclude that when secretion and motility are normal, the fasting stomach contains no bacteria cultivatable on the ordinary nutrient media. This condition is immediately changed, however, when diminution of the hydrochloric acid secretion or motor insufficiency set in, whether or not complicated with other secretory anomalies or motor disturbances; then more or less numerous bacterial colonies, of the most various nature and origin, develop on culture. [R. M. G.]

Deutsches Archiv für Klinische Medizin. Bd. 96. Heft. 3 and 4. June, 1909.

14. Weber, F. P., and Ledingham, J. C. G. *A Case of Lymphadenoma (Hodgkin's Disease) of the Mediastinum Combined with a High Degree of Hypertrophic Pulmonary Osteoarthropathy.*
15. Port, F. *A Contribution to Acute Myelogenous Leukemia.*
16. *Berger, F., and Tsuchiya, I. *Contributions to the Pathogenesis of Pernicious Anemia.*
17. *Meyer, E., and Emmerich, E. *Paroxysmal Hemoglobinuria.*
18. Hedinger, M. *Cures of Obesity by a Strict Milk Diet.*
19. Magnus-Alsleben, E. *Permanent Arrythmia.*
20. Sluka, E., and Zarfl, M. *A Case of Kala-azar from Taschkent in Vienna.*
21. Rach, E., and Zarfl, M. *The Culture Findings in the Case of Kala-azar Observed in Vienna.*
22. Grafe, E., and Röhmer, W. *The Occurrence of Hemolytic Substances in an Ether Extract of Feces in Ulcerative Processes of the Intestine.*
23. Book Notices.

16. Berger and Tsuchiya report results of elaborate experiments in search of the cause of pernicious anemia. Extracts from the gastro-intestinal mucous membrane and the digestive glands of cases of pernicious anemia were fed to or injected into animals, the hemolytic power of whose blood was later estimated. They find that in cases of pernicious anemia there exists in the gastric and intestinal mucous membranes a lipoid substance, extractable with ether, which possesses ten times the hemolytic power of lipoid substance obtained from the mucous membrane of normal stomach and bowel. Artificial gastro-intestinal catarrh was produced in dogs, and the lipoid substance in this mucous membrane had hemolytic properties similar to those observed in pernicious anemia. The writers believe that the characteristics of the so-called cryptogenetic form of pernicious anemia depend upon the hemolytic activity of the lipoid substance, with secondary insufficiency of the bone-marrow. The place of origin of this powerfully hemolytic lipoid substance is in all probability the gastro-intestinal mucous membrane, an important predisposing factor being a chronic catarrhal condition in which all parts of the alimentary canal have a greater or less share.

17. Meyer and Emmerich made a critical study of four cases of paroxysmal hemoglobinuria and succeeded in demonstrating the autohemolysis of Donath and Landsteiner in all of them. The reason why it has not always been found lies in the fact that often, especially in the days following a paroxysm, complement is either lacking or present in too small amount to be demonstrable.

In a paroxysm, blood pressure (both systolic and diastolic) rises even before the onset of the chill, and falls at the height of the fever; during the chill it can be reduced by amyl nitrite. Coincident with the chill there is a sudden fall in the lymphocytes of the blood from 35% to 10%, and at the same time a diminution or disappearance of eosinophiles. The hemoglobin lost is excreted twenty-four hours afterward as urobilinogen.

The hemolytic amboceptors unite on cooling with the blood cells, but can be separated from them again by repeated washings with warm physiological salt solution. The red cells are less normally resistent to temperature changes, dilute acids and saponins. The serum of patients suffering with this disease has opsonic properties.

[L. D. C.]

BULLETINO DELLE SCIENZE MEDICHE.
JUNE, 1909.

1. CARRETTI, I. *Researches in Regard to the Violet Reaction of Arnold.*
2. *CASALI, L. *The Chvostek-Weiss Sign or Facial Phenomenon in Pulmonary Tuberculosis.*
3. SIMILI, F. *Action of Oxygenated Water (Hydrogen Peroxide) on Hemoglobin and on Carboxyhemoglobin (Methemoglobin).*
4. CALABRESE, D. *Paranephritic Phlegmon of Difficult Diagnosis.*

2. Casali reports a series of observations on the Chvostek-Weiss sign, or hyperexcitability of the facial muscles on slight stimulation in pulmonary tuberculosis. He concludes that in phthisis this symptom is fairly frequent, but less so than are idiomuscular contractions; that the origin of the phenomenon is probably of toxic nature, but probably not due to a specific toxin of intestinal origin; that the mechanic hyperexcitability of degenerated muscles, though it may also be considered as a toxic phenomenon, appears independently of nervous hyperexcitability; since the former is by far the more frequent, the most simple conclusion to be drawn is that muscular tissue is much more vulnerable in tuberculosis than is nerve tissue [R. M. G.]

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Correspondence.

PARIS LETTER.

THE NORTH ATLANTIC ISLANDS.

(*From Our Special Correspondent.*)

PARIS, Aug. 1, 1909.

Mr. Editor: Whatever may be the drawbacks to Paris as a fixed residence for foreigners, and they are many and serious, it unquestionably has one advantage: As a center from which to undertake interesting journeys it stands almost unrivaled. Looking at it as the hub of a wheel, no matter along which spoke you radiate out, in twenty-four hours you can find yourself in an entirely new land, with novel scenes, language and customs. To persons who enjoy foreign travel, this is a great boon.

Long residence in France has rather surfeited me with the ordinary tourist routes, so this summer I thought I would try something original, and planned a trip through the islands of the North Atlantic as far as Iceland. It has occurred to me that in view of the novelty of this journey a few notes concerning it may prove of interest.

An easy day's traveling landed us in the peaceful cathedral town of Ripon, a little gem of the Middle Ages. It is difficult to express the change experienced in passing in a few hours from the confusion and hubbub of the boulevards to such a place as Ripon! Here you are back in Henry the Eighth's days. The inns bear the names of the Unicorn, George and Dragon, Black Bull, or Lamb and Hag. How different from the present-day Majestic Palace, or Imperial Astoria! Our place, the Unicorn, has stood where it is, to man's knowledge, for four centuries. It has a magnificent gilded unicorn over the entrance, above which can still be read the old announcement, "Posting-house," beneath which has been added apologetically, to catch the passing American, "Garage," though happily this modern institution is away off in another street. In the entrance, among the old prints of races and cock-fights and the eight-day clocks and copper warming pans, hangs a framed copy of Magna Charta!

The town hall on the same square bears in large letters the inscription readable to every one: "Except ye Lord keep ye cittie, ye wakeman waketh in vain," of which more anon. Close by stands a diminutive house with the following device: "In thys house lived a long time Hugh Ripley, ye last wakemanne and first mayore of Rippon. 1604." At nine in the evening the curfew still rings in the cathedral tower, and a few minutes later takes place in the center of the square one of those quaint ceremonies so characteristic of England. A man, clad in a Middle-Age coat and three-cornered hat, suddenly appears from a side street, walks to the foot of the town cross, and there gives three long, dismal blasts on a hugh ox-horn, each nearly a minute in duration. This, one of the most ancient usages in Great Britain, has been kept up for *eleven centuries!* Its origin was as follows: In olden days the safety of the town at night was intrusted to a wakeman. If a burglary was committed during his period of watch, he became responsible and had to make the loss good; and it was by these three blasts of the horn that he notified the citizens that he was taking over the guard each evening. Lastly, a short hour's walk across the pleasant fields of England brings you to Fountains Abbey, the most beautiful ruin in this country.

So you see, Ripon was not a bad beginning for people looking for quiet and change, and anxious to shake off the uproar of present-day life and move backward a little through the centuries; but this was only the first step in our plan. Another twenty-four hours brought us to the Orkney and Shetland Islands.

Here we were farther back still in retrospective history. The Union Jack floats merrily over the houses, all the signs are in English, and a species of Scotch-English is the current tongue the people use in addressing the stranger, but among themselves they speak a different language. *This*, England? Never. A country England where every island is an ey or a holm; a hill, a fell; a pool, a tarn; a bay, a roe or a hope; a cape, a nes, etc., etc! This is a land of the Northmen, and in Shetland, when you go fifteen miles south of the capital in a smart little go-cart, and then row across a two-mile "sund," another good old word, you come to a Pictish tower on an island, forty feet high, fifty broad at its base, and with fifteen-foot walls, prehistoric, but twice mentioned in the Icelandic Sagas. By this time, when we stood on the ruined upper circumference of that tower, and thought of the old Northman who brought his bride in an open boat across the wild North Sea to spend his honeymoon in that barren looking place, we felt we were really getting on very nicely in shaking off modern times. Nobody knows exactly who the Picts were, but they unquestionably have a very venerable sound when they are mentioned.

We then took ship again, a noble steamer of seven hundred and ninety tons, that would go very comfortably in the dining saloon of the *Lusitania*, and sailed boldly out on the North Atlantic, where we were mortally sick. The way that boat stood first on its hind legs and then on its fore was sinful. But in due season we reached the Faroes, and on the whole feel fairly satisfied with the islands from our special point of view. One of our objects in these summer journeys is to find a place to retire to in the days of our decrepitude. We want a land where there are neither motor-cars nor telephones, though to these nuisances I am afraid we shall have ultimately to add Marconis and aeroplanes, in which progress seems to be so rapid of late.

The Faroes, unfortunately, have a very complete system of telephones. They have also a cable to the mainland, and two weekly newspapers; but the rates on the former are prohibitive and the latter are almost impossible to obtain, so matters might be worse. There is also one carriage road two miles long, on which a motor *could* be run; otherwise, there is not a road in the islands.

Communication between the eighteen islands is chiefly by boat, the inhabitants living altogether along the shore, as the higher ground, entirely columnar basalt, is unproductive and uninhabitable. Otherwise, their intercourse with the outside world is limited to a few English travelers, and about two steamers per month in summer and one in winter. So we have given the Faroes a favorable mark among our notes, without having definitely adopted them. They show ominous signs of progress: motor boats, instead of the good old ten-oar skiff, in which the islanders skim about so gaily at present, — craft put up on the Viking lines, very light, and proof against any sea, peaked in bow and stern. The people have also an advanced radical party which wants to cut loose from Denmark and paddle its own canoe, though as they are only 18,000 in all, and do just about as they like, the advantages to be derived from this course are not apparent at first sight.

Here again we were on classical Saga ground. Places and names remain just as they were a thousand years ago.

The heroes of the Færingja Saga are the heroes of the present days, and the captain pointed out to me Sknö and Suderö, between which islands Sigmund made his famous swim of six nautical miles, part of the way with a man on his back! We also passed in view of Gata, where Trond used to live; and the turbulent thing mentioned in the Saga was held on Tinganes, a point in Társhavn harbor. It certainly gives the traveler a curious feeling to hear the youth of the country singing as they dance, in a tongue that is practically the same as classical Icelandic, so much so that any one familiar with the latter, can read Faroese at first sight, ballads about Olav Tryggvason and the battle of Svolder, that go back to about the year 1000! These songs take the place of "Mrs. 'Ennery 'Awkins," and and "A bicycle build for two," to great advantage.

We took a two-hour walk across a ridge to visit the leader of the Separatist party, a splendid type of Faroese, in native dress, who lives in the most interesting place on the island. The ruins of the old cathedral of Kirkibö are on his farm, and the massive timber of some parts of his log-house is *eight hundred years* old and identical with that used in the construction of the most ancient houses in Norway, of which we visited several last summer, —what they there call the "rögstue," log dwellings without windows, a hole in the roof and a fire on an open hearth in the center of the one room, probably the first step in advance after the primitive tent.

I called on the doctor of Társhavn, as I had a little medical question to elucidate while on the islands. A man in Paris, man of intelligence, who has traveled all over the known earth, told me as I was leaving to find out when in the Faroes why all the natives there were troubled with chronic diarrhea. I told him I would, though it seemed to me that he must have got his information mixed up, as I had never heard of such a curious state of affairs as that, which on general lines did not seem to me to be a working proposition.

It turned out as I thought, nothing of the sort exists in the Faroes, and my friend must have been misinformed. But during my visit to the doctor, who spoke excellent English, I gathered some details that will give an idea of what medical life is like in such regions as this.

As I mentioned before, this group consists of eighteen islands, lying together and separated by narrow channels, through which tides and storms race as they please. The population is 18,000. If the tide is adverse, they can often not pass from island to island.

Well, there are *six* doctors for the entire affair, three small hospitals, the one in the capital having eighteen beds, quite a number of midwives with Danish training, no dentist, no asylum for insane or aged (they claim there are only 150 poor and destitute in the entire archipelago), and last, though not least, — listen, O Bostonians, — a sanatorium for tuberculosis!

The Danish government has to pay the doctors a fixed sum per annum to get them to go to the Faroes at all; then they make what they can besides. A great deal of their work is done by sea; they then charge by distance, refuse to go unless sent for by at least an eight-oaringer, as they call it, and get back when weather and tides permit. That they lead an independent life I gathered from a complaint written to the papers by an aggrieved relative while I was there, who said that, a patient being desperately ill, he went for the doctor with the regulation crew, but the first day the medico declined, as it was after 7 P.M.; the next day, because it was the Sabbath; and it was not until the Monday forenoon that medical advice could be obtained! This unreasonable taxpayer wrote to inquire as to the mutual duties between physician and citizens, the former, he asserted, existing for the benefit of the latter, and not the reverse. In parenthesis, it is not so clearly demonstrated that such is really the case, as the newspaper correspondent seemed to imagine!

From the conversation I had with my confèrre, I found that pathology is very much the same in the Faroes as elsewhere. Infectious diseases cannot be kept away, but are brought from the outside, chiefly from Iceland, where the young men go every summer for the fishing season. They have typhoid, scarlet fever, measles and diphtheria. A case of leprosy occasionally, also from Iceland. No echinococcus. Venereal complaints only when brought from continental seaports by the sailors.

Cancer seems uncommon. Dr. Jestrau had no recollection, during nine years, of having seen or heard of a case of mammary carcinoma. Uterine cancer equally rare. In the mouth, nothing but cancer of the lip; neither tongue nor pharynx appear to be affected!

But the really interesting point in medical life in the Faroes is their sanatorium, finished two years ago, thirty-two beds. I mentioned before that a spirit of progress is abroad in the land.

This building, the largest in the land, larger than Government House or the Lagthing, larger than the Grand Hotel Djurhuns where I put up (and which has not even a water-closet nor any other similar device!) is connected with the capital by their only carriage-road, referred to above. The trouble with the Faroes is the violent storms and gales. These had to be taken into account, so the sanatorium was placed down in a hollow, separated from the sea by a ridge, and looking out onto a peat bog that has been opened up in every direction by ditches in an attempt to drain it. When I think of what that outlook must be on a Faroes November day to those poor devils lying out in their open sheds — fog, a peat bog and basalt ridges —I simply shudder with horror. I have some remarks to make on the location of sanatoria, but as they are lengthy, they must wait for another time. When I asked the medico why he had not put his sanatorium in some convenient cave, so as to be entirely out of the gales, he replied that this choice of site was due to a conflict between local interests and politics! I am devoutly thankful that I have not got tuberculosis in the Faroes.

We now propose to take another noble ship of 1,100 tons and sail around Iceland. If these "notes by the waterside" prove to be of any interest, I will send you some more from that historic island.

"Spectator."

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TOBACCO FROM THE VIEWPOINT OF A REFORMED SMOKER.

Boston, Aug. 17, 1909.

Mr. Editor: In your issue of Aug. 12, you wield your editorial cudgel over the head of a correspondent who takes issue with a previous editorial on the subject of "tobacco." His letter is chiefly a protest against your statement in regard to smoking that "maturity makes its moderate enjoyment possible without detriment." He also argues that your position would naturally encourage the use of tobacco among the immature. I cannot help agreeing with your correspondent, and I think that your logic is not quite sound. In the first place, you assume that your correspondent objected chiefly on the score of example, which I do not think is the case, and you mention actions performed by adults that cannot well be omitted in order to prevent corrupting the youth, — actions, however, which are not conducive to health, such as the watching for signals by engineers and responding to night calls by physicians. I think you will agree with me that it is hardly logical or fair to compare duties with a luxury, or, as some would call it, a drug habit. You then go on to use the ancient and time-worn argument that "it is the testimony of many of the world's most eminent, honorable and enlightened men that the use of tobacco has been to them an aid in their good labors for the benefit of mankind." Not many years ago "the most eminent, honorable and enlightened men" recommended alcohol in tuberculosis, and also considered it a help to the best intellectual work, but men of the same class know now as a result of exact experimentation that alcohol diminishes the resistance to tuberculosis and is a detriment to intellectual activity.

The beneficial psychical effects of tobacco on the habitué are well known, but can you state from exact knowledge that they overbalance the deleterious effects? Is it not possible that in the long run adults may be more happy and philosophical without thus artificially fortifying themselves against "the slings and arrows of outrageous fortune," and is it the case that you would advise editorially, as you appear to do, that all young men on reaching manhood should contract the habit of moderate smoking?

Yours truly,

A Reformed Smoker (yet Still Happy)

RECORD OF MORTALITY

For the Week ending Saturday, July 24, 1909.

Cities.	Reported deaths in each.	Deaths under five years.	Cities.	Reported deaths in each.	Deaths under five years.
New York	—	—	Waltham	—	—
Chicago	534	165	Pittsfield	4	1
Philadelphia . . .	—	—	Brookline	2	2
St. Louis	—	—	Gloucester	6	1
Baltimore	210	108	North Adams . .	9	8
Cleveland	—	—	Northampton . .	3	1
Buffalo	—	—	Chicopee	14	12
Pittsburg	—	—	Medford	2	1
Cincinnati	—	—	Beverly	4	1
Milwaukee	—	—	Leominster . . .	5	1
Washington . . .	—	—	Hyde Park . . .	2	1
Providence . . .	—	—	Melrose	4	0
Boston	188	56	Newburyport . .	3	2
Worcester	41	18	Revere	5	3
Fall River	61	46	Westfield	6	3
Cambridge	23	7	Woburn	5	2
Lowell	31	12	Peabody	—	—
New Bedford . .	24	15	Marlboro	4	0
Lynn	18	7	Attleboro	1	1
Springfield	28	15	Adams	—	—
Lawrence	21	10	Clinton	3	0
Somerville	13	3	Gardner	3	—
Brockton	6	1	Milford	3	1
Holyoke	23	12	Watertown . . .	1	0
Malden	5	1	Plymouth	—	—
Chelsea	12	1	Southbridge . . .	4	2
Newton	4	—	Weymouth . . .	3	0
Salem	17	9	Framingham . .	—	—
Haverhill	13	1	Wakefield	—	—
Fitchburg	—	—	Webster	—	—
Everett	4	1	Arlington	4	—
Quincy	4	1	Greenfield	0	—
Taunton	18	6			

LIST OF CHANGES OF STATIONS AND DUTIES OF COMMISSIONED AND OTHER OFFICERS OF THE PUBLIC HEALTH AND MARINE-HOSPITAL SERVICE FOR THE SEVEN DAYS ENDED AUG. 4, 1909.

Bailhache, Preston H., surgeon. Placed on "waiting orders" from Nov. 1, 1909. July 29, 1909.

Banks, Charles E., surgeon. Upon being relieved by Surgeon E. K. Sprague, directed to proceed to Portland, Me., and assume command. July 30, 1909.

Kalloch, P. C., surgeon. Upon being relieved by Surgeon Charles E. Banks, directed to proceed to Memphis, Tenn., and assume command. July 30, 1909.

Wasdin, Eugene, surgeon. Upon arrival of Surgeon P. C. Kalloch, relieved from duty at Memphis, Tenn. July 30, 1909.

Brown, B. W., surgeon. Granted five days' leave of absence from July 29, 1909.

Brown, B. W., surgeon. Upon being relieved by Passed Assistant Surgeon R. H. Creel, directed to proceed to Vineyard Haven, Mass., and assume command. July 30, 1909.

Sprague, E. K., surgeon. Upon being relieved by Assistant Surgeon W. M. Bryan, directed to proceed to Key West, Fla., and assume command. July 30, 1909.

Lavinder, C. H., passed assistant surgeon. Granted fourteen days' leave of absence from Aug. 1, 1909.

Foster, M. H., passed assistant surgeon. Granted one day's leave of absence, July 27, 1909, on account of sickness.

Warren, B. S., passed assistant surgeon. Granted fourteen days' leave of absence from Aug. 1, 1909.

Creel, R. H., passed assistant surgeon. Upon the arrival of Assistant Surgeon James P. Leake, directed to proceed to Louisville, Ky., and assume temporary command. July 30, 1909.

Ashford, F. A., assistant surgeon. Directed to proceed to Washington, D. C., and report to chairman of board of medical examiners to determine his fitness for promotion to the grade of passed assistant surgeon. July 29, 1909.

Herring, R. A., assistant surgeon. Leave of absence granted May 20, 1909, for one month and four days from June 5, 1909, amended to read one month and six days from June 5, 1909.

Bryan, William M., assistant surgeon. Relieved from duty at South Atlantic Quarantine Station, and directed to proceed to Southport, N. C., and assume command of the Cape Fear Quarantine Station. July 30, 1909.

Hasseltine, Hermon E., assistant surgeon. Directed to proceed to Buffalo, N. Y., and report to the medical officer in charge for duty. July 31, 1909.

Hunter, W. R., acting assistant surgeon. Granted two days' leave of absence from Aug. 5, 1909.

Knight, Carlisle P., acting assistant surgeon. Granted thirty days' leave of absence from Oct. 1, 1909.

Porter, Joseph Y., Jr., acting assistant surgeon. Granted thirty days' leave of absence from Aug. 4, 1909, without pay.

Richter, H. C., acting assistant surgeon. Granted fifteen days' leave of absence from July 29, 1909.

Story, H. C., acting assistant surgeon. Granted thirty days' leave of absence from Sept. 1, 1909.

Weeks, Alanson, acting assistant surgeon. Leave of absence granted July 9, 1909, for thirty days from July 10, 1909, amended to read thirty days from July 19, 1909.

Brown, F. L., pharmacist. Upon the departure of Assistant Surgeon W. M. Bryan, directed to assume charge of the South Atlantic Quarantine Station. July 30, 1909.

BOARD CONVENED.

Board of medical officers convened to meet at the Bureau, Aug. 5, 1909, for the examination of Assistant Surgeon F. A. Ashford, to determine his fitness for promotion to the grade of passed assistant surgeon. Detail for the board: Assistant Surgeon-General J. W. Kerr, chairman; Surgeon W. P. McIntosh; Passed Assistant Surgeon J. F. Anderson, recorder. July 29, 1909.

RECENT DEATH.

Dr. Lewis Balch, of New York, died on Aug. 11, at the age of sixty-two years. In the Spanish-American War he served in Cuba as surgeon of the Second Regiment, New York Volunteers, and later spent some time in the Philippines. In 1900 he was appointed superintendent of sanitary improvements at Colon, Panama. Since giving up this position he had practiced in New York.

BOOKS AND PAMPHLETS RECEIVED.

Second Annual Report of the Commissioner of Health of the Commonwealth of Pennsylvania. Harrisburg. 1908.

The Malarial Fevers, Hemoglobinuric Fever and the Blood Protozoa of Man. By Charles F. Craig, M.D. Illustrated. New York: William Wood & Co. 1909.

Clinical Lectures on Neurasthenia. By Thomas Dixon Savill, M.D. Lond. Fourth edition. London: Henry J. Glaisher; New York: William Wood & Co. 1908.

Lectures on Hysteria and Allied Vaso-Motor Conditions. By Thomas Dixon Savill, M.D. Lond. Illustrated. New York: William Wood & Co. 1909.

The Medico-Chirurgical Series No. 1. The Practice of Anesthetics. By Rowland W. Collum, L.R.C.P. Lond., M.R.C.S. Eng.; General Surgical Technic. By H. M.W. Gray, M.B., C. M. Aberd., F.R.C.S. Edin. Edited by James Cantlie, M.A., M.B., C. M. Aberd., F.R.C.S. Eng. Illustrated. New York: William Wood & Co. 1909.

Diathesis and Ocular Diseases. By A. Maitland Ramsay, M.D. Illustrated. New York: William Wood & Co. 1909.

The Practical Medicine Series. Under the general editorial charge of Gustavus P. Head, M.D. Series 1909, Vol. IV. Chicago: The Year Book Publishers.

Manual of the Diseases of the Eye. By Charles H. May, M.D. Sixth edition, revised. Illustrated. New York: William Wood & Co. 1909.

Third Report of the Wellcome Research Laboratories of the Gordon Memorial College, Khartoum. Andrew Balfour, M.D., B.Sc., F.R.C.P. Edin., D.P.H. Camb., Director. London: Baillière, Tindall & Cox; New York: Toga Publishing Co. 1908.

Physiology and Hygiene for Secondary Schools. By Francis M. Walters, A.M. Illustrated. Boston: D. C. Heath & Co. 1909.

Health Studies. Applied Physiology and Hygiene. By Ernest Bryant Hoag, A.M., M.D. With prefatory note by David Starr Jordan, Ph.D., M.D. Illustrated. Boston: D. C. Heath & Co. 1909.

Ministero della Marina. Ispettorato di Sanita. Statistica Sanitaria dell' Armata per gli anni 1901–1902. Rome. 1909.

Protest and Prophecy. By C. A. Henry, M.D. Reprint.

The Significance of the Scaphoid Tubercle of the Foot as a Bony Landmark. By Henry O. Feiss, M.D. Reprint.

A Consideration of the Introduction of Surgical Anesthesia. By William H. Welch, M.D., LL.D. Reprint.

Address.

HEART DISEASE IN INFANCY AND CHILDHOOD.*

BY JOHN LOVETT MORSE, A.M., M.D.,

Assistant Professor of Pediatrics, Harvard Medical School; Associate Visiting Physician at the Children's and Infants' Hospitals; Visiting Physician at the Floating Hospital, Boston.

It hardly seems necessary to take up in this connection the development of the heart during fetal life, the fetal circulation, or the changes which take place in the circulation at birth, as these subjects are undoubtedly familiar to you all. There are, however, certain points about the growth and the physical examination of the heart during infancy and childhood which are important and worthy of detailed consideration. The volume and weight of the heart relatively to the body weight are greatest in the newborn, sink rapidly in the first and second years, increase again for a time, are smallest in the years before puberty and increase rapidly during puberty, reaching the adult relation. The caliber of the arteries in early childhood is relatively large in comparison with the volume of the heart. With the approach of puberty, however, the relation rapidly approaches that of adult life. The diameter of the veins in relation to that of the arteries is, on the other hand, much smaller in childhood than in later life, while the capillary circulation is much more highly developed. All these peculiarities favor the nutrition and growth of the organism. They also explain the low blood pressure, rapid circulation and frequent pulse of infancy and childhood.

Blood pressure. — Age plays a very important part in the blood pressure, while the influence of sex is unimportant. In infancy, the general condition makes a great difference, the pressure being much lower in feeble or premature infants. It is lower when sleeping than waking, when quiet than when moving or crying, and before than after feeding.

Under 6 months,	60 to 90 mm. of mercury.
2–3 years,	80 ,, 95 ,, ,, ,,
5–6 ,,	100 mm. ,, ,,
9–10 ,,	110 ,, ,, ,,

Rapidity of circulation. — According to Vierordt, the round of the circulation is made in twelve seconds in the newborn, in fifteen seconds at three years, eighteen seconds at fourteen years and twenty-two seconds in the adult.

Pulse-rate. — The rate of the pulse is very irregular in infancy, even under normal conditions. It varies markedly as the result of exertion, excitement or any slight disturbance. The rhythm is also very easily disturbed. The pulse also becomes irregular from very slight causes in early childhood. Irregularity of the pulse is, therefore, of comparatively little significance in infancy and early childhood. It is impossible, for these reasons, to give more than approximate figures as to the pulse rate at these ages.

Early weeks,	120–140
1st year,	110–120
2d year,	100–110
2–5 years,	90–100
5–10 ,,	80–90

The pulse-rate increases very markedly from slight causes in infancy and early childhood, and a very high rate may be quickly reached. Increased frequency of the pulse is, therefore, of less significance at this age than later. This fact must never be forgotten in estimating the prognostic importance of a frequent pulse in early life. The normal rate for the given age must always be taken into consideration and the rate compared with that. A pulse-rate of 180 in an infant of a few months is of no more importance, for example, than one of 120 in an adult.

PHYSICAL EXAMINATION OF THE HEART.

The cardiac physical signs vary materially at different periods of infancy and childhood because of the varying rapidity of the growth of the heart, thorax and other organs. In infancy, for example, the comparatively large heart is placed more horizontally in the narrow thorax and is covered to a less extent than later by the lungs, giving, therefore, a materially different set of physical signs from those found in later childhood and adult life. The physical signs gradually approach the adult type with the development of the organism. The infantile form of thorax is replaced by the adult type between four and five years, while the diaphragm reaches the adult position at five or six years, or a little later. The lungs are not fully expanded forward until six years or later. The thymus modifies the signs in infancy and possibly for two or three years longer.

Cardiac impulse. — The cardiac impulse is rarely visible and frequently not palpable in early infancy. Later, it is more distinct than in adults. Owing to the anatomical conditions already mentioned, it is at first higher up and farther out than in later life. In infancy, it is in the fourth space about 1 ccm. outside the nipple line and from 5 to 6 ccm. from the median line. As the result of the anatomical changes due to growth, it gradually moves downward and then inward, being in the fifth space in the nipple line at seven years, and always inside the nipple line by the thirteenth year.

Cardiac area. — Percussion is best performed in infants in the recumbent position, while in older children the position makes but little difference. Comparisons must always be made, however, with the child in the same position. The fingers are far better than any instrument for this purpose. The area of the relative dullness, because of the anatomical peculiarities already mentioned, is relatively larger than in adult life, and relatively larger in infancy and at puberty than at other periods of childhood. The area of absolute dullness — that part of the heart uncovered by lung — is relatively larger than in adults, until the lungs are fully expanded at six years. On account of the small size of the parts, it is impossible to determine accurately the area of absolute dullness in infancy. The usual mistake is in making the area too large. The right border is at the left sternal border throughout the whole of childhood. Fortunately, a knowledge of this area is of relatively little importance. It is comparatively easy, however, to determine the area of relative dullness, which is the important one. In the first two years, the dullness of the thymus may interfere with the determination of the upper border of the heart, but it can usually be made out by the aid of strong percussion.

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* Annual oration, Maine Medical Association, June 17, 1909.

In infancy, the upper border of relative dullness is at the lower border of the second costal cartilage or in the second space. The left border is 1 ccm. outside the left nipple line, or from 5 to 6 ccm. to the left of the median line, the right border at, or just inside, the right parasternal line, or 2 ccm. to the right of the median line. At six years, the upper border of relative dullness is at the upper border of the third rib, the left border just outside the left nipple line, or 7 ccm. to the left of the median line, the right border 2½ ccm. to the right of the median line. At twelve years, the upper border of the relative dullness is at the third rib, the left border 1 ccm. inside the left nipple line, or 8 ccm. to the left of the median line, the right border 3 ccm. to the right of the median line.

Heart sounds. — In early infancy, the first sound lacks the booming quality heard later and is much more like the second sound, so that the sounds often resemble the "tic-tac" heart of the fetus. The first sound acquires the normal booming character during the second year. The first sound at the apex is relatively much louder in comparison with the first sound at the base in infancy and early childhood than in later life. The second pulmonic sound is louder than the second aortic throughout the whole of childhood. For this reason, great care must be exercised in diagnosing an accentuation of the second pulmonic sound. Reduplication of the second sound is not uncommon under normal conditions. When this occurs alone, it is, therefore, not necessarily pathological.

DISEASES OF THE HEART.

General peculiarities. — There are certain general peculiarities in the physical signs of cardiac disease in infancy and childhood. Prominence of the precordia occurs frequently as the result of the pressure of the enlarged heart on the unossified sternum and costal cartilages. The earlier the onset and the longer the duration of the disease, the more marked is this deformity. Rickets also favors its development. Murmurs are often heard over large areas. Thrills are more common than in later life. Cardiac disease in childhood also interferes with the growth of other organs and causes a general retardation of development. On the other hand, however, the tendency to recovery is greater in early than in later life because of the reparative powers of growth.

The diseases of the heart in infancy and childhood may be divided into congenital and acquired. Certain main points are of importance in the diagnosis between these two conditions. The presence of the evidences of cardiac disease in infancy or early childhood without the history of some disease in the past likely to cause cardiac disease is strong evidence in favor of a congenital lesion. Cyanosis and clubbing of the extremities without heart murmurs or other evidences of disease sufficient to account for them, and cyanosis and clubbing of the extremities without signs of venous congestion in other organs, are strong evidences in favor of a congenital against an acquired lesion. So, also, are loud murmurs without enlargement of the heart. Diastolic murmurs are practically never congenital. A combination of physical signs not consistent with those usually found in the various forms of acquired cardiac disease is strongly suggestive of a congenital lesion. The presence of other congenital anomalies favors the diagnosis of congenital disease, and the presence of the characteristic signs of the various congenital lesions make the diagnosis almost positive.

The diagnosis of congenital lesions from anemic or functional murmurs is sometimes necessary because of the common location of functional murmurs at the base. The general teaching to the contrary, these murmurs are not at all uncommon, even in infancy. When the murmurs are anemic, there is no enlargement of the heart and no thrill. There is often, however, a venous hum and always the evidences of the causative anemia.

CONGENITAL DISEASES OF THE HEART.

These should better be spoken of as anomalies or malformations of the heart and great vessels.

The causes of congenital heart disease may be divided into three classes: Persistence of fetal conditions, interference with normal development, and fetal endocarditis. The only important anomalies resulting from the persistence of fetal conditions are patency of the foramen ovale and ductus arteriosus. These may be the only lesions or may be the result of other cardiac lesions. The most common abnormalities resulting from interference with normal development are defects in the septa, more often in the ventricular than in the auricular, and stenosis or atresia of the orifices, most commonly of the pulmonary. Malformations of the great vessels are also not uncommon. Fetal endocarditis almost always occurs on the right side and usually affects the pulmonary valves.

Combinations of lesions, as the result of a combination of the causes just mentioned, are very common. Inflammatory lesions and anomalies which result in narrowing of the orifices, and hence in a local increase of intracardiac pressure, prevent a normal development of the heart, especially of the septa, which fail to close because of the necessity for a compensatory circulation. For the same reason, the foramen ovale and the ductus arteriosus often continue open after birth.

Hypertrophy and dilatation of the heart, especially of the right side, also develop as the result of the lesions which cause obstruction, increased resistance and increased intracardiac pressure.

The most common lesions are, in order of frequency, defect in the ventricular septum, defect in the auricular septum (including open foramen ovale), pulmonary stenosis or atresia, patent ductus arteriosus, and abnormalities in the great vessels. The most commonly associated lesions are defects in one or both septa in connection with pulmonary stenosis.

Symptomatology. — Barring the cases of uncomplicated patency of the foramen ovale, in which there are almost never any symptoms, the symptoms of congenital heart disease are present at birth or develop during the first month in about 70%. In about half of the others, symptoms appear before the end of the first year, while in a small number they may not develop until after puberty. Infants may die suddenly before having shown any symptoms, or the symptoms may be so slight as not to attract attention until the infant begins to exert itself sufficiently, as in walking or running, to embarrass the circulation. In rare instances, patients live many years with gross defects and without any symptoms.

The most common symptom is cyanosis, which is present in about four fifths of the severe cases; and varies from a slight tinge to a dark leaden color. In many instances, it is present only on exertion or during crying and coughing. It may be absent, even when there is some severe lesion. In the majority of cases with cyanosis, there is a lesion of the pulmonary artery. This corroborates the commonly accepted view that the cyanosis is due to obstruction to the pulmonary circulation rather than to the admixture of venous and arterial blood. The presence of cyanosis in early infancy does not, however, necessarily mean congenital heart disease, as it may be due to a number of other conditions, such as an enlarged thymus gland, atelectasis, cerebral hemorrhage or sepsis.

Clubbing of the fingers and toes is never congenital, but sometimes develops during the latter part of the first year. It is about as common as cyanosis in children who have reached the age of four or five years. It is usually due to the swelling of the soft parts alone, but in time the bones may also be involved (hypertrophic osteo-arthropathy).

Dyspnea is a very constant symptom, although in many cases it is not noticeable when at rest. As a rule, it varies directly with the cyanosis. Peculiar attacks of suffocation are not uncommon in connection with cyanosis. They are usually started by coughing or crying and last from five to fifteen minutes. Consciousness is lost. Recovery is the rule, but death is not infrequent in these attacks.

Bulging of the precordia usually develops early and becomes more marked as time goes on. Growth and nutrition are almost always affected, and those who live usually present the typical picture of infantilism.

If the cases of patency of the foramen ovale, in which murmurs are often lacking, are omitted, murmurs are heard in at least nine tenths. These murmurs are almost invariably systolic in time, are often diffuse and not infrequently accompanied by a thrill. Their location and transmission does not, as a rule, correspond to those of acquired heart disease. Enlargement of the heart is, in my experience, often absent. If present, it is usually most marked to the right.

Diagnosis. — The diagnosis of congenital heart disease from acquired heart disease, on the principles already detailed, is usually an easy one. The diagnosis of the exact abnormality is, however, always extremely difficult and in most instances impossible, partly because several lesions may give the same signs, partly because of the frequency of combined lesions and partly because of the occasional presence of most unusual anomalies. Fortunately, the diagnosis of the exact lesion in these cases is not of great importance in either prognosis or treatment. The signs of certain lesions are, however, fairly constant and characteristic. A loud murmur, most marked at the center of the heart dullness, not accompanied by a thrill, and without enlargement of the heart, points toward a defect in the ventricular septum; a murmur loudest at the base, accompanied by a thrill at the base and without hypertrophy, points to a patent ductus arteriosus; a murmur loudest at the base, accompanied by a thrill and enlargement of the heart to the right, with a feeble second pulmonic sound and cyanosis, points to a narrowing of the pulmonary orifice.

Prognosis. — The prognosis depends to a certain extent on the nature of the lesion. Patency of the foramen ovale diminishes the expectancy of life but little, and simple defects of the ventricular septum are not incompatible with long life; so, also, are certain combined lesions in which the lesions to a certain extent neutralize each other. Infants with atresia of the pulmonary artery rarely live over two years, and those with atresia of the aortic orifice seldom over two or three days. The determination of the lesion is so difficult, however, that clinically little reliance can be placed on the diagnosis of the lesion in prognosis, this depending on the general condition and the character of the circulation in the individual patient rather than on special symptoms and signs. In general, about one third die in the first two months, and another one third in the first five years. A few reach adult life. Some infants with what are apparently characteristic symptoms and signs of congenital heart disease recover entirely and develop normally in every way. I have had two such cases. It is hard to reconcile these cases with what we know about the pathology of congenital heart disease, in which there can apparently be no tendency to healing of the lesions. It seems as if the diagnosis must be wrong in these cases. Other children with congenital lesions and loud murmurs show no symptoms. I have a boy of twelve under my observation now, in whom the murmur, which is audible over the whole chest, was present at birth and has never changed. He has never had a symptom referable to the heart, has taken ether several times, is very active, plays football, skates and swims with impunity. It is not safe, therefore, to give too bad a prognosis in this condition.

Treatment. — There is, of course, no curative treatment. There is nothing which will either diminish the deformities or favor the closure of abnormal openings. The treatment must, therefore, be hygienic and symptomatic. Breast feeding, maintenance of the body temperature, and the prevention of infection are of the most importance in the beginning. Affections of the respiratory tract are very dangerous and must be especially guarded against. A comparatively warm dry climate is, therefore, most suitable. Overexertion and excitement must be avoided in older children. Insufficiency of the heart muscle calls for digitalis, as it does in acquired heart disease. Sudden severe symptoms are to be treated, as in acquired heart disease, by nitroglycerin or the quick cardiac stimulants, such as strychnia and ammonia. The sudden attacks of suffocation and the convulsions are best avoided by the use of bromide.

ACQUIRED HEART DISEASE. ACUTE ENDOCARDITIS.

Acute endocarditis practically never develops during the first three years of life. It is uncommon during the next two years, and very common after this period. It is almost never primary. It is, in round numbers, secondary to rheumatism in about three fourths of the cases, to chorea in at least one half and to scarlet fever in one fourth of the remainder, occasionally to other infections of various sorts. It is very seldom due to pneumonia, more often to tonsillitis. The facts that rheumatism and chorea almost never, and scarlet fever rarely, occur during the first few years of life, explain the age incidence just mentioned.

It is hardly possible to speak of acute endocarditis in childhood without considering the characteristics of rheumatism at this age. In the first place, rheumatism is almost unknown in infancy. What is called rheumatism at this age is most often scurvy; sometimes gonorrheal, septic or syphilitic arthritis. The manifestations of rheumatism in childhood are materially different from those in adult life and are consequently often overlooked. Swelling of the joints is unusual, and redness relatively uncommon. The temperature is seldom high or the constitutional symptoms marked. The patients not infrequently do not feel sick enough to go to bed. In many, or most instances, there is merely a little pain and stiffness in the joints, or even only fleeting pains in the extremities, with an elevation of temperature of only one or two degrees. The endocardium is involved just as often in these mild cases, however, as in the severe; in fact, it is apparently sometimes affected before the joints, thus justifying the statement that in childhood the endocardium acts like a synovial membrane. It is these cases of endocarditis coming on insidiously in mild cases of rheumatism which explain the numerous cases of apparently primary cardiac disease so often seen in later childhood and adult life. It is difficult to state how frequently rheumatism in childhood is complicated by endocarditis, various authors estimating it at from 50% to 75%. In all probability, however, this proportion is much too high, as the many cases in which endocarditis does not develop are forgotten or overlooked, while when endocarditis is present, careful questioning is very likely to bring out a history of pains in the past which is accepted as indicative of rheumatism.

The frequency of the occurrence of endocarditis in chorea is seldom appreciated, although on account of the intimate relationship between rheumatism and chorea it is not at all surprising. Most authorities estimate it at about 50%. However this may be, it is certain that there is no other disease in which endocarditis is found so constantly at autopsy as chorea.

Acute endocarditis in childhood is almost always vegetative in type, the ulcerative form being extremely rare, so much so that it is hardly worthy of consideration at this time. The mitral valve is affected at least ten times as often as the aortic, and if the aortic is involved, it is almost always in connection with the mitral. Acute endocarditis is much more often associated with pericarditis and myocarditis in childhood than in adult life, so much so that the English often speak of the "acute carditis of childhood," meaning by this term the simultaneous inflammation of all parts of the heart, endocardium, myocardium and pericardium.

Symptomatology. — The onset of endocarditis is almost always insidious. In most instances there is merely a rise of temperature. This is seldom high, often irregular, not infrequently ephemeral. Symptoms pointing directly to cardiac involvement are uncommon. Pain, oppression, anxiety and distress are most unusual, and when present are almost always due to a complicating pericarditis. In some cases there is slight dyspnea, especially on exertion. To sum up, in the vast majority of cases of acute endocarditis in childhood there is nothing whatever to direct attention to the heart, the only symptom being a rise in the temperature. This being the case, the heart should always be examined repeatedly in all diseases of childhood likely to be complicated by endocarditis. In many cases a change in the character of the first sound can be noted before the development of a murmur. In most, however, the first thing detected is a murmur. This murmur, whether it originates at the aortic or mitral orifice, is almost always systolic in time. There is seldom any enlargement of the heart in the beginning; in fact, this may not develop for many weeks. The absence of enlargement is best explained by the great reserve power of the child's heart which prevents dilatation and renders hypertrophy unnecessary. Another explanation is that, on account of the comparatively small size of the child's heart, it is almost impossible to detect by percussion slight enlargement of the left auricle, the part first involved in mitral lesions. Accentuation of the second pulmonic sound, due to the increased work thrown on the right ventricle, often develops fairly quickly, however, and long before any enlargement of the cardiac area to percussion.

Diagnosis. — There is little danger of overlooking the development of acute endocarditis if the heart is examined repeatedly, as it should be. There is, however, the possibility of mistaking other abnormal sounds for those of endocarditis and, consequently, of drawing erroneous conclusions.

Pericardial friction sounds may be so soft in childhood as to resemble endocardial murmurs. They are not, as a rule, so definitely associated with a single phase of the cardiac cycle, are more superficial, are not transmitted, are increased by the pressure of the stethoscope and are often modified by change in position.

Anemic murmurs often appear during the course of acute diseases. They are usually most marked at the pulmonic area and are accompanied by a venous hum in the neck and by pallor. The second pulmonic sound is not accentuated.

Acute febrile diseases often produce myocarditis which results in dilatation of the heart, usually most marked in the left ventricle. This causes a relative insufficiency at the mitral orifice which is, of course, accompanied by a systolic murmur at the apex. The only sign of any value in differentiating between myocarditis with relative insufficiency at the mitral orifice and acute endocarditis is the cardiac area, which is increased in myocarditis with relative insufficiency and normal in endocarditis. It is, of course, impossible to determine whether there is or is not endocarditis when there is myocarditis with cardiac enlargement and relative insufficiency.

The murmurs which are most often mistaken for those of acute endocarditis in children are the cardio-pulmonary. These are due to the squeezing of the air out of the thin edges of the lungs over the heart by the cardiac systole, and are consequently systolic in time. They may be loud and long. They are most noticeable during inspiration, when the lungs are distended. They are more marked when the heart action and respiration are rapid, as they are in fever. They are to be differentiated from endocardial murmurs by their variability with respiration and with the pressure of the stethoscope. Slight pressure increases them; strong pressure stops them.

Prognosis. — The immediate prognosis of simple, uncomplicated, acute endocarditis is good. A fatal outcome is most unusual and, when it occurs, is usually due to embolism. The outlook for the future, however, is dark. In most instances the cicatrical changes following the involvement of the endocardium result in permanent valvular lesions, which eventually prove fatal. The chances of complete involution and of the restitution of normal conditions are better in childhood than in later life, however, because of the great reparative power at this period and because of the changes consequent on growth. A small proportion recover entirely. It must be remembered in this connection that the murmurs due to the acute endocarditis frequently disappear, to be followed later by those due to the cicatricial changes in the orifices. The disappearance of the murmur does not, therefore, justify a favorable prognosis. This can only be given when the murmur has not reappeared after an interval of one or two years. The prognosis is also influenced to a considerable degree by the treatment during the acute and convalescent stages.

Treatment. — The one important thing in the treatment of acute endocarditis in childhood is rest. Everything else is subordinate. The child must be kept in bed not only during the acute stage, but for months after. Three months is the minimum. In the beginning it must be kept flat; later as nearly flat as circumstances will allow. A week in bed at this time means a year or more of life later. It is impossible to overestimate the importance of rest in bed at this time. After leaving the bed, the life must be most carefully regulated for a year or two and the amount of exertion limited. The child will feel perfectly well and will wish to do what other children do. He must be restrained.

Those cases which develop during the course of rheumatism and chorea should be given some form of salicylic acid during the acute stage, preferably aspirin. Little can be expected from it, but it may possibly limit the process to some extent. Restlessness and discomfort call for bromide or opium. Cardiac tonics and stimulants are seldom needed. In most cases they do harm rather than good, because rest of the heart, not stimulation, is demanded.

The necessity of good food, fresh air, quiet amusements and so on is apparent.

CHRONIC ENDOCARDITIS. CHRONIC VALVULAR DISEASE.

Chronic endocarditis, or better, chronic valvular disease, is in childhood almost invariably the result of acute endocarditis. The causes of chronic arteriosclerosis, except syphilis, are not active in childhood. Since chronic valvular disease is consecutive to acute endocarditis, which is very uncommon in the early years of life, we rarely meet it before the age of five. For the same reason, the mitral orifice is much more commonly involved than the aortic, the proportion being nearly twenty to one.

Symptomatology. — The symptomatology of chronic endocarditis is, on the whole, much the same as in adult life. Certain points of difference are, however, worthy of mention. The subjective symptoms are, as a rule, less, as children apparently do not notice slight degrees of discomfort and complain only when they are marked. Interference with growth is, of course, peculiar to childhood; so, also, are deformities of the chest and clubbing of the fingers. The amount of deformity of the chest varies according to the age-incidence of the cardiac disease. Children sometimes also have a peculiar cachexia as the result of chronic valvular disease. They are pale, irritable and subject to repeated attacks of indigestion. The murmurs of chronic valvular disease in childhood are, as a rule, louder and more diffuse than in later life. They are not infrequently heard in the back. Great enlargement of the heart is more common than later. An area of dullness and bronchial respiration, not infrequently of considerable size, is occasionally found in the lower left back near the spine. It is often thought to be due to a complicating pneumonia and sometimes leads to the suspicion of a pericardial effusion. It is, however, the result of the compression of the lung by the enlarged heart. Failure of compensation in childhood is usually first shown objectively by enlargement of the liver. It is not at all uncommon to find the liver enormously enlarged without edema of the lungs or extremities.

Prognosis. — In spite of numerous statements to the contrary, I am extremely doubtful as to whether recovery ever takes place from valvular lesions due to chronic endocarditis. If so, such recovery is extremely unusual. Many cases go to the bad early as the result of recurrent attacks of rheumatism and acute endocarditis. Few reach adult life in good condition in whom severe lesions have developed before the age of eight years. Those in whom it develops later do well, as a rule, during childhood. The progress of the disease depends more on the condition of the general nutrition than on any other one factor. When this is good, the symptoms are often surprisingly latent. Failure of compensation is especially likely to develop at puberty when the demands on the heart are greatest because of the rapid growth at that time. Many patients begin to go wrong rapidly at this time. Sudden death in chronic valvular disease in childhood is very unusual. A moderate number reach adult life without any marked symptoms.

Treatment. — Children with chronic valvular disease must be kept under constant observation in order that the progress of the disease may be watched and their life properly regulated. They should be seen and examined at least every two or three months. In this way only can they be expected to do well. Parents, even with the best intentions, do not understand what to do and what not to do; they are almost certain to make gross errors unless they are carefully instructed. Little or no co-operation on the part of the patient can be expected in early childhood. Later, some will help and others will not.

When compensation is present, the treatment must be directed to the maintenance of the general nutrition and to preventing overstrain of the heart. This is especially necessary at the time of puberty. Every detail of the child's life must be laid out, — the time allowed for study, sleeping, exercise and amusement. The most difficult thing to regulate is the amount of exercise in boys. The fundamental principle is that there shall be no prolonged strain. Football, swimming and all competitions must be interdicted. Mild exercise, like horseback riding, walking and golf, is allowable. In girls, much dancing must be prohibited. It is very important in endeavoring to prevent overstrain not to go to the other extreme and not allow sufficient exercise. Proper exercise is most beneficial in that it not only keeps up the general nutrition, but keeps the muscles, including the heart muscle, in good condition.

Boys should be trained for some occupation which does not demand too hard strain, preferably one which requires some exercise and much life out of doors. Too sedentary a life is almost as bad as too active a one. In most instances, it is unwise for girls to marry, because the strain of pregnancy and labor is very likely to bring failure of compensation and death. They should be brought up with the understanding that they probably will not be able to marry. It is also important to avoid rheumatism if possible and exposure to the infectious diseases.

When compensation is failing, the treatment is the same as that of failure of compensation in adult life.

MYOCARDITIS.

Children do not have fibrous myocarditis for the reason that the chief cause of this condition, coronary disease, does not occur in childhood. Chronic myocarditis secondary to acute myocarditis develops in rare instances. Acute myocarditis, most often parenchymatous, not infrequently interstitial or mixed, is very common in the course of the infectious diseases and intoxications. It is most common in diphtheria, some observers (White and Smith) having found clinical evidences in more than 90%. It is next most common in scarlet fever. It is less frequent in connection with typhoid fever and influenza in children than in adults. Acute myocarditis is also an almost constant accompaniment of endocarditis and pericarditis, especially when these are due to rheumatism.

Although myocarditis, which may show no symptoms or merely a little irregularity and variation in the pulse-rate, with possibly a little change in the character of the first sound or a slight murmur, is very common, myocardial insufficiency is comparatively infrequent. In this condition there is an increased area of cardiac dullness, due to dilatation, and symptoms of impaired circulation in addition to the signs already mentioned. Myocardial insufficiency rarely develops before the end of the first week in diphtheria and is much less common in scarlet fever, rheumatism and other diseases than in diphtheria.

The most typical picture of myocardial insufficiency is seen in diphtheria, one which, unfortunately, is familiar to every one. It develops most often during the second and third weeks, sometimes later. Sudden death early in diphtheria is usually not due to myocarditis, but to the action of toxins on the cerebral vasomotor center. The affection of this center causes dilatation of the vessels, the accumulation of the blood in the abdominal organs and anemia of the rest of the body. Death usually occurs in from six to twenty-four hours. This condition may also arise in pneumonia. It is important to recognize this condition, as its treatment is in many ways different from that of myocarditis.

There is much difference of opinion as to how much of the cardiac weakness coming on later in the course of, or during convalescence from, diphtheria and other diseases is due to an affection of the vagus and how much to myocarditis. At present, the weight of evidence is that the myocarditis is the important factor and that the affection of the vagus plays a subordinate part.

Treatment. — The most important method of treatment of myocarditis and myocardial insufficiency is rest, not only after their development, but as a prophylactic measure. Rest must be as absolute as possible and must be continued, not only as long as symptoms persist, but for some time longer. The necessity of absolute rest and the dangers of any exertion cannot be overestimated. Alcohol is useless in this condition unless as a food. In large doses, it undoubtedly does harm. Strychnia helps some. Digitalis cannot act on a degenerated muscle. Its value depends, therefore, on how much normal muscle remains. Nitroglycerin is dangerous, as it predisposes to vasomotor paralysis.

The object of the treatment of vasomotor paralysis is to restore the tone of the blood vessels and to get the blood out of the abdominal organs into the general circulation. Alcohol and the nitrates are consequently contra-indicated. Cardiac stimulants are of but little use. Massage of the abdomen, ice to the abdomen, caffeine and adrenalin subcutaneously are most useful.

FUNCTIONAL DISORDERS OF THE HEART.

Functional disorders of the heart are very uncommon before middle childhood, but become increasingly frequent up to puberty, when they are most common. They are often due to indigestion or overstrain, especially mental. The exciting cause is occasionally tea, coffee or cigarettes. These disturbances are usually associated with other evidences of disturbed nervous equilibrium. The most common symptom is attacks of palpitation. At times, more marked symptoms, such as oppression, dyspnea or faintness, appear. The pulse is usually increased in rate and often irregular. The cardiac area and sounds are normal. The treatment is, in the main, removal of the cause. Digitalis and bromide are useful in some cases.

These disturbances, as already noted, are especially likely to appear at the time of puberty. This is probably because of the rapid growth of both body and heart at this time, that of the heart usually lagging a little behind that of the body, and the general disturbance of the nervous system. Enlargement of the area of dullness and murmurs, probably due to relative insufficiency of the mitral valve, are not infrequently added to the usual signs and symptoms. It is very important to bear this condition in mind at this age. If it is not, it is easy to mistake it for organic disease.

ANEMIC, CARDIO-PULMONARY AND VENOUS MURMURS.

It was stated for many years that, although anemic murmurs were common enough in childhood, they almost never occurred in infancy. Much doubt has been expressed recently as to this statement, especially by American authors. Personally, I feel sure that anemic murmurs are almost, if not quite, as common in infancy as at any other time. The cardio-pulmonary murmurs have already been referred to in speaking of the diagnosis of acute endocarditis.

Venous murmurs, or hums, are very common in both infancy and childhood. They are usually systolic in time but may be practically continuous. They are usually limited to the right side, being heard in the neck, at the junction of the clavicle and manubrium and along the right side of the manubrium. A possible explanation of the greater frequency on the right side is that the sound originates in the vena cava and is transmitted into the right innominate vein and its branches rather than into the left, because the right is practically a continuation of the cava, while the left leaves it at an angle. These murmurs are, as a rule, more marked in the upright position.

A murmur is often heard above or at the manubrium in infancy which has been attributed to the pressure of enlarged bronchial glands or an enlarged thymus on the innominate veins. This murmur usually disappears when the patient is recumbent, and is most marked when the head is extended. It is undoubtedly due to pressure on the innominate veins, and this pressure is certainly due in some cases to enlarged bronchial glands and in others to an enlarged thymus. The murmur can be brought out, however, in almost every infant by complete extension of the head when in the upright position. All infants certainly do not have enlarged bronchial glands or an enlarged thymus. Consequently, this sound is of no value in the diagnosis of these conditions.

ACUTE PERICARDITIS.

Acute pericarditis is very unusual in infancy, the frequency increasing directly with the age. In infancy, it is usually pyemic in origin, in early childhood secondary to inflammatory processes in the neighboring parts, and in middle and late childhood to rheumatism. It is less frequently secondary to pneumonia and more often tubercular than in later life. The tendency to effusion is greater than in adults. Owing to the nature of the exciting cause, the effusion is usually purulent in infancy, while throughout childhood there is a greater tendency for it to become purulent than in adults. A blood-tinged exudation is more common than in later life and less indicative of tuberculosis or malignancy. The effusion often forms very rapidly in childhood.

Symptomatology. — The symptoms are surprisingly latent in infancy and early childhood, and for this reason the disease is probably often overlooked. In middle and later childhood pain is often a marked symptom and is, as a rule, located in the abdomen rather than in the chest. Dyspnea is relatively more marked than in adult life. On the whole, children bear large effusions less well than adults. Tuberculous pericarditis often runs its whole course without any definite symptoms.

Physical signs. — The physical signs are, of course, essentially the same as in the adult. In infancy and early childhood, however, the diagnosis between pericardial friction sounds and endocardial murmurs is more difficult than later, partly because the friction sounds are usually softer and partly because they are often heard only in systole. The obtuse cardio-hepatic angle and the line of the right border of cardiac dullness, which is straight or a curve with the concavity to the right, are as characteristic and of as much or more importance in the diagnosis from dilatation of the heart as they are in later life. Flatness in the fifth right space extending more than 2 cm. to the right of the right border of the sternum (Rotch's sign) is most characteristic of effusion and is of more importance in the diagnosis from dilatation of the heart than any other single sign. Too much importance must not be attached to an area of dullness in the lower left back, as a similar area is sometimes found in connection with enlargement of the heart, although if the breath and voice sounds are also diminished, the presumption is in favor of effusion. There is nothing about the physical signs to show whether an effusion is serous or purulent. This can only be determined by aspiration.

Prognosis. — The prognosis of pericarditis in infancy is very grave, partly on account of the age and partly because of the etiology at this time. The immediate prognosis during childhood is not materially different from that in adult life, the tendency being toward recovery except in the purulent and septic cases. The ultimate results, however, are often serious on account of the formation of permanent adhesions and the consequent damage to the heart.

Treatment. — The treatment of pericarditis in early life is essentially the same as later. Aspirin or some other preparation of salicylic acid should be given in the rheumatic cases. Rest is all-important. Cold to the precordia is useful in most cases; heat acts better in some. The danger of depression from cold in early life must never be forgotten; its too vigorous application may do great harm. Counterirritation of the precordia, especially if carried to blistering, is, in my opinion, an unwise and useless procedure at any age. In childhood, however, it is also dangerous, in that it disturbs the child and consequently lowers his resistance, and in that local infection is likely to occur because of the child's weakened condition. Digitalis and heart stimulants are very useful. Personally, I believe in comparatively early aspiration when there is an effusion, in order to save the heart unnecessary work. I have had most success in tapping in the fifth right space about 3 ccm. from the right edge of the sternum. There is probably less danger of wounding the heart here than elsewhere. A purulent effusion demands free incision or the resection of a rib.

CHRONIC ADHESIVE PERICARDITIS.

Chronic adhesive pericarditis is far more common than is usually supposed. It is often overlooked or unsuspected, the symptoms being attributed to an affection of the myocardium or endocardium. It most often follows plastic rheumatic pericarditis, but is occasionally tubercular in origin. It is, however, not infrequently found at autopsy in children in whom there is no history of previous acute cardiac disease. The symptoms are usually more severe when the obliteration of the pericardium is associated with mediastinal and pleural adhesions.

Symptomatology. — There is nothing distinctive about the symptoms of adhesive pericarditis. These are dependent on the condition of the heart muscle rather than on direct embarrassment of the heart action from the adhesions and are, therefore, those of cardiac failure in general. Chronic adhesive pericarditis, whether simple or tubercular, does in some instances, however, cause a peculiar form of cirrhosis of the liver which will be spoken of later.

Physical signs. — The physical signs are usually most indefinite and very hard to distinguish from those of endocardial and myocardial disease. The characteristic signs, such as systolic retraction at the apex or in the back and diastolic collapse of the veins, are, in my experience, conspicuous by their absence. Examination with the x-ray, however, will sometimes show the adhesions or at least demonstrate immobility of the heart.

Cirrhosis of the liver. — Cirrhosis of the liver not infrequntly follows chronic adhesive pericarditis, especially in childhood. The pathological changes in the liver are not constant and depend to a certain extent on whether the pericarditis is simple or tubercular. Chronic changes in the pleuræ and peritoneum are usually associated. The liver is much enlarged; the spleen moderately. Ascites develops early, always before edema of the extremities, and usually without other symptoms of passive congestion. The first symptom usually noted is enlargement of the abdomen as the result of ascites. The presence of ascites in a child, associated with an enlargement of the liver and spleen, without edema or other signs of passive congestion, should always suggest this condition. If there are also signs of cardiac disease, the diagnosis is almost certain. The prognosis is, of course, bad, but the expectancy of life greater than in other forms of cirrhosis at this age. The treatment is purely symptomatic.

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The number of students in the universities of the German empire has this summer reached 51,700, an increase of about 3,000 over last winter and of 4,000 over the summer of 1908. There has been a large increase in the faculties of medicine and philosophy, and a decrease in the faculty of law. — *Science.*

Original Articles.

THE DIFFERENTIAL DIAGNOSIS OF CEREBELLAR TUMORS.*

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The problems relating to the diagnosis of intracranial tumors are matters no longer of theoretic interest only, but of urgent practical importance. This is so because in every case the question of operation, whether with a radical or a palliative object, arises, and in few conditions does success in treatment depend more closely on accuracy in diagnosis as it does here. In no condition so desperate as that of intracranial tumor have the results of treatment shown in recent years a more marked and sustained progress, and at the present time they compare by no means unfavorably with those obtained in the case of intra-abdominal tumors. In order to secure still better results improvement is necessary on the part of both the diagnostician and the operator; it is only with the former possibility that this paper is concerned. It is very rare that a physician can attain to any high degree of skill at the same time in the niceties of neurological diagnosis and in the elaborate technic of intracranial surgery, so that collaboration is usually necessary between the neurologist and the surgeon. The surgeon demands that the diagnosis be made as *accurately* as possible, so that his task is thereby simplified, and as *early* as possible, so that operation may be undertaken while the patient's general health is yet unimpaired and before the tumor has extended so far as to render hopeless the attempt at removal. Intracranial tumors are sufficiently common to make it necessary to bear them in mind as a possible diagnosis in every case of nervous disease, as is illustrated by the fact that I have myself examined sixteen cases of this nature in the past twelve months only.

In the present paper I do not propose to describe any individual cases, but shall merely offer some general remarks concerning the differential diagnosis between tumors of the cerebellum and those elsewhere in the cranial cavity, paying most attention to the difficulties that are greatest in actual practice. These remarks are mainly based on a study of some twenty cases of cerebellar tumor I have observed in the past few years. Most of them were operated on.

It will save much repetition if I first give a rapid review of the symptoms that are most characteristic of cerebellar tumor, and then consider the differential points later. I will omit the indirect signs produced by pressure of the growth on neighboring structures. The *general* symptoms of intracranial tumor are usually very pronounced when this is situated in the cerebellum. The headache, which is invariably confined to a sagittal plane, is severe, the optic neuritis is early and rapid in onset and intense in character, and the vomiting and vertigo are frequently very distressing. Beside the general feeling of giddiness and unsteadiness that may occur with any intracranial tumor we here meet with a special form of vertigo that consists in a peculiar sense of lateral rotation. On closer investigation we find that to the patient both his own body and external objects seem to be turning in the same direction — away from the side of the lesion.

The *attitude* and *gait* show the following features: The head is held in a position of lateral flexion, the ear on the side of the lesion being approximated to the corresponding shoulder; the head is drawn backwards and is also rotated so that the face looks away from the side of the lesion. These three features make up what is called the cerebellar attitude. When standing, the patient is unsteady, though more so subjectively than objectively; the unsteadiness is not appreciably increased on shutting the eyes, so that Romberg's sign is absent. The patient stands with a broad base and rests his weight chiefly on the leg of the side opposite to the lesion. There is frequently present a considerable degree of lordosis. The gait has two special features: The patient reels as if drunk and tends to stagger and fall over on to the same side as the lesion. Again, in walking towards a given point he gradually deviates from the appointed direction, describing a path that is curved, with the concavity on the side of the lesion.

The *ataxia* of cerebellar disease is peculiar in being of the dynamic variety, thus differing from the static ataxia of, for instance, tabes or peripheral neuritis. It is, in other words, a dysmetria, being due, not to a lack of precise information from the periphery, as in these diseases, but to a defect in the central regulating mechanism of co-ordination. It is, therefore, not dependent on, and, indeed, is usually unaccompanied by, any sensory changes or any diminution in acuity of the "muscle sense." The ataxia is always more marked in the upper than in the lower limb, and is usually confined to the homolateral side. It is manifested in several ways. During the performance of such an act as pointing to an object, or touching the tip of the nose, irregular incoordinate movements appear. Sometimes they have a tremor-like character, but they differ from an intention tremor, such as occurs in insular sclerosis, by not increasing towards the end of the act, and in disappearing as soon as this is completed. Indeed, a limb that is maintaining a fixed attitude, such as being held out straight, is held frequently preternaturally steady, a point to which we shall later refer. The carrying out of a complex movement frequently shows a defect that Babinski has termed "cerebellar asynergy." For instance, if the patient is told to straighten a lower limb that is flexed at both hip and knee-joints, he will extend first the leg and then the thigh, and not both simultaneously, as in the normal. Again, he is unable to carry out any rapidly reciprocating movements, a symptom known as dysdiadokokinesia. This also occurs on the same side as the lesion, so that, for instance, the patient cannot rotate his hand by the alternate movements of supination and pronation so rapidly on this side as he can on the opposite side, and he will frequently compensate for this incapacity by rotating the arm at the shoulder-joint when he is tested in this way.

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A cardinal side of cerebellar disease is *hemiparesis.* This paresis altogether differs from that produced by cerebral disease, or from that produced by interference with the pyramidal tracts. It is distinguished by being more pronounced in the trunk than in the limbs, and in the upper than in the lower limb; by never affecting the face; by being of a flaccid and not a spastic type, and by being unaccompanied by pain or any other sensory disturbance. Further, there are none of the changes in the reflexes so characteristic of pyramidal affections, such as ankle clonus, heightened activity of the deep reflexes, abolition of the abdominal reflexes, inversion of Mendel's reflex, and the appearance of Babinski's plantar sign and its allies, the " fan " sign, Oppenheim's, Schäfer's and Remak's signs. The *hypotonia* that accompanies this paresis is a highly important differential sign. It is shown by the diminished resistance to passive movements, by the flaccid feel of the muscles and the greater mobility of the joints. Special tests by which it can be revealed or estimated are: The extent to which passive hyperextension at the knee is possible (the knee-angle sign), the extent to which the seventh cervical spine descends below the level of the great trochanter when the patient tries to touch his toes without bending his knees, and by a useful test applied most conveniently with the forearm in the following way: If some one is powerfully flexing his forearm against resistance, and we suddenly remove this resistance, the forearm will flex to a certain extent and will then recoil. If cerebellar ataxia is present, then the forearm will continue to flex even to the maximum possible extent, and there will be no recoil. It is important to remember that the hypotonia of cerebellar disease differs from other forms in not being correlated with absent knee-jerks.

Of the *eye-symptoms,* three are of especial importance: nystagmus, sixth nerve weakness and skew deviation. Cerebellar nystagmus is characterized by being most marked when the patient looks towards the side of the lesion, in this respect differing from nystagmus of labyrinthine origin by being of a slow and rather coarse kind and in sometimes being more marked in the homolateral eye. It is practically always lateral in type. The paresis of the sixth nerve is an exceedingly frequent symptom; there is commonly also a dissociated paresis of the opposite internal rectus muscle so that it is weak in lateral movement of the two eyes, though not in convergence. In the latter case there may be a secondary conjugate deviation of the eyes away from the side of the lesion, a symptom of much greater significance than isolated affection of the sixth nerve. There are several kinds of skew deviation of the eyes. The commonest is the Magendie type, in which the homolateral eye looks downwards and inwards and the contralateral eye outwards and slightly upwards. It is usually a temporary phenomenon and, therefore, has carefully to be watched for.

Two general characteristics of cerebellar tumors are further worth remembering, namely, the tendency of the symptoms to progress in definitely marked-off steps, and the continual variation in the activity of the deep reflexes.

If I were asked to place the above-mentioned signs in order of their diagnostic value, I should do so as follows: First, ataxia; then the characteristic vertigo, the hypotonia, paresis, nystagmus and skew deviation. With this clinical picture in mind we may next consider some of the problems of differential diagnosis that most frequently arise.

Of *superatentorial* tumors, those that give rise to the greatest difficulty in this respect are tumors of the frontal lobe, of the optic thalamus and of the corpora quadrigemina. It is uncommon for a cerebellar tumor to be confounded with one in the parietal, temporal or occipital lobe. It can be thought to be situated in the *Rolandic area* only if the observer mistakes for an attack of *petit mal* one of the giddy spells that occur in cerebellar disease and which sometimes gravely impair consciousness. In cerebellar attacks, however, there are never any local twitchings, as there are in the Jacksonian attacks; even in the true cerebellar fit there is no clonic stage, only a tonic condition of the muscles that lasts for a variable time. The subsequent paralyses are also of a totally different kind in the two affections.

A *parietal* tumor may occasionally be a source of embarrassment in diagnosis. It gives rise to a lack of dexterity in the limbs, which, however, is due to an astereognosis or sometimes to sensory asymbole, and so is quite different from cerebellar ataxia. When the tumor extends far back in the parietal lobe it may produce conjugate deviation of the eyes, but in such a case there will probably be present a contralateral homonymous hemianopsia or else a mind-blindness for objects, together with evidence of visual aphasia.

Frontal tumors give rise to many symptoms resembling those of cerebellar tumors. In both cases there may be present nystagmus, conjugate deviation of the eyes, speech disturbances, unilateral tremor of the limbs, and even the so-called cerebellar attitude of the head. The conjugate deviation of the eyes in frontal tumor is, however, an irritative phenomenon, not, as in cerebellar tumor, a paralytic one, and the two can thus be readily distinguished. The speech disturbance is of a different kind, being aphemic and not dysarthric. The tremor has a different character, being very fine and rapid, and there is never present the typical cerebellar ataxia, though in making this observation care must be taken not to confuse the motor apraxia of frontal disease with the ataxia of cerebellar. Hemiparesis when present is on the opposite side and is of the cerebral type, with spasticity and the characteristic changes in the reflexes. Symptoms, such as anosmia, apraxia, bitemporal hemianopsia, agraphia and motor aphasia, may occur that are never found with cerebellar tumor; such as the typical gait, forced vertigo, hypotonia, lordosis and skew deviation of the eyes, are not found in cases of frontal tumor.

Tumors of the *optic thalamus* can very easily be mistaken for cerebellar tumors, and a case well illustrating this fact was recently reported by Dr. Heggie and myself to the Ontario Academy of Medicine. The hemiparesis is slight, and still more striking is the fact that it is hypotonic. Vertigo and the cerebellar attitude of the head may occur, and further, the involuntary irregular movements that constitute a cardinal sign of thalamic lesions are sometimes very hard to distinguish from cerebellar ataxia. However, with tumors of the thalamus there are always pronounced sensory changes, particularly loss of deep sensation, and marked irritative symptoms, such as pain and paresthesia. Implication of the third nerve nucleus is common, most often manifesting itself as a bilateral mydriasis. Further, in all the cases of thalamic disease so far reported, there has been some implication, however slight, of the motor part of the internal capsule, so that changes in the reflexes indicative of a pyramidal affection are present. In the resulting hemiparesis the facial muscles are affected in a peculiar way, in that mimetic movements are more paralyzed than volitional ones.

It is sometimes impossible to distinguish a tumor of the *corpora quadrigemina* from one of the cerebellum. A few points of value are that the deafness is an early symptom and not a late one, as in cerebellar disease; that it is on the side opposite to the tumor; that the affection of the third nerve, causing most often external ophthalmoplegia, is one of the first signs that hemianopia may occur, and that the ataxia and tremor are frequently bilateral. Paresis when present is frequently bilateral, and is always spastic, being due to implication of the pyramidal tracts.

The difficulties of distinguishing cerebellar tumors from other *subtentorial* tumors are even greater than in the case of supratentorial ones, and here accuracy in localization is of vital importance because on it depends the operability of the case. Tumors of the *pons* and *medulla* are relatively easy to distinguish. The optic neuritis is late in appearing and the general symptoms are not pronounced. Vertigo and ataxia may occur, but not of the cerebellar variety. The sphincters are frequently affected, and there are often vasomotor and respiratory disturbances. The paralysis may be on one or both sides of the body, but is always spastic and is accompanied by evidences of affection of the pyramidal tract, such as Babinski's plantar sign, etc. The lower cranial nerves are always affected, and in very characteristic ways. The paralysis of them is intense and permanent and is often bilateral. The nerves affected are grouped according to anatomical features. Bilateral paralysis of conjugate movements of the eye is a frequent symptom, but not skew deviation or typical nystagmus. When the lowest group of cranial nerves is implicated, then there will be present a crossed paralysis of one of the four recognized types, named after Avellis, Hughlings Jackson, Schmidt and Tapia, respectively. The speech disorder cannot be told from that found with cerebellar disease.

Tumors of the angle between the pons and cerebellum, called the *cerebello-pontine angle*, are hardest to distinguish from cerebellar tumors. It is an important diagnosis to make, for, as Frazier has well shown, the route of operation should be quite different in the two cases. Thanks to the observation of Holmes, Stewart and Weisenberg, we are now in a position to make the diagnosis in the majority of cases. Tumors of the cerebello-pontine angle are of two kinds. They grow either from the pia covering the under surface of the cerebellum, or more often from one of the middle group of the nerves in the posterior fossa, usually the eighth. They are most often fibromata, frequently with myxomatous degeneration, but sarcomata and endotheliomata are also met with here. They tend to press more on the middle peduncle of the cerebellum than on the pons, and hence clinically resemble cerebellar tumors more closely than pontine ones. The most important sign of tumors of the cerebello-pontine angle is the early and intense affection of cranial nerves. The seventh and eighth nerves are practically always paralyzed, and frequently also the fifth, sixth and tenth. When the tumor presses on the cerebellum or its peduncle, then typical cerebellar ataxia and gait, homolateral paresis and hypotonia will occur. The paresis and hypotonia are, however, only very slight. A contralateral paresis due to pressure on the pyramidal tracts is common; this will, of course, be spastic and will show the charasteristic changes in the reflexes, such as Babinski's sign, etc. When this spastic hemiplegia is present the patient will in standing rest his weight on the homolateral leg, and not, as in cerebellar tumor, on the contralateral. Two other valuable signs may be mentioned. *First*, a coarse tremor is frequently present in the homolateral arm when it is held out horizontally, whereas, as was mentioned above, this arm is held preternaturally steady in cerebellar tumor provided no hydrocephalus is present. *Secondly*, the feeling of subjective rotation is towards the side of the lesion, whereas in cerebellar tumor it is towards the opposite side.

Before concluding, I might add a few remarks on the important practical question of how to determine the side of the lesion once its site in the cerebellum is known. This is a matter that frequently causes considerable embarrassment, but the following points are of service in helping one to decide. The general rule is that every symptom of cerebellar tumor is either confined to, or most marked on, the same side as the lesion, but there are several fallacies of observation that have carefully to be guarded against. For instance, the patient as a rule tends to deviate towards the side of the lesion when asked to walk towards a given point. Later in the course of the disease, however, he becomes aware of this tendency and tries to counterbalance it. In so doing he advances with the shoulder on that side higher than and in front of its fellow, and we are thus able to detect the process. It may often be observed that on good days he actually over-compensates this defect and deviates towards the opposite side, a fact that easily leads to a false conclusion, whereas on bad days he deviates towards the side of the lesion. Again, although the symptoms of cerebellar tumor are as a rule paralytic in nature, yet occasionally they may be irritative and will then be in the reverse direction. The cerebellar attitude of the head is notoriously misleading in this respect, for when it is due to irritation the head is in the opposite position to the one that was described above in this connection. A similar remark applies to the direction of the skew deviation of the eyes. Further, the increase of general intracranial pressure that is so great in these cases may give rise to false localizing signs that are frequently on the opposite side to the lesion. As is well known, the paralysis of the sixth nerve is particularly unreliable in this respect, and I have several times seen it occur on the opposite side to the tumor. The signs on which one can most rely to determine the side of the lesion are as follows: The ataxia, hypotonia and cerebellar paresis are invariably most marked on, and often confined to, the side of the tumor. The movements of the nystagmus are slower and have a wider range in the direction of the lesion than in the opposite direction. The homolateral arm is held extended more steadily than the contralateral one. Lastly, when the patient is rotated in a chair and the movement is suddenly stopped, the sense of subjective rotation is less intense and the succeeding eye deviation and nystagmus are less marked when the chair has been rotated towards the affected side than towards the other. Here, however, as elsewhere in localization diagnoses, care should be taken not to lay excessive stress on any single symptom, but to attach different standards of value to the different symptoms and then to make a diagnosis on the general clinical picture present.

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WORK FOR PATIENTS AS AN IMMEDIATE AND ULTIMATE THERAPEUTIC FACTOR.*

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The therepeutic aim at a sanatorium conducted primarily for the working classes should be the restoration of its patients to a working capacity. To this end every effort must be made to increase the resistance of the patient to the tuberculous virus, which resistance has become broken down from physical exhaustion.

Rest, relative or absolute, is essential at the beginning of treatment, and when, through rest in the open air, good nursing care and proper nourishment, the exhausted vital forces have been restored, the temperature and pulse-rate have assumed a normal level, and proper digestion and assimilation of food have been established, the matter of exercise is to be properly considered.

The immediate value of exercise is first the production of a certain amount of auto-tuberculinization or inoculation of the patient with his own tuberculin, as has been indicated by the studies of Wright and Freeman, and as has been so beautifully demonstrated by the work of A. C. Inman in the cases of those patients doing graduated labor at the Brompton Hospital Sanatorium. By a study of the opsonic index, he has shown that "this exercise has supplied the stimulus needed to induce artificial inoculation and that its systematic graduation has regulated this in point of time and amount."

Quite similar conclusions have been reached by Rothschild, who states that "tuberculin stored up in the vicinity of the diseased focus may be transferred to the blood by systematic measured movements, and in this way an artificial exaltation of the opsonic content of the blood may be secured; by intelligent arrangement of work and rest periods, endogenous auto-tuberculinization may be made therapeutically available."

By supervising and carefully regulating the daily exercise, it is possible to gradually increase the activities of the patient without producing an over-reaction or dangerous elimination of tuberculin, with its accompanying symptoms of rise of temperature and pulse-rate, pain in the head or limbs, or malaise.

So long as exercise is unattended with any symptoms, and without fatigue, it can be safely increased from day to day until an exercise capacity approximating normal has been reached.

The successful therapeutic application of exercise presupposes a certain amount of intelligent co-operation on the part of the patient, as well as vigilant medical supervision, in this respect, however, differing in no way from the application of any therapeutic measure.

By the term "exercise," I mean to include all forms of bodily activity, beginning with simply walking, and increasing to the doing of several hours' work daily.

Another immediate therapeutic effect of exercise is the overcoming of the ennui — the mental and physical torpor that is so pernicious an accompaniment of the "rest cure."

Patients accustomed to arduous labor at first complain bitterly of the enforced rest during the early weeks of their sanatorium residence, — an indolence which is at first endured, but finally embraced with such tenacity as to engender an indolent habit of life difficult to slough off, and conducive to the development of a parasitic existence or to the pauperization of the patient.

Systematic work is a great aid to the maintenance of that proper spirit of self-reliance and self-help so essential to recovery.

Work is also of value in limiting muscular atrophy consequent upon lack of exercise, and maintaining proper tone in both voluntary and involuntary muscular systems.

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The general nutrition, digestion of food and action of the bowels are all benefited by proper work and exercise.

At the sanatorium at Rutland, a system of work has been in operation for several years. It was started for economic reasons, the patients being expected to do a certain amount of work in consideration of the small weekly payment demanded, and it was believed that by thus employing patients, the per capita cost could be materially diminished.

All patients on admission enter a receiving ward where they remain under careful observation for a varying period. During the first week, no exercise is allowed, the day being spent quietly upon the veranda and the pulse and temperature taken by the nurse at 8 A.M., 1.30 and 7 P.M.

All patients whose temperature is 100° F. or over are kept in bed, and those with a temperature of 99.6° F. are restricted to the verandas without exercise. After the first week, if the temperature is normal, a short walk is prescribed, limited to ten or fifteen minutes once or twice a day, and if this is not followed by a rise of temperature, the amount of exercise is gradually increased until the patient is exercising an hour twice daily. All patients who can exercise to this extent without symptoms are expected to work from half an hour to two hours daily. The work allotted to them is the making of beds, care of the wards, wiping the woodwork with damp cloths, carrying trays, serving lunches, picking up about the lawns and walks, running a lawn mower, etc. The lighter work is first given to the patients, and the heavier work, such as carrying trays and running the lawn mower, is given after they have demonstrated their ability to do the light work without reaction. The number of patients at present doing this grade of work is one hundred and thirty-two, or 38% of the whole number under treatment.

After a residence of at least one month, patients who are without means and have shown their fitness for work by doing the above tasks without physical disturbance are allowed to work for their board, doing four to four and one-half hours' work daily. This work consists of doing many of the above-mentioned things, but for a longer time; waiting on tables, working about the hennery, doing clerical work or working as orderlies and attendants on the wards. At the present time, forty-seven out of a population of three hundred and forty-five are working four and one-half hours daily. Some degree of work is being done by 51% of the patients. After doing this work for a time, some are discharged as patients and engaged as regular employees, working eight to nine hours daily as orderlies, nurses, waiters, clerks or about the grounds. In this way we have recruited a large part of the working force of our paid employees. At the present time, ex-patients are employed in the following capacities: Physician, pharmacist, bacteriologist, laboratory helper, stenographer, bookkeeper, clerks; telephone operators, nurses, attendants, orderlies, waiters, diet kitchen girls; driver, supervisor of grounds, laborer on grounds; carpenter and painters; storekeeper and helpers. In all, about ninety-six ex-patients are thus employed in or about the sanatorium. Those who remain as employees continue to a very large extent the routine which they have learned as patients. They have a rest hour during the day, retire early, and in other ways conserve their energy to a greater degree than they can or do who return to their homes and former occupation.

Although the work at Rutland is all done under medical supervision, and the effects are watched by the physicians and the work stopped or modified if symptoms of reaction occur, it has never been conducted as systematically or the supervision given so painstaking and thorough as that of the work done under Dr. Patterson, of Frimley. We are at present attempting some work along the lines formulated and so successfully carried out by him, but our experience is yet too small to show results. In spite of the imperfections of the system employed, I believe it has demonstrated its value as a therapeutic measure to a greater extent than as an economic measure.

Reactions frequently occur, necessitating the temporary discontinuance of the work assigned, and a lessening of the amount of work or a change in its character is followed by renewed improvement.

The patients watch carefully their pulse and temperature throughout their sanatorium residence, and any change in these, or the appearance of a pleurisy, streaked sputum or other symptoms is at once reported to the physician, and the patient is taken from the working list.

It is surprising how much even patients with advanced pulmonary disease can do without ill effect and even with a noticeable improvement, both in the physical signs and in their general condition, so long as the work is done systematically under good environment and without stress.

From time to time, we find certain patients having slight physical signs of pulmonary disease, but who have a persistent, slight elevation of temperature — a temperature running from 99.5 to 100 at midday or in the evening — and which continues in spite of the prolonged rest and general improvement. These patients are, as a rule, of a nervous temperament, and the febrile condition appears to have a nervous foundation. Such patients often lose their afternoon temperature when put upon light exercise or work which seems to afford an outlet for their nervous energy, and to restore their temperature equilibrium.

The ultimate results of exercise seem to me to be well exemplified by the subsequent history of those patients who worked while in the sanatorium and also played ball on the team, which for several years has been a feature of Rultand.

The rather strenuous exercise in which these patients indulged, in addition to their work, afforded a pretty severe test of their physical condition.

During the last five years, twenty-seven patients were allowed to play on the ball team. All these men were working four and one-half hours and their exercise was not restricted. They were picked men, selected from the daily average population of one hundred and eighty men. All had been under observation and sanatorium treatment for several weeks or months and had been worked up to this amount of exercise gradually. The disease was incipient in twelve and moderately advanced in fifteen.

Their condition on discharge from the sanatorium was as follows:

Apparently cured,	3
Arrested,	11
Improved,	13

Average duration of residence, eight months.

The subsequent history of these men showed that twenty-two, or 81.4%, are to-day doing full-time work, two are working part of the time but have had relapses, and three are dead. Of the latter, two resumed intemperate habits after leaving the sanatorium, and their early death was directly traceable to dissipation. One had a relapse after returning to work and died of a pulmonary hemorrhage.

The positions of pitcher and catcher have been filled by men hired from the outside during the last two years, it having been found by experience that the physical exertion in these positions was too severe for the patients or ex-patients. The excitement attending a game is perhaps often a greater strain upon the player than the physical exertion involved, but with the exception of the pitchers I have been unable to learn that the course of the disease might have been unfavorably influenced by this exercise. These data cover the last five years only. Information concerning those who played during the preceding five years is not as complete, but I have the names of forty-one men who played ball during this period, 71% of whom are alive and in good condition to-day. Most of the twelve who are now dead left the sanatorium in good condition and lived an average of four years after discharge.

It is rather significant that nearly every man who pitched ball in the early years has died, though almost without exception in good condition on discharge.

The above facts are given, not in advocacy of baseball as a therapeutic agent, but simply to show that, in selected cases, pretty strenuous exercise can be allowed with safety and even with advantage to the patient in hardening him and building up his resistance. Aside from its effect upon those patients who play, a vast amount of good accrues to all of the patients who can attend the games, by reason of the diversion and relief from the routine monotony which it affords.

I have also traced the subsequent history of another group of thirty patients who worked four and one-half hours during their sanatorium residence, and who have now been discharged three or four years. The list was taken from the record of those who worked for board during 1905 and the first month of 1906 without selection of good or elimination of poor cases. They were classified as follows:

Incipient,	12
Moderately advanced,	13
Advanced,	5

The condition on discharge:

Apparently cured,	6
Arrested,	7
Improved,	17

At the present time, 21, or 70%, are doing regular full-time work daily; 5, or 16.6%, are not working because of relapses; 4, or 13.3%, are dead; 1 was not traced. The latter was an incipient case, discharged apparently cured four years ago. For comparison, I put these figures

TABLE I.

RECORD OF TWENTY-SEVEN PATIENTS WHO WORKED AND PLAYED BASEBALL WHILE IN THE SANATORIUM.

	Admitted.	Discharged.	Stage of Disease.	Condition on Discharge.	Present Occupation.
1	May 20, 1904	May 20, 1905	Incipient	Improved	Driving meat wagon
2	March 23, 1904	Jan. 26, 1905	M. A.	,,	Bell boy
3	Dec. 31, 1904	Aug. 21, 1905	Incipient	,,	Pool room
4	June 13, 1905	Aug. 29, 1905	M. A.	,,	Delivery wagon
5	Jan. 1, 1907	Nov. 19, 1907	Incipient	App. cured	Book bindery
6	Aug. 3, 1906	July 19, 1907	,,	Improved	Driving wagon
7	June 29, 1908	Oct. 24, 1908	M. A.	Arrested	Clerk, shoe store
8	Oct. 30, 1906	Nov. 1, 1907	,,	Improved	Harvard College library
9	April 27, 1906	Oct. 18, 1906	,,	,,	Ball player
10	Feb. 21, 1906	Sept. 1, 1906	,,	Arrested	Helper on team
11	March 16, 1904	July 27, 1904	Incipient	,,	Letter carrier
12	Jan. 1, 1906	May 3, 1906	,,	,,	Broker's office
13	Aug. 25, 1905	May 3, 1906	M. A.	,,	Hack driver
14	Feb. 12, 1906	Feb. 21, 1907	,,	Improved	Orderly, sanatorium
15	March 5, 1906	March 7, 1907	Incipient	Arrested	Waiter, sanatorium
16	Sept. 10, 1906	Sept. 11, 1907	M. A.	Improved	Waiter, sanatorium
17	Oct. 5, 1904	Oct. 5, 1905	,,	,,	Clerk, sanatorium
18	Dec. 7, 1903	Dec. 6, 1904	,,	,,	Dead
19	July 30, 1906	July 30, 1907	,,	,,	Dead
20	Dec. 30, 1905	Oct. 1, 1906	,,	,,	Motorman, N. Y.
21	Sept. 17, 1904	April 1, 1905	,,	,,	Dead
22	Dec. 16, 1907	April 11, 1908	Incipient	Arrested	Waiter, sanatorium
23	May 5, 1908	Sept. 1, 1908	,,	App. cured	Carpenter work
24	July 14, 1908	Nov. 7, 1908	,,	Arrested	Freight conductor
25	March 19, 1908	June 22, 1908	,,	,,	Jewelry factory
26	Feb. 4, 1908	June 29, 1908	,,	,,	Jewelry factory
27	April 20, 1908	Jan. 20, 1909	M. A.	App. cured	Forestry school

opposite the subsequent history record of all of those discharged during the same year, 1905, and whom we have been able to trace. We have the subsequent history of 365 patients discharged in 1905. Of this number, 56% are now working. Of 25 board-working patients discharged during the same period, 68% are now working.

Although the comparison is hardly fair, in that the workers are picked ones, yet I think the figures help to demonstrate the ultimate result of work in building up the resistance of the patient, which is likewise attested by the satisfactory service which we receive from a large number of ex-patients in the employ of the sanatorium. Relapses among them are comparatively infrequent, and they are, as a whole, as robust in appearance as the employees of any institution.

Success in the therapeutic application of labor cannot be obtained without system and careful supervision. There must be the freest coöperation between physician and patient. The latter is generally too optimistic, over-estimating his capacity for exercising, especially during the first weeks of treatment and before he has become habituated to the routine. He must be held with a tight rein during these early days, and as a rule his progress will be in direct ratio to his faithfulness to orders. Obedience, supervision and graduation must be the watchwords.

The tendency of the "rest cure" is to make dependants of our patients, but by carefully prescribed and graduated labor we can return a greater number to their homes independent and self-supporting citizens.

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STUDIES IN PSYCHOPATHOLOGY.

The Psychotherapeutic Value of the Hypnoidal State.

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(Continued from No. 8, p. 247.)

II.

From this general discussion about the nature of the hypnoidal state, we may turn now to a brief review of some of the cases treated by hypnoidization. Before, however, I proceed with the account of the cases, I wish to have one point specially clear, namely, that I do not claim the hypnoidal state as the panacea for all psychopathic diseases. I certainly do not wish to leave this wrong impression on the mind of the medical reader. The hypnoidal state is but one of the many important psychotherapeutic agencies. The fundamental methods and principles of psychotherapeutics I shall develop elsewhere. The object of this paper is necessarily limited, inasmuch as its purpose is to treat of the hypnoidal state and of the place of hypnoidization in the domain of psychotherapeutics. Having made this precaution, I may now turn to the cases. The cases are given in a brief, general outline. The details, the genetic development and analysis are omitted.

I. Mr. M. G. Irish. Age thirty-eight. Married. Occupation, liquor dealer. Father living, well. Mother died of pneumonia when at the age of forty. Brother and sister died of some obscure form of "heart trouble." Physical condition is good. Patient has no appetite, worries, has no confidence in himself, is full of indecision and fear of anything "new"; he is extremely methodical, things must be arranged in certain order, otherwise he feels uneasy and quite unhappy. Has no headaches, but suffers from insomnia. Does not drink, but smokes excessively. Sexual life normal. Has been very sensitive and nervous from his very childhood. He broods very much over his incapacity of spelling. Has been lately working very hard on a new business intrusted to his care. He doubts his business capacities and fears to ruin the business. He became greatly depressed, had to give up his work and go to the country, but with no beneficial results.

The patient was brought to me in a state of deep despondency, close on the brink of suicide. He could not be hypnotized. I put him then into a slight hypnoidal state and kept him in a state of relaxation for fifteen minutes. When he came out of it he felt "a little better, but not much." After two weeks' treatment the patient felt so far improved that I advised him to return to his work while his treatment was being continued. Gradually his despondency gave way; his fears, worries and doubts disappeared, while confidence in himself became strengthened. Patient declared he felt well, — "never felt so well" before. The treatment covered a period of three months. It is now more than two years since the completion of the cure, the patient continues to stay well and carries on his business with far more energy than before.

II. Miss P. R. Age twenty-three. American. Mother is very nervous, "hysterical." Sister high strung. Patient was "sensitive" when young, but was well otherwise. Her present trouble began some three years ago. She suffers from constipation, nausea, vomiting, dizziness, dysmenorrhea. Eyes ache occasionally and are relieved by glasses. Suffers from numbness in extremities and great fatigue. Attention is good but her mental state is one of indecision and from fear of meeting people. At the age of eighteen she fell in love with a young man to whom she became engaged. A year later the engagement was broken off under very distressing circumstances. Since then the present symptoms have gradually developed.

The patient expected to be hypnotized, but she could not go into hypnosis. The hypnoidal state was then tried. At first the hypnoidal state was very brief in duration, the patient being very restless, but as I persisted, the hypnoidal state became prolonged, with gradually increasing beneficial effects.

III. A. C. Age forty-seven. Actor, married. No special diseases in the family but "family rather nervous." Claims to be very imaginative; when about the age of ten, grandfather gave him "Faust" to read. Since then has been troubled with the idea of selling his soul to Satan. Was very religious in his childhood, prayed much, was afraid of sins and suffered from nightmares. About fifteen years ago had syphilis and was treated for it for a period of two years. He led a very gay life up to the age of thirty-two. Seven years ago, when about the age of forty, he suddenly felt something snap in his brain and he became very frightened over it. He thought it was paresis or tabes, as so many actors suffer from those diseases. This fright, however, soon wore off. A month later, after a strenuous and fatiguing series of plays, he went to sleep rather exhausted and woke up at night with the idea of paresis and intense fear. He had been overconscientious in his childhood and was possessed by fear of sin. " It has now all come back." He thinks now of his sins in boyhood, of masturbation, deception, blasphemy, but the fear of paresis is uppermost in his mind. A great number of insistent ideas can be traced by the patient to his early childhood. He suffers from anorexia, indigestion, choking, vomiting, gagging, eructation and gastralgia. He is obsessed by the fear of parasyphilitic diseases, tabes and paresis, the symptoms of which are reflected in his attacks.

In the hypnoidal state he became quieted, much of the depression was gone. In addition to other information obtained, which, though interesting from a psychopathological standpoint, space does not permit to give here, I obtained the fact that the last attack and outburst of the mental trouble was occasioned by watching a friend of his, an actor, suffering from gastric crises of tabes. A few treatments by hypnoidization improved his condition and he has since returned to his occupation.

IV. B. P. Boy seventeen years of age. Family history is good. Up to the age of twelve was well. After that he changed in character, became irascible, deceptive in his dealings with people, careless in his social relations, contradicted and even abused occasionally his relatives and treated his mother with disrespect. All power of concentration of attention seemed to have gone, — at least he claimed so. " My head begins to whirl and my eyes darken when I get hold of a book and try to think long." The boy probably exaggerated his condition, but he was tested in various ways by different physicians and educators and his attention was found to be wandering. The boy was otherwise quite intelligent. He became associated with idle boys, learned to smoke and acquired other bad habits. About the age of fourteen, he met with an accident from a cannon cracker, which knocked him down unconscious and nearly destroyed his eyesight. The family and physicians made a good deal of stock out of the accident.

The treatment of the case is quite complicated and would take too much space to elucidate it here. I can only say that the hypnoidal state has been utilized in this case with great advantage. Besides the therapeutic power of the hypnoidal state, the subconscious reserve nervous energy comes into play, while many of the other psychotherapeutic methods become enhanced in their efficiency when utilized in the subwaking hypnoidal condition.

V. Mrs. F. T. Age twenty-seven. American. Family history good. Patient is emaciated, pale and anemic; pulse is irregular; there is accentuation of second aortic; otherwise heart is in good condition; urine has no albumen. Menstruation is normal, occasionally painful and scanty. She was well when a child, but was delicate and frail. She studied hard in one of the local academies and got a fair education. In the provincial town where she lived things were quiet and patient's life was rather uneventful up to the time of her marriage, about the age of twenty-two. She was then suddenly transferred from a quiet environment right into the turmoil and whirl of life. The young couple had hard struggle for the bare necessities of life; at the same time the family responsibilities and social duties were heavy, exacting and distasteful. This told on the patient and she began to brood, became gloomy, depressed, lost her appetite, began to suffer from restless sleep accompanied with bad dreams and nightmares, complained of anorexia, indigestion, nausea, retching, headaches and dysmenorrhea. Darkness began to gather around her and she began to feel as if she was hemmed in by dark shadows which haunted her day and night. Her dreams were full of the same "indefinable shadows which have gotten a grip on her life and sucked out the essence of her soul." She used to wake with those shadows crowding on her from all sides. The patient, in short, was obsessed by a fear of shadows. She was tired at the least exertion, could not concentrate her mind, had no self control, no will-power to decide anything, life was a burden.

Hypnosis could not be induced, patient was treated by hypnoidization. The physical and mental conditions began to improve rapidly. All the gloom and shadows fled. The fatigue, the headaches, the digestive and menstrual disturbances were gone, and at the end of four months she recovered her health and cheerfulness and gained 23 lb. in weight. It is now more than three years since the treatment is completed; patient continues in excellent condition.

VI. Miss E. F. Age twenty-five. American of Irish descent. Family history is good. Physical condition is good; menstruation normal. She was well up to the age of seventeen, when during the winter she had a very severe attack of the grippe. At the same time she had some love affair of an unpleasant character. She became gloomy and suffered from insomnia. It happened that a lady, a neighbor of theirs, became insane. The idea then came to the patient's mind that she too might become insane. Filthy words enter her mind and she feels as if she " is getting crazy." Another source of worry is her nose, which seems to her not to be shapely enough. She feels greatly depressed and life is a burden to her. She has frightful nightmares, dreams of dead people, especially of the insane woman. At day time she keeps on thinking of the insane woman.

A prolonged stay in the hypnoidal state made the patient feel happy immediately after the very first treatment. The effect wore off after a day. A few more treatments made patient feel well and comfortable.

VII. J. R. Male. American. Age twenty-eight. Family history as far as it could be ascertained is good. Occupation, artist. He has strong homosexual tendencies. The sexual instinct for women is completely absent. A big man with immense hips is his ideal of sexual desire. His mind is full of images of males in various lascivious postures. The images disturb him very much, so that he cannot carry on his work. When he comes in contact with men of the same inclinations he becomes greatly excited. In his dreams he sees men who excite him and respond to his sexual passions. His mental and physical conditions are otherwise quite good and he is doing work which is regarded to be of high grade. He is very intelligent and sociable.

In the hypnoidal state it came to light that at the age of fifteen he carried on a love affair with a roommate of his with whom he slept in the same bed. He always liked to play with boys, and if possible sleep with them in the same room. This he succeeded to accomplish a number of times. Far, far away back in his childhood, perhaps at the age of six, he was influenced by a big coachman who induced him to carry out homosexual practices. It was the aspect of that coachman that became with the patient the main object of his sexual passions. This incident was always hovering in his mind, although he did not remember it so distinctly as in the hypnoidal state.

A series of treatment by means of the hypnoidal state completely relieved the patient of his homosexual passions. The patient was not long enough under treatment to cultivate his degenerated or rather rudimentary normal sexual instinct. This gave rise to some unpleasant complications, into which I cannot enter here. The patient was, however, entirely freed from his homosexuality.

VIII. H. R. Male. Age twenty-six. Occupation, engineer. Father suffers from heart trouble; mother died of some tubercular affection. Patient was operated for hydrocele and tubercular testicle some five years ago. He feels physically and mentally well, but is possessed by homosexuality. He can trace the homosexuality to his fourteenth year. It is not, however, the homosexual desires that trouble him, as they are rather weak; it is rather the absence of the heterosexuality that worries him, as he wants to get married and lead a good family life. He loves little ones and wishes to have some of his own. The patient appeared to me extraordinarily kind-hearted and his case was very pathetic. Any attempt on the part of the patient to cultivate heterosexuality meets with complete failure. He has no desire for women; in fact, he even experiences a dislike for them. He masturbates occasionally. The images which fill his imagination during the act of masturbation are entirely of a homosexual character.

The treatment was rather of short duration, about a few weeks in all, and the hypnoidal state could not be prolonged sufficiently to enable me to penetrate into the patient's subconscious life and trace the origin and development of the homosexuality. The hypnoidal stage, however, enabled me to free him from his homosexuality and to arouse in him an interest for the other sex.

IX. Mrs. T. D. Age forty-five. American. Married. Father well. Mother died of some unknown disease at the age of twenty-five. One sister very nervous, the other died of tuberculosis. Patient was a precocious child and extremely nervous. About the age of fourteen had typhoid fever; began to menstruate about the age of thirteen. At the age of sixteen entered a millinery store and at twenty become a modiste. The patient must have been a very beautiful girl, as traces of her former unusual beauty could still be seen. She was then strong, healthy, vivacious and enjoyed life. She had many admirers and finally got married at the age of twenty-five. After a few years of married life she became very nervous, restless, suffered from headache, backache, constipation and loss of appetite. She lost flesh, — from 145 she went down to 120 lb. Menopause set in at the age of forty-two. She has been for some time under the care of a physician and has improved a little. She did not come to me, however, for her physical troubles, as she found that they really were of little consequence. "The whole trouble is mental. If you could only help me, I would make a clean breast of it. It has come now to a point that I need help."

The whole trouble lies in her family life. She has no children and is disappointed in her husband, whose character she strongly dislikes. Sexual relations have been normal, but the incompatibility of character has become emphasized with years. Recently she met a young married man with whom she fell violently in love which she thinks is reciprocated. She is conscious that the whole thing is foolish, sentimental; moreover, the man is unworthy, but the passion is an obsession and she finds it hard to master it. She needs help to get rid of that obsession. "Life is not worth living." The patient is deeply depressed. She was quieted by a little talk and then put into the relaxation characteristic of the hypnoidal state. At first she was restless and fidgety, but she gradually became quiet and relaxed. When she came out of the hypnoidal state she was more quiet, composed and felt more self-control After a few treatments, the patient felt considerably better, fixed idea or insistent emotion lost its grip and she regained her self possession.

X. Mrs. B. F. Age thirty-eight. American. Occupation, physician. Patient comes of neuropathic stock. Both parents were highly neurotic. One of the brothers committed suicide. As a child, patient was very sensitive and nervous, suffered from various fears. At the age of eight she had a bad fall, with unconsciousness. As a young girl she worked hard, but felt very well. The first period after marriage was happy, but then had a miscarriage which brought her down in health. Her nervous condition became aggravated by the suicide of her brother. Patient occasionally experiences illusions and hallucinations of memory and of recognition, a condition which she thinks she has inherited from her mother, who has gone through similar experiences.

When I first saw the patient she was in great emotional excitement. She cannot eat, cannot sleep and is in agony. Wants to commit suicide. The mother-in-law tortures her, alienates her husband's love, intends to separate him from her. The evil eye of the mother-in-law "hypnotizes" her, patient "becomes transfixed and paralyzed by that gaze." Her will power is gone, her personality is fast disappearing under the baneful eye of the mother-in-law. Nothing but death is left to her.

The patient was quieted and then put into hypnoidal state with its characteristic relaxation. After the first treatment, patient felt somewhat relieved of that intense strain in which she was. After a few treatments by hypnoidization, she felt much better, "felt perfectly normal," "was herself again," was ready to meet the exigencies of life no matter how unpleasant they might prove to be. At the close of the treatment, patient regards her insistent desire to talk of herself as foolish and ridiculous; she realizes that she has magnified trifles, that she has misconstrued the relations of her husband to herself, that he really loves and is devoted to her as much as ever. Her emotional tone now is one of great peace and repose, she has a good appetite, sleeps well, has no dreams and has gained six pounds.

XI. Mrs. S. D. Age thirty-two. American. Married. Family history shows neurosis. Masturbated early and for a number of years. She is very religious, is depressed on account of her sins. Suffers from insomnia, lassitude, great fatigue, crying spells, gastralgia, loss of appetite, vomiting, heart burn. She is suggestible, capricious, irritable, sensitive, suspicious, suffers from morbid introspection, indecision and doubts. Likes routine; anything new frightens her. Always dissatisfied with life, becomes easily depressed and complains of all kinds of pain.

Treated by the hypnoidal state the patient improved considerably. No cure, however, could be effected as the patient's psychopathic condition was unfortunately kept up by the complicated unfavorable family life and by the sexual impotence of her husband.

XII. Miss D. M. Age forty-three. Family history good. Patient was well until a year ago, when menstruation became irregular and menopause set in. Patient suffers from backache, occasionally from intense pain around the sacral and coccygeal region and the back of pelvis. The pain shoots up the back of right and left sides; patient faints from dizziness. Some physician told her it was due to hemorrhage into the kidneys. She is nervous, restless, has lost her appetite, suffers from indigestion and from insomnia. A few months ago she happened to fall down from a car and since then she is afraid to board a car or to walk upstairs.

The patient was but a short time under treatment, so that there was no time to follow the case closely, but she improved rapidly under the treatment by hypnoidization.

XIII. Mrs. C. K. Age forty-five. Family history good. Children are all well. A year ago, at the oncome of climacteric period, patient became nervous, sleepless, lost her appetite, had flushes and flashes of light, suffered from headaches and worried a good deal. She is very religious and is mortified by her unholy thoughts, she curses and blasphemes the Creator in her mind, and all kinds of filthy ideas trouble her, especially when she prays. She is in agony of fear; feels she is a lost soul. "God will not pardon such obscene, outrageous blasphemies on his holy name." Patient is despondent, feels greatly depressed and is unable to do anything, cannot do her housework and has lost interest in her family. She is indifferent to her friends and refuses all social intercourse. She keeps on brooding and is full of despair.

It took me some time to gain her confidnece. It was at first difficult to keep her quiet and have her relaxed. After a few treatments by hypnoidization, improvement set in rapidly and she is now in excellent condition.

XIV. Miss A. W. Age thirty-five. Irish housekeeper. Patient is well nourished. Physical condition is good; menstruation is normal and painless. Occasionally she suffers from headache, but on the whole headaches do not trouble her. She suffers much from auditory hallucinations and thinks she is possessed by demons. From her ninth year she suffers from hearing spirit-voices which sometimes tell her very unpleasant things. Along with the hallucinations she also has attacks of automatic speech. Occasionally the automatic speech becomes uncontrollable. It appears to the patient as if some other being forces her to tell what she thinks. It is on that account that she shuns society. Her family in Ireland, being aware of her trouble, thought it was demoniacal possession. Occasionally she has visual hallucinations of angels and saints.

It would take too much space to give a full account of this interesting case; we can only refer to it in its main outlines, as our object here is not so much the psychopathological as the psychotherapeutic aspect of the cases.

The patient could not be hypnotized, but she went easily into the hypnoidal state. At first the improvement was rather slight. In fact, now and then the hallucinations and the automatic speech became even more frequent and more annoying than before. After a couple of months of treatment, the outlook began to be somewhat brighter, the auditory and visual hallucinations began to give way, the automatic speech considerably diminished and became more controllable. After a few months' treatment by hypnoidization, all the symptoms completely disappeared.

XV. Mrs. M. R. Age thirty-eight. American. Married. Family history good, children well. Patient is pale, looks worried, nervous, has little appetite and suffers from insomnia. Suffers from headaches, pneumatosis, pyrosis, eructations, has attacks of vomiting. Menstruation is scanty, irregular and painful. When about the age of nine, she met with an accident, — she fell out of a carriage and was unconscious; about the age of twelve, she had an accident with a runaway horse. Since that time she has the greatest terror to ride in a carriage, but enjoys much automobiling. She also has an uncontrollable fear of dogs. When a child, she was attacked by a dog and then heard and read a good deal about hydrophobia. In fact, after she was bitten by the dog, the sensations she experienced in the throat seemed to her to be hydrophobia. The fear of dogs occasionally sets in as an attack and comes to the surface of her consciousness during states of extreme fatigue. She especially suffered from it during pregnancy. Many of the details of the accidents were revealed in the hypnoidal state, although she had a general knowledge of them during her ordinary condition and was painfully conscious of them during many of the attacks. A number of details became subconscious and were disclosed during the hypnoidal stage. A series of treatment by hypnoidization greatly relieved the distressing symptoms, but the treatment was not continued long enough to obtain permanent results.

XVI. Mr. C. B. Age thirty-nine. Single. Russian. Builder. Father died of apoplexy at the age of seventy-two. Mother is seventy-seventy years old, but has always been nervous. Brothers and sisters are all well. Patient is rather undersized, about 5 ft. 2½ in., and weighs about 97 lbs. He looks emaciated, anemic, cachectic. Has no appetite; suffers from indigestion, nausea, gastralgia. Anything unpleasent makes him feel nauseated. Detailed inquiry of patient's sexual life discloses no abnormalities. All those symptoms set on about twelve years ago when patient had an attack of gonorrhea of which he was greatly frightened and kept on worrying about its consequences. He suffered then a good deal from nausea, which afterwards persisted. The feeling of nausea became exacerbated with his father's death. Patient is extremely introspective and suggestible in regard to sickness. If any of his family happen to have some trouble, he is sure to be sick with the same symptoms. Thus, about two months ago, the patient's mother fell and broke her left arm. Patient began to feel pain in the left arm and had to be treated for it. He tells me that every new moon he experiences irritation in rectum and around the anus. This he kept up from his boyhood and was due to the fact that about the time of the new moon his mother, in her old-fashioned superstitious way, used to administer to him a purgative.

Put in the hypnoidal state, patient felt much relieved. The beneficial results of the hypnoidal treatment became manifest at the end of a few weeks.

III.

Before we proceed with our cases it may be well to point out a few of the most important characteristics of the patients who are by their mental makeup specially subject to the influence of the hypnoidal state. The patients are intensely self-conscious, introspective and critical. Their personal consciousness is constantly on the alert; they are untiringly on the watch, and it is nigh impossible to bring about in them a condition of distraction and complete concentration of attention on one object. Their mind is ceaselessly hovering on the margin of the personal field of consciousness just where the dissociation occurs requisite for the hypnotic state. Not that it is impossible to put them into hypnosis, as some psychopathologists claim. With the exception of the hopelessly insane and the idiots, we are not justified to say that a person cannot possibly be hypnotized. There is some period in everybody's life when conditions, external and internal, combine so that the person formerly inaccessible to hypnosis becomes susceptible to it. In my experience of many years with hypnosis I know of cases of subjects who apparently resisted all attempts at hypnotization who, nevertheless, after long untiring efforts, finally became hypnotized; in fact, they went into a deep somnambulic state with hallucinations and transformation of personality. On the other hand, I have cases of subjects and patients who at first could be put into a deep somnambulic state with transformation of personality and even with formation of many personalities, having all the earmarks of multiple personality, and who, after a few years, lost all susceptibility to hypnosis.

Janet, who still clings to his master's views, claims that suggestibility and hypnosis are convertible or rather identical and that they belong to hysteria. He created a separate clinical entity, psychasthenia, which, according to him, is not hysteria and is not subject to hypnosis with its symptom suggestibility characteristic of hysteria. Granted, for the sake of argument, that suggestibility is the grand symptom of hysteria, can we assert that suggestibility is the sole attribute of hysteria? Do we not find suggestibility present in most of subconscious states, and especially in hypnosis? Of course this difficulty is obviated by the arbitrary assumption, as Janet does, namely, that hypnosis itself is but a symptom of hysteria. This, however, is only begging the question. All the facts go to prove the other way. On the one hand, though the so-called hysterical may be suggestible, suggestibility does not mean hysteria; on the other hand, while the hysterical may be hypnotized, the hypnotic subject can by no means be regarded as a hysterical patient. The Salpêtrière school and Janet have come to such a one-sided conclusion, because they work with hysterical patients and not with normal subjects.

Babinski, Thomas and others may be right in defining an hysterical symptom as "one that can be produced by suggestion and removed by suggestion-persuasion." Does that mean that a hypnotized subject is hysterical? Even if we assume the correctness of the statement that every hysterical is suggestible and hypnotizable, have we established the converse proposition that every suggestible and hypnotizable subject is hysterical? Every man is a living being, but is it true that every living being is a man? In fact we cannot even say that every hysterical can be hypnotized, nor does the consensus of psychopathologists maintain that all the symptoms can be cured by persuasion-suggestion. What about suggestibility itself, the fundamental trait of the hysterical; can that, too, be cured by persuasion-suggestion?

What is meant by suggestibility as the mark of hysteria is not so much suggestibility in general, but rather heightened suggestibility, and that not in its transient and momentary form as observed in hypnosis, but in its permanent or rather to say stable form. Suggestibility, as I have pointed out many years ago in my "Psychology of Suggestion," depends on the activity of the subconscious when dissociated from the personal controlling consciousness. Not in every person can this dissociation take place at any time, but it can occur some time in his life history. In some persons there is a relatively great plasticity of neural activity, and such dissociation may easily take place. Given, however, the proper conditions, external and internal, favorable to mental dissociation, temporary though it may be, and hypnosis will be sure to come on in any person. Not every person who comes in contact with tubercle bacilli becomes tubercular, but every one may and can become tubercular if his constitution is run down, if he lives under bad sanitary and hygienic circumstances and if the conditions are favorable to the growth and development of bacilli disseminated in great quantities by tubercular patients. Every one may become hypnotized; it is simply a matter of circumstances, conditions and predisposition. We have no more right to affirm that only the hysterical patient can become hypnotized and that he who gets hypnotized is for the time being hysterical than to generalize that every hysterical is tubercular, or that every tubercular patient is hysterical. There are hysterical patients who cannot be hypnotized, and there is a great number of hypnotic subjects who are by no means hysterical.

The more I think over the matter, the more I am impressed with the fact that it would be far better for the scientific progress of psychopathology or abnormal psychology if we were less given to coining terms for mythological, clinical entities. After all, instead of devoting time and energy to conceptual fictions of artificial classifications, such as hysteria and psycho-asthenia, is it not far more profitable and far more scientific to study our facts, to closely investigate the various cases on their own merits? When science is in its theological or mythological stage its principle is the *logos* or *Am Anfang war das Wort*, but when science reaches its positive stage its principle is pragma, *Am Anfang war der That*, as Goethe puts it.

We may now return to the hypnoidal state. What sort of cases fall within the domain of the psychotherapeutic treatment by the hypnoidal state? I may say that all cases of a psychopathic character admit of treatment by hypnoidization. This, however, is too broad a statement, as the hypnotic state is far more powerful and attains its end in a shorter time than the hypnoidal state. In those cases, therefore, where hypnosis can be used, it should by all means be employed. There is, however, a far larger number of cases where hypnosis is not quite easy to induce, either on account of the patient himself or on account of unfavorable external circumstances. In such cases, and they form the vast majority of psychopathic cases, the hypnoidal state is of the utmost importance from a diagnostic, psychopathological and therapeutic standpoint. In short, hypnosis is limited, while the hypnoidal state, being widespread in the animal world, is readily induced, not only in man, but also in animals.

The problem, therefore, is not what sort of cases fall within the domain of hypnoidization, but what sort of cases do not admit of hypnosis on account of the difficulty and lack of favorable conditions to induce it? Evidently it is such cases that do not have the conditions favorable for the induction of abnormal suggestion characteristic of the hypnotic state. In the same work I have pointed out that the conditions of abnormal suggestibility are as follows: (1) Fixation of attention; (2)

monotony; (3) limitation of voluntary movements; (4) limitation of the field of consciousness; (5) inhibition.

Patients, therefore, who are so situated as not to comply with the conditions of abnormal suggestibility will be difficult to hypnotize. Patients whose attention is weak, fluctuating and wandering, who cannot sustain any interest in a subject without changing it immediately; patients with diffused attention, such as idiots, imbeciles, are not favorable for subjects hypnotization. On the other hand, patients whose personal attention is fixed and rigid on systematized delusions, fixed ideas, imperative concepts or on any other well-organized system of ideas permeated by a strong emotion, patients who are intensely conscious of their troubles and pay minute attention to the slightest symptoms so that their attention is confined to a narrow, limited region, their ideas and concepts are fixed, their mental and emotional activities run in well-defined grooves which resist efforts at variations,— such patients are hard to put into a hypnotic state. The whole mental makeup has, in such patients, not only lost its plasticity, but is militantly aggressive, so to say, against all changes, the dominant mental systems having gained undue control over the personal consciousness of the individual. The attention is already bound in one definite direction, in the direction of the predominant systems which admit of no inhibition. Thus fixation of attention and inhibition, the two important conditions requisite for abnormal suggestibility, are here at a disadvantage or completely absent. Hypnosis, therefore, becomes more and more difficult in such cases. Patients with a shifting attention, as well as patients with a more or less rigidly fixed attention, are usually poor hypnotic subjects and are specially benefited by the hypnoidal state. Patients with insistent moods of a depressing character, with a fixed tendency to worry, to inspect the minutiæ of feelings hovering in the background of consciousness; patients who take delight in self-analysis, in watching their symptoms, who never can elate enough on the various delicate shades of their feelings and experiences; patients whose focal consciousness seems always to hover with a feeling of luxury on the periphery of mental life,— such patients are often the despair of the physician who can avail himself of the hypnoidal state specially adapted for such cases. The hypnoidal state may not be as striking and sensational in its manifestations as hypnosis, but it is a powerful instrument in psychopathology and psychotherapeutics and is effective just where hypnosis fails.

It is advisable to give an account of a few more typical cases so as to form an adequate idea of the classes of cases in which hypnoidization may be used effectively.

(To be continued.)

Sanatorium Opens. — A new State Sanatorium for Tuberculosis at Roanoke Red Sulphur Springs, Va., was opened to receive patients July 16. — *Jour. Am. Med. Asso.*

Clinical Department.

PREGNANCY, UTERINE MYOMATA AND PERITONITIS.

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ASSISTED BY
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Some four years ago (June 10, 1905), I was asked by Dr. Eaton, of Winchester, to see with him a middle-aged woman, seriously ill, five days after giving birth to a healthy child, in a normal confinement. The woman had led a laborious life and was the mother of eight children, all of whom had came into the world without undue travail on her part. She was a robust person, forty-three years of age.

Two years before I saw this patient, —that is to say, in 1903, immediately after the birth of her seventh child, — her physician told her that she had a small tumor of the womb, which should be removed before another pregnancy. Disregarding his advice, she found herself again pregnant in due course; and in the third month of her pregnancy, seven months before my visit, she consulted her physician again. Again he found the tumor, then about the size of a closed fist, and closely connected with the outer wall of the uterus. He advised the removal of the growth by abdominal section, even though the operation should interrupt the pregnancy. Again the patient disregarded his advice. She went on safely to a successful labor at full term, as we have seen. In her labor she was attended by a midwife only, who expressed the placenta.

Then trouble began. The lochia, at first abundant, in three days became scanty and foul. The patient was restless, hot and "feverish," and was tormented by an intolerable thirst. Most noticeable of all, her abdomen began on the first day to swell, and the swelling increased without interruption, while absolute constipation prevailed, without the passage of flatus even, and in spite of the energetic use of cathartics and enemata.

On the fourth day after her confinement, she began to vomit. She was vomiting twenty-four hours later when I saw her for the first time. Further, there was abdominal pain, associated with distention, pain steady, increasing, localized, radiating from the region of the navel. Such were the conditions described to me.

When I reached the woman I found her looking sick, with peritoneal facies and the general aspect of one near death. She lay on her back with her knees drawn up and her abdomen greatly swollen, the navel being flush with the abdominal wall. Her belly was highly tympanitic, except in the left lower quadrant, where indistinctly a mass might be felt, — a mass extending to the median line and half way to the navel, — altogether about the size of an infant's head. The patient's temperature was 100.2°, her pulse 130, respiration 35 and the leucocyte count 14,000.

Here was a woman obviously in an advanced stage of diffuse peritonitis, five days after labor, and with the story of having a myoma of the womb. I had her carried at once to the Massachusetts General Hospital, where I operated upon her.

Before her belly was opened, a large amount of foul, fecal-like fluid was washed out of the patient's stomach. The condition of the abdominal cavity was interesting. It contained several pints of evil-smelling, bloody fluid. The heavy omentum showed as a gangrenous mass, but on investigation this apparently gangrenous material was found to be disorganized blood clot, beneath which lay the omentum intact. The intestines were greatly distended. After exposing properly the pelvis, I found it partly filled by a tumor about the size and shape of a boy's flat cap — dark red, sloughing, overlain by disorganized blood clot, not movable, attached firmly to the fundus of the subinvoluted uterus, of which it formed an integral part.

The rest of the operation was easy and obvious, and, as the patient's strength held good, the work was done without special anxiety. I shelled out the mass — a sloughing myoma — from the fundus; myomectomy; washed out the belly with a hot saline douche; fastened the wounded fundus of the uterus against the abdominal wall (ventrofixation), and closed the belly, with a gauze wick to the uterus and a rubber tube to the depths of the pelvis. The patient in a fair condition was then put to bed, her pulse but 130, and though she gave us some anxiety for two or three days, eventually she made a surprisingly good recovery and left the hospital well at the end of a month.

Here was a case, interesting from various points of view, not the least being that the patient recovered promptly from a diffuse peritonitis and without the use of those continuous rectal infusions which now we use with satisfaction.

A few days since I asked one of my friends, a gynecologist, if he knew how commonly post-partum abdominal sepsis is due to the sloughing of *intramural* fibromyomata. "Oh, yes," he told me, "it's common enough; I had two such cases last year in my own practice."

The reply did not answer my question, and, such as it was, it proved to be untrue. He had had no such cases in his own practice. His were cases of *submucous* myomata, sloughing polyps, and there was no resulting abdominal sepsis.

Fibromyomata uteri and pregnancy often coexist, however, and the patient who harbors a uterus thus burdened has to face certain definite risks which must often be met by the vigorous action of a surgeon.

Myomata in a pregnant uterus are sources of far greater danger than are myomata in a uterus non-pregnant, and for this fundamental reason: myomata take part in the physiological changes of the organ in which they lie. As the pregnant uterus enlarges, and as its components hypertrophy, so do the elements in the tumor enlarge and hypertrophy. At the same time the blood supply of the uterus and the myoma is enormously increased.

Conversely, and after parturition, as the uterus shrinks, so does the tumor shrink. Curiously enough, in the case of an enlarging uterus, the changes taking place in the walls tend to mask the distinction between the three common types of myomata, — interstitial, subserous and submucous, — inasmuch as the two last types often assume the interstitial form. A well-known writer, Veit, tells of watching the change. His case was one of a distinctly subserous sessile "fibroid," which became so stretched and flattened during pregnancy that it ceased to protrude beyond the surface of the uterus, and became clearly interstitial, so far as Veit could determine. In that case, after the birth of the child, the tumor again protruded beyond the surface of the uterus, and, as a "subserous" growth, was removed.

Such an interesting change during pregnancy in the relation of the uterine wall to the tumor is due in part, perhaps, to the increased pressure from within the uterus, but more especially to the stretching of the uterine wall and of the tumor, and to the rearrangement of their fibers. Along with the changed relation of uterine wall to tumor, there goes the alteration of blood supply in the two structures, uterus and tumor, inasmuch as each expands during pregnancy and contracts after parturition. The changes in the blood supply are great, — great during the nine months of the expanding period, but startling and abrupt after the emptying of the uterus and its consequent and rapid shrinking during involution. That involution time is a critical time for the myomata. They may suffer severely for a period and may die for lack of nourishment. This is the time, consequently, when a necrosis of the tumor is most likely to occur. Rarely a necrosis, due to increased vascularity and hemorrhage, may occur during the course of a pregnancy.

After parturition, in most cases, the fibroid, which has grown large with pregnancy, will atrophy, and rarely, with the diminishing blood supply, it will disappear even, only to reappear with the next pregnancy. Again, as I have said, with the cutting off of the blood supply, it may slough and set up a dangerous peritonitis.

The sloughing of a uterine myoma is not uncommon, even in the absence of pregnancy, when the tumor is pedunculated and either submucous or, more rarely, subserous; but the sloughing of an intramural myoma is extraordinarily rare, and, when it does occur, is due to an immediately antecedent parturition.

In this brief paper I discuss but one phase of the great subject, *pregnancy complicated by fibromyomata* — the post-partum phase. Other writers have little to say of sloughing intramural fibroids. We have studied the records and are interested to find that "fibroids and pregnancy" have been discussed seldom in the past fifteen years, though "the literature" previous to 1890 is full of the subject. Most of the articles on "fibroids and pregnancy" deal with post-partum hemorrhage as a complication, and speak of the extrusion of the tumor (polyp) after labor. Cases are reported in which myomectomy was done during the pregnancy, and without a resulting miscarriage, and rupture of a fibroid-laden uterus during pregnancy is detailed. We read of twisted pedicles and the sloughing of subserous myomata also, with consequent peritonitis, but we do not find cases of peritonitis due to necrosis of an intramural tumor. Nevertheless, such necrosis must be added to our list of dangers, when we consider "fibroids and pregnancy." Especially is it the duty of the physician to see to it that the woman with a fibroid be delivered of her tumor before pregnancy occurs, and if she do become pregnant while carrying the fibroid, that the tumor be removed promptly. If the tumor is found before the woman has passed her third month of pregnancy, the safe course is to remove it, taking the chance that a miscarriage may not follow, — a miscarriage the best of the evils which threaten.

If the early months have passed, however, the surgeon must wait until after the completion of the pregnancy before operating, and he must wait with the reasonable assurance that nature will accommodate herself to the strange conditions and will accomplish the birth of a living child. After the childbirth, however, for at least ten days, the surgeon must watch sharply the convalescence and must be prepared to operate should symptoms of an intra-abdominal infection arise.

All of us are familiar with the sloughing polyp and with the necrotic and sloughing subserous myoma, but the lesson in the case I report here is that an *intramural* myoma may become a serious menace to life after all thought of danger from it is passed. The patient appears to suffer from a severe childbed fever and drifts quickly into a state of alarming sepsis, while the peritoneum becomes rapidly and profoundly involved, and, with symptoms simulating those of acute intestinal obstruction. Death impends.

Distinguish the disease from the ordinary forms of puerperal septicemia.

Peritonitis from the sloughing myoma may be met and cured by prompt abdominal section, and by removal of the fetid mass, and drainage. The ordinary puerperal septicemia is more resistant to treatment, and is far more likely to result in death.

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Reports of Societies.

THE AMERICAN GYNECOLOGICAL SOCIETY.

Thirty-Fourth Annual Meeting, celebrating the Centennial of McDowell's Operation, held in New York City, April 20, 21 and 22, 1909.

(Concluded from No. 8, p. 263.)

THE TRAINED OR THE UNTRAINED ANESTHETIST.

Dr. Hunter Robb, of Cleveland, Ohio, tentatively proposed the following suggestions: (1) That a skilled anesthetist, holding an appointment in the medical school as one of the faculty, and in the hospital as one of the staff, be appointed at a proper salary to teach and demonstrate the administration of anesthetics, and to personally administer them to the private patients and to those in the general wards who were in a debilitated condition. (2) That in connection with a carefully prepared course of lectures on anesthetics and their physiological action, each student should be required to administer anesthetics to dogs or other animals a certain number of times. (3) That the lecturer next take the students the rounds of the operating rooms and point out to them the details in connection with the service, and the points to observe in giving an anesthetic to the human being. (4) That each student should be detailed to give the anesthetic at a certain number of operations under the guidance and criticism of the instructor, or one of his more advanced students. In this way we could be assured that all of them would have at least a fair amount of general experience. (5) That the senior, instead of the junior interne, be detailed to administer the anesthetic, as he would have had an opportunity of following and also of assisting in the administration of the anesthetic in a considerable number of cases by the time he had reached the position of senior assistant.

The author did not present this as a detailed plan, but in order to give an outline which could be developed according to the various conditions which existed in the different hospitals.

Dr. Robert L. Dickinson, of Brooklyn, N. Y., detailed his experience with visiting anesthetists in some Brooklyn hospitals.

IMPROVED METHODS OF OBTAINING ANESTHESIA IN HOSPITAL PRACTICE.

Dr. J. Clarence Webster, of Chicago, said that the routine administration of ether, as practiced in America, was to be condemned because of unpleasant or dangerous sequelæ. His method consisted in administering nitrous oxide gas with oxygen (2%) until the patient was unconscious, then ether until complete anesthesia was obtained. The latter was then abandoned, and the operation was performed under the influence of the nitrous oxide gas and oxygen mixture. This might or might not be followed by pure oxygen for twenty minutes. This method meant greater safety and fewer unpleasant or serious after-results. Local anesthesia should also have a more important place in practice, and should supersede general anesthesia in certain cases.

A general discussion followed the symposium. All of those who took part in it expressed themselves as being fully convinced of the great need of having more expert anesthetists in America.

CONSERVATISM IN SURGERY OF THE PELVIC ORGANS.

Dr. Herman J. Boldt, of New York, said that the exsection of a part of an ovary, the seat of small cystic degeneration, or the puncturing of the small cysts, did not deserve the name of conservative surgery, because the small cystic degeneration was without significance.

Plastic surgery on suppurating Fallopian tubes was considered as bad surgical judgment rather than as conservative surgery, because the patients upon whom such a procedure was undertaken were not cured by it.

The removal of a pedunculated subperitoneal myoma should not be considered conservative. It was only a common-sense procedure. Good judgment must be used in interstitial multiple myomata, and in multiple subperitoneal myomata, if the latter had attained to more than 4 or 5 cm. in diameter. To retain the uterus in such cases was conservative surgery. It was also conservative surgery to retain the whole or a part of the uterus in cases of an abscess in the uterus. A case of the latter class was related in which about one third of the uterus had been removed and the woman subsequently conceived and was delivered at term.

In cases of ovarian tumors, an attempt should always be made to regain functionating ovarian stroma from the base of the tumor. In all cases of doubtful character of the tumor, a frozen section of it should be made, if possible, by the pathologist of the hospital, and his report on the character of the tumor be obtained before the abdomen was closed. The operation had been done forty-five times in cases of bilateral tumors during the past twenty years, and, with one exception, there had been no occasion to regret the procedure. The menstrual function had been retained in all patients; some had conceived and were delivered at term.

Two specimens were presented to elucidate the technic.

REMOTE RESULTS OF OVARIOTOMY.

Professor Hofmeier, of Wurzburg, Germany, read this paper, in which he said that in Group 1, retention cysts, fibroids, dermoids, pseudomucin-cystoma, with the exception of carcinoma, ovariotomy in all sorts of tumors of this group, gave excellent results. The danger of secondary affection of the other ovary did not exist. The danger of a later spontaneous (idiopathic) affection was very slight. Therefore, the removal of the one diseased ovary would be sufficient. With reference to the slight possibility of secondary implantations of the pseudomucin-cystomata, special precaution during the operation was required. If there was a suspicion of carcinomatous degeneration of the removed tumor, the removal of the other ovary, which seemed to be healthy, was not absolutely necessary in younger women. In case of illness, as shown by microscopical examination, relapse would surely follow in spite of the removal. In case it was healthy, a cure was possible by leaving it. In every single case, younger women or their nearest relations should be consulted and notice of their wishes should be taken. Operation should be attempted in all cases where removal of the ovary or ovaries seemed to be possible. The resection of a beginning growth of the second ovary was only allowed in cases of retention cysts, fibroids or dermoids. Of pseudomucin-cystomata, it was only allowed if the patient was ready to risk a second operation later; it was absolutely forbidden in case of carcinoma.

In Group 2, comprising cystoma serosum papillare, pseudomyxoma, sarcoma, teratoma, complete cure was possible, especially for papillomata and pseudomyxomata, even when bilaterally developed; also for unilateral sarcoma and teratoma. If on thorough microscopic examination the second ovary seemed to be healthy, it might be left, as the removal of both ovaries was very detrimental to the general health of younger women, and as the danger of a spontaneous attack of the secondary ovary was not very great. The state of the ovary, however, must necessarily be controlled for several years. If both ovaries were diseased, they must be completely removed with the uterus. Resection of such a tumor from the ovary was not allowable.

SURGICAL TREATMENT OF DYSMENORRHEA AND STERILITY IN WOMEN.

Prof. Samuel Pozzi, of Paris, France, read a paper on this subject, describing in great detail an operation for the relief of dysmenorrhea and the cure of sterility, and thus far he had not experienced a single failure. After this operation cervical metritis due to stenosis rapidly disappeared, including leucorrhea. As regarded sterility, in more than 25% of his cases pregnancy followed the operation, the women going to term without any accident, and their labors were normal. Rigidity of the cervix was not to be feared, for there was no cicatricial tissue as occurred after some amputations of the cervix.

POST-OPERATIVE PERITONEAL ADHESIONS.

Dr. George Gellhorn, of St. Louis, Mo., read a paper on this subject, detailing experimental studies of post-operative peritoneal adhesions. In summing up his experimental studies on the subject and trying to utilize them for practical purposes, he suggested that the multitude of causes of post-operative adhesions would also necessitate a multitude of preventive measures, and that, therefore, the following precautions should be considered, either wholly or in part: (1) All prophylactic measures mentioned in connection with primary adhesions. (2) Bier's hyperemia in the form of dry heat. (3) Hypodermic injection of fibrolysin or thiosinamin. (4) Drainage with the liquor of aluminum acetate after certain vaginal operations. (5) Prompt provocation of peristalsis by hypodermic injection of physostigmin, together with improvement of the passive mobility of the intestines by means of mucilage. (6) Interposition of lanoline, provided further experiments will prove its harmlessness to the human organism and efficacy as to the prevention of adhesions.

SIGNIFICANCE OF PERITONEAL ADHESIONS FOLLOWING OPERATIONS.

Dr. Henry T. Byford, of Chicago, said that operations which led to the production of adhesions were either imperfectly or improperly performed. Extensive adhesions following poorly performed operations sometimes caused more suffering than was felt before. He illustrated this by cases from his records which showed serious conditions were sometimes due to post-operative adhesions of limited extent, and might be relieved by their separation. Also that the mere separation of adhesions about diseased organs might lead to a cure of the symptoms, and that when the original causes of the adhesions were removed, the secondary adhesions that followed a properly-performed operation were less extensive and less permanent. When post-operative adhesions were intestinal in character, muscular exercise and intestinal activity tended to relieve them without the aid of operation. Omental adhesions caused less immediate trouble, but the omentum had not the power of separating itself as had the small intestines. They acted by interfering with the functions of the organs to which the omentum was attached, and by dragging upon the stomach and colon, causing or perpetrating gastroptosis and dilatation of the stomach.

The prevention of these post-operative adhesions was not to be attained by any one procedure or remedial agent, but by a properly executed technic.

INTESTINAL AND OMENTAL ADHESIONS.

Dr. John G. Clark, of Philadelphia, discussed the anatomical and pathological factors concerned in the promotion of adhesions, and described some hitherto overlooked points in the technic which led to this sequel. He likewise spoke of the frequency of post-operative adhesions and discussed their treatment,

Dr. Henry C. Coe, of New York, compared the present with the former after-results of laparotomy. Of seventy to seventy-five patients who recovered from the operation in preseptic days, many were practically invalids for life, due to imperfect technic. Complications that are now rare were then common. Examples were given. The reasons were unskillful manipulation, infection, the use of large silk ligatures, glass drains, bad after-treatment, etc. The etiology and pathology of omental and intestinal adhesions were discussed by him. He said that opposed raw surfaces were more likely to adhere. Gauze packing and early movement of the bowels did not prevent it. There might be a localized traumatic peritonitis, as in simple cases of interval appendicitis, etc.

Medical treatment was of no avail in marked cases. It was necessary to reopen the abdomen, separate the adhesions, and cover the raw surfaces in such a manner that the adhesions would not reform.

Although humiliating to abdominal surgeons to admit it, up to this time we had no certain means of preventing the formation of adhesions in complicated cases. The introduction of foreign bodies, films, powders, etc., was foreign to the spirit of modern surgery. Early purgation was not always a prophylactic measure, and was often harmful. We could not obtain healthy peritoneal flaps when there were extensive raw surfaces. The future method of prevention of adhesions still remain to be devised.

Dr. J. Clarence Webster, of Chicago, spoke of adhesions following abdominal sections. He alluded to the faults in technic which were likely to injure the peritoneum and then lead to adhesions. In dividing the tissues with a knife or scissors, the operator should take care to bury the raw surfaces. The same procedure was demanded where adherent structures were separated, and although it was impossible to carry this out perfectly in all cases, various maneuvers may be employed, in many instances calculated to improve the condition of the parts. These were described in detail.

ILEUS.

Dr. William H. Wathen, Louisville, said that for post-operative ileus we should substitute post-operative paralytic intestinal obstruction, partial or complete, temporary or permanent. The partial or complete post-operative obstruction in the gastro-intestinal tract might be either primarily paralytic or mechanical, which, if not operated on promptly, was followed by a loss of motility, and then the symptoms were often so nearly identical that a differential diagnosis could not be made. The paralytic form might be caused, first, by violent inhibitory impulses transmitted to the muscle walls of the intestines from the central nervous system by the splanchnic nerves through the sympathetics; second, by the destruction or impairment of the neurogenic energy and the myogenic force in the walls of the intestines upon which motility and peristalsis depended, resulting from the poisonous action of bacterial enzymes from the intestines or the peritoneal cavity upon the nerves or muscles in the bowel walls, or from traumatism. Third, by the combined action of the central inhibitory splanchnic impulses, with impairment or destruction of the neurogenic energy and myogenic force in the intestines caused by bacterial poisons or traumatism.

Reference was made to the researches upon the gastro-intestinal tract bearing upon its anatomy, physiology, motility and bacteriology.

Where intestinal mechanical obstruction could be timely recognized, an immediate operation should be advised and sometimes resection of the injured bowel. Rapid work in these operations was very essential, and as little traumatism as possible to the intestines or the mesentery. In some instances enterotomy should be advised, and in others enterostomy. No food or liquid should be given by the stomach, but stomach lavage should be frequently repeated where the bowel contents have regurgitated into the stomach and not easily vomited. The patient should be placed in the semi-sitting or sitting posture and the tissues of the body supplied with water by the rectum after the fashion advised by Murphy. In some instances relatively large enemata, to which might be added a little alum or some carminative, might be used, but not repeated too often, and the bowel never over-distended. This might empty the colon, thereby removing colonic obstruction to the flow of the contents of the small bowel.

Paralytic intestinal obstruction was now relatively infrequent when compared with the results of work in the past. This was due to a better preparation of patients, to a better technic, more rapid operation, more gentle handling of the intestines and a better asepsis. Drainage should not be used where it could be avoided, but when necessary one should use the rubber split or fenestrated tube, and never use gauze, except to control the dangerous oozing of blood or to isolate an infected area. Preventive treatment was more important than the post-operative.

Dr. Howard A. Kelly, of Baltimore, discussed the mental disturbances following abdominal sections, the nature of them, their frequency, the kinds of operations that they follow, the prognosis and the treatment.

Dr. John Osborne Polak, of Brooklyn, N. Y., said that acute dilatation of the stomach as a post-operative complication occurred eight times in one thousand abdominal sections. There were two deaths in patients with low hemoglobin percentages and low red-cell counts. All patients were operated on under general anesthesia. Six had had septic processes before operation. One had previous gastroptosis. Vomiting began from twenty-four to fifty hours after operation. There was diffuse abdominal pain and thirst, with continuous and persistent regurgitant vomiting, without peritoneal irritation, which enabled one to make the diagnosis. The treatment consisted of lavage, starvation, the right lateroprone position, with Murphy irrigation and nutrient enemata.

URETERAL FISTULÆ AS SEQUELÆ OF PELVIC OPERATIONS.

Dr. John A. Sampson, Albany, N. Y., discussed certain important anatomical features of the ureters from the standpoint of ureteral fistulæ. In the first place, he spoke of their relation to the other pelvic structures, especially to the parietal peritoneum and to the uterus. He referred to the pelvic conditions in the operative treatment of which there was danger of injuring the ureter, as, for instance, extreme lateral displacement of the cervix; masses adherent to the parietal peritoneum covering the ureter; intraligamentary tumors; inflammatory exudates in the base of the broad ligament; tumors lateral to the ureter; cancer of the uterine cervix; injuries to the ureter which might result in fistulæ, such as clamping, ligation, incision, failure of repair, and interference with blood supply.

The author classified ureteral fistulæ, after which he discussed their treatment and prophylasis.

THE PATHOLOGY OF OVARIAN TUMORS.

Dr. Thomas S. Cullen, Baltimore, discussed under this head retention cysts, cystic ovaries, multilocular ovarian cysts, papillo-cystomata, carcinomata, dermoid tumors and teratomata.

THE INFLUENCE OF CORSETS AND HIGH-HEELED SHOES ON THE SYMPTOMS OF PELVIC AND STATIC DISORDERS.

Dr. Edward Reynolds and Dr. Robert W. Lovett, of Boston, said that this was a preliminary report, from the clinical and gynecological point of view only, of some of the results of experimental observations which had extended over about three and a half years, upon the general subject of the influence of attitude and proportion upon abdominal and skeletal disorders. There was a large portion of the clinical field in which the cases were either suffering from both static (orthopedic) and pelvic lesions due to a common cause, or present symptoms which might be due to either and demanded a differential diagnosis.

The experimental investigations of balance in the erect posture was a subject very difficult of investigation. The keynote to its comprehension was to be found by studying the relation of the center of gravity to the several portions of the skeleton. Certain types of figure tended to be free from ptoses and static ailments. Certain other types were inherently liable to them. The stable types of figure are but little affected by the varying types of corsets and shoes. The unstable types were greatly affected for good or evil by these articles of dress. In corsets, there were types which were always productive of evil, and types which were sometimes thoroughly desirable and productive of good. From a gynecological point of view, the effect of shoes must be considered in connection with that of corsets.

The authors exhibited photographs and presented full-sized graphic studies from living models under differing conditions.

THE BANQUET.

The notable and culminating feature of this meeting, which was one of the most successful in the history of the society, was the dinner in commemoration of the first ovariotomy by Dr. Ephraim McDowell, given at the Waldorf-Astoria by the New York and Brooklyn Fellows, Thursday evening, April 22.

Dr. J. Riddle Goffe acted as toastmaster.

The speeches were not only instructive and scholarly, but valuable historical contributions.

The toasts and speakers were: "Ephraim McDowell, the First Ovariotomist," by Dr. Lewis S. McMurtry, Louisville, Ky.; "Mrs. Crawford, a Type of American Womanhood," by Dr. Edward P. Davis, of Philadelphia; "McDowell's Successors in America," by Dr. Howard A. Kelly, of Baltimore; "McDowell's Successors in the British Empire," by Dr. Herbert R. Spencer, of London, England; "McDowell's Successors in France," by Prof. Samuel Pozzi, Paris, France; "McDowell's Successors in Germany," by Professor Hofmeier, Wurzburg, Germany.

Dr. E. C. Dudley, Chicago, exhibited lantern slides showing the home of McDowell, Mrs. Crawford before and after operation, etc.

OFFICERS.

The following officers were elected for the ensuing year: President, Dr. Edward P. Davis, Philadelphia; First Vice-President, Dr. Seth C. Gordon, Portland, Me.; Second Vice-President, Dr. Edward Reynolds, Boston; Secretary, Dr. LeRoy Broun, New York; Treasurer, Dr. H. Wesley Bovee, Washington, D. C.

Washington, D. C., was selected as the place of next meeting, in conjunction with the Congress of American Physicians and Surgeons, 1910.

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Book Reviews.

Essentials of Dietetics in Health and Disease. A Textbook for Nurses and a Practical Dietary Guide for the Household. By Amy Elizabeth Pope, author, with Anna Caroline Maxwell, of "Practical Nursing," and Instructor in Practical Nursing and Dietetics in the Presbyterian Hospital School of Nursing; Instructor in Dietetics in the Schools of Nursing of the New York Hospital, Mt. Sinai Hospital and Smith's Infirmary, Staten Island; and Mary L. Carpenter, Director of Domestic Science of the Public Schools, Saratoga Springs, N. Y. New York and London: G. P. Putnam's Sons. The Knickerbocker Press. 1908.

This volume fulfills its purpose admirably. It is concise, clear, practical and is a credit to the authors. With instruction so well arranged, it is easy to understand why American nurses are esteemed so highly throughout the world.

Bacterial Food Poisoning. A Concise Exposition of the Etiology, Bacteriology, Pathology, Symptomatology, Prophylaxis and Treatment of So-Called Ptomaine Poisoning. By Prof. Dr. A. Dieudonné, Munich. Translated and edited, with additions, by Dr. Charles Frederick Bolduan, Bacteriologist Research Laboratory, Department of Health, City of New York. Authorized translation. New York: E. B. Treat & Co. 1909.

This book gives a most satisfactory account of the poisoning of food by bacteria. It explains so clearly that bacteria and not the mysterious ptomaines are the cause of most outbreaks of food poisoning that any one reading it will be slow to give the conventional diagnosis of ptomaine poisoning again. A little more than half the volume is devoted to meat poisoning, and the balance of the text takes up poisoning through fish, mollusks, cheese, ice cream and puddings, potato and canned goods. We commend the volume to the attention of our readers.

Diet in Health and Disease. By Julius Friedenwald, M.D., Professor of Gastro-Enterology in the College of Physicians and Surgeons, Baltimore: and John Ruhräh, M.D., Professor of Diseases of Children in the College of Physicians and Surgeons, Baltimore. Third edition, thoroughly revised and enlarged. Philadelphia and London: W. B. Saunders Company. 1909.

We welcome the third edition of this very creditable book upon diet because the earlier editions have already demonstrated its worth. We do not think an enlargement of the volume, however, was necessary or even desirable. It is wearisome to read two thirds of a page upon Diet of Typhus Fever, when the first sentence of the article begins with "the diet in this disease is the same as in all acute fevers." Without detriment to the volume, the diet in typhus fever, smallpox, measles, etc., could be summarized. Nearly five pages could further be savèd by the elimination of Sir William Roberts' and Germain See's diabetic diet lists, as well as those of other last century worthies, which to-day are only of historic value. Similar pruning is advisable in the section upon Obesity. On the other hand, the introduction of Winton's Analyses of Diabetic Flours will do a world of good. Professor Von Noorden must groan in spirit in being recorded in a 1909 book as using the "following carbohydrate-free diet as a standard," namely, one in which there are "almost 200 gm. albumen (with 32 gm. nitrogen)"!

It was a most embarrassing oversight by which the section on Lithemia was not wholly rewritten. The writers would do well to ponder long on Brugsch and Schittenhelm's exposition on gout and the uric acid diathesis. One of the most excellent articles upon the subject, though undoubtedly too late for incorporation in this volume, has appeared recently in *Die Therapie der Gegenwart.*

The diet of hypersecretion could well undergo a revision, and the subject of hyperacidity be included with it. The introduction of Lenharz's suggestions for the diet in gastric ulcer is distinctly useful. We would not for a moment have the above criticisms interpreted as capable of extension to the whole volume. Far from it. The book as a whole is really a splendid contribution to modern medicine, and there are few practitioners who can afford to have it absent from their shelves.

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120 BOYLSTON STREET, BOSTON, MASS.

AMERICAN RACE PROBLEMS.

VOICES are oftentimes raised against a "mongrelizing" of our people; immigrant mixtures are feared. But Professor Boas,[1] of Columbia University, demonstrates that those of our race who, to begin with, supplanted the aboriginal Indians were not at all a pure type; the English were not, nor were the Dutch, nor the French, nor the Spaniards. There is not, practically speaking, nor has there been, indeed, for many centuries past, a pure type of people in any part of Europe. Moreover, such purity is probably undesirable. Our ancestors from across the water were all mongrelized centuries ago; with respect to every European type — except possibly the Icelanders and some inhabitants of Scotland and Wales — we have historic proof of the process of mixture. The immigrants who are now coming among us, thousands every week, are a product of such mixture. Certainly, therefore, the future continuation of the process in our country need occasion no alarm. Racial and group antipathies are sufficiently potent to prevent these mixtures attaining a rapidity greater than in the past; and as such intermixtures have never tended to degrade European nationalities, they need have no such effect here. The only difference between the present and the past lies in the greater masses of humanity here involved. Boas notes the difficulty of realizing how rapidly the intermixture of distinct types takes place if the choice of mates is left entirely to accident. He has found that where the ratio of intermingling is as 1 to 9, there will be among the more numerous population only 18 to 1,000 in the fourth generation that will be of pure blood; and where two types intermarry with equal freedom, less than one person in ten thousand in the fourth generation will be of pure descent; that is, within a century the process of intermixture in this nation should be complete.

Boas makes this very vital observation: "I can find no evidence that would corroborate the view so often expressed that the hybrid of distinct types tends to degenerate." This bears much upon the condition of our Indian wards, who are being so widely decimated by tuberculosis. Regarding this disease at least, marital unions of the white and the Indian appear to be salutary. Among the Oglalas of South Dakota, Walker[2] has found in general a very high tuberculosis death-rate. But in this tribe there is a section made up of well-educated, thrifty, mixed bloods, who live under conditions equal to that of the average white community — and possibly even better. While often victims of consumption, these people are less subject than others on the reservation to it, and when attacked live longer under treatment. Martin[3] and Hrdlicka[4] have also noted that marriage between Indians and whites tends less to tuberculosis among the offspring than among the Indian full bloods. No doubt the cleanlier habits of the whites, and the better living conditions they require, contribute to this good result.

Boas deprecates sensational predictions about group intermarriages in this country, especially since we have at present no precise knowledge about their effects anywhere. No one knows, for example, which racial types are the more fertile, or which, consequently, of the types of immigrants from southern and eastern Europe will become physically predominant among us. Here is a question which it will take a score of years to determine. Our present census reports are utterly inadequate to inform us to what extent each nationality tends to intermarry. It is in the power of Congress to remedy this defect in the next census; and we, as a profession, might well petition to this effect, or urge that the government provide otherwise for an inquiry under its auspices.

Instead of making vain and utterly unscientific forecasts, we had best wait until we have inquired somewhat into the facts about present racial intermarriages. We might then know definitely much we are now only conjecturing. For example, the proportions of intermixture; the changes, favorable or unfavorable, in the physical development of offspring; whether the proportions of the sexes alter; whether, as in the case of half breed Indians, a type taller than either parental race develops; whether the fertility of mixed blood is increased; whether our immigrants, in the second or third generation of their existence here, are not better developed than their forbears in the old countries; whether the hybrid of distinct types tends to degenerate, or, as is quite possible, to rise in the scale; the status of the American negro, whether he grows white in successive generations. Here, Boas well submits, are problems of the utmost moment, the resolution of which intimately concerns our many millions of people.

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[1] Boas, F.: Race Problems in America. Science, May 28, 1909.

[2] Walker, J. R.: Tuberculosis among the Oglala Sioux Indians in South Dakota. Second Annual Report of the National Association for the Study and Prevention of Tuberculosis.

[3] *Idem.*, Discussion.

[4] Hrdlicka: A Contribution to the Knowledge of Tuberculosis in the Indian. Southern Workman, November, 1908.

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THE IDEAL PHYSICIAN.

In the *Journal of the American Medical Association* for Aug. 14 appear two important and suggestive articles by two physicians, each distinguished as an investigator and as a teacher in his special field of medical science, presenting from somewhat different points of view the opinions of the authors as to the qualities desirable in a practitioner of medicine, and the best methods of training and testing those qualities so as to make them available for the good of the community.

Dr. W. T. Councilman, dealing with the more practical questions of state examination for license to practice in medicine, emphasizes primarily the importance of methods of diagnosis and familiarity with their use and application, and, secondly, thorough knowledge of the facts belonging to the fundamental branches of medical science, and justly considers that the public has a right to demand evidence of such familiarity and knowledge from those who are to treat disease. Just as the best way of learning how to do a thing is by doing it, so he believes the most efficient test of a candidate's ability to practice medicine is by actual clinical demonstration of his capacity to do so. In other words, he recommends the substitution of practical examination in laboratory and clinic for the written examination at present required, with the addition of written work based on the practical demonstration. He further discusses ways and means by which such a change might be effected without undue public expense or hardship to candidate or patient. The fallibility, frequent injustice and possible pernicious influence of written examinations are well known, and thoughtful friends of medical education will recognize the value of suggestions like Dr. Councilman's for better testing the fitness of medical students to practise their profession.

In a more general article relative to the ideals of medical education, Dr. Charles S. Minot describes as the essential qualities of a physician, first, the faculty of exact observation, dependent on intelligence, concentrated attention and judgment; second, intellectual endurance; and third, loyalty to occupation, to purpose and to person. Without these qualifications, or the capacity of developing them, he believes no one can become a good physician, and the chief function of a medical school he regards as the selection of those promising to show such qualities and their training to produce practitioners. The most important agent of such training he considers to be the laboratory, and as a laboratory he classes the hospital. The breadth and facile statement of his ideals make them convincing and attractive, though almost discouragingly unattainable. Doubtless he means to include under the embracing category of loyalty that cardinal quality of human sympathy, of interest, understanding and charity for even the lowest passions and frailties of mankind, of love and reverence for high courage and nobility in the individual, of personal regard and desire for service, without which the physician can be a brilliant scientist but never a good practitioner of the art of medicine.

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SUPPRESSION OF OPHTHALMIA NEONATORUM.

Soon after his appointment as director of the Division of Communicable Diseases in the New York State Health Department, the late Dr. John T. Wheeler outlined a comprehensive plan for work on the part of the department in interesting physicians throughout the state in a movement looking toward the suppression of ophthalmia neonatorum. Dr. Wheeler addressed one or two large gatherings of medical men, and succeeded in obtaining from the majority of those present a written pledge to use an efficient prophylactic in every case of childbirth. The work was interrupted for a short time by the death of Dr. Wheeler, which occurred a few months since, but was resumed as soon as possible along the lines laid down by him. Printed pledge cards were sent to the secretaries of all the county medical societies, except in New York and Kings counties, for distribution, and later individually to those physicians not enrolled in county societies. The total number of cards thus sent out by the department was 5,243, and of these, 3,148 have been returned signed. Second requests for co-operation in this work will shortly be made to all thus far failing to respond, and it is hoped that in the near future the pledge of nearly every practising physician in the state will have been secured. The pledge distributed is as follows: "The undersigned, realizing the importance of the prevention of ophthalmia neonatorum, pledges himself, in the interest of humanity, personally to adopt some approved method of prophylaxis in his obstetric practice and to use his influence to secure the co-operation of his professional associates to the same end." A gratifying feature of this campaign against preventable blindness has been the receipt of a number of letters accompanying the pledge, commending the department for having taken the work in hand, and promising co-operation in every way.

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MEDICAL NOTES.

The Philadelphia Clinic Moves into Own Quarters. — The Philadelphia Clinic for Home Treatment of Chest and Throat Diseases (Consumption) has moved from 519 South 15th Street to its new location, 2114 Lombard Street, which has recently been purchased and refitted by the Board of Trustees by means of contributions received from its many friends and patrons. Its rooms are open for the treatment of patients Mondays, Wednesdays and Fridays at 3 p.m.

Ancient Dentistry. — It is stated that dental work approximately three thousand years old has been exhibited at the International Dental Congress which is holding its sessions in Berlin. The work was taken from an Etruscan tomb and is a human jaw into which had been fitted a calf's tooth, held in place by gold. This unusual exhibit is reported as showing good workmanship in a perfect state of preservation. At this same congress an exhibit by Emperor William shows Roman forceps and dental implements of the second century.

Army Medical Corps Examinations. — The Surgeon-General of the Army announces that the War Department has appointed a permanent board to meet at Washington, D. C., for the preliminary examination of applicants for appointment in the Medical Corps of the Army in addition to the usual preliminary examination boards that are assembled at various Army posts throughout the United States from time to time. The board at Washington will probably hold its first session about Sept. 7, 1909, and on such other dates thereafter as may be designated by the Surgeon-General.

Full information concerning the examination can be procured upon application to the "Surgeon-General U. S. Army, Washington, D. C." The essential requirements to securing an invitation are that the applicant shall be a citizen of the United States, shall be *between* twenty-two and thirty years of age, a graduate of a medical school legally authorized to confer the degree of doctor of medicine, shall be of good moral character and habits and shall have had at least one year's hospital training or its equivalent in practice.

Applications for permission to take the examination may be filed with the War Department at any time. Unless the statement is made that the candidate desires to appear before the Washington board at or about a certain time, arrangements will be made to have him examined before the next board assembled in his vicinity.

BOSTON AND NEW ENGLAND.

Acute Infectious Diseases in Boston. — For the week ending at noon, Aug. 24, 1909, there were reported to the Board of Health of Boston the following cases of acute infectious diseases: Diphtheria 28, scarlatina 15, typhoid fever 15, measles 14, smallpox 0, tuberculosis 53.

The death-rate of the reported deaths for the week ending Aug. 24, 1909, was 18.08.

Boston Mortality Statistics. — The total number of deaths reported to the Board of Health for the week ending Saturday, noon, Aug. 21, 1909, was 223, against 275 the corresponding week of last year, showing a decrease of 52 deaths and making the death-rate for the week 18.67. Of this number 133 were males and 90 were females; 218 were white and 5 colored; 149 were born in the United States, 72 in foreign countries and 2 unknown; 39 were of American parentage, 156 of foreign parentage and 28 unknown. The number of cases and deaths from infectious diseases reported this week is as follows: Diphtheria, 31 cases and 1 death; scarlatina, 18 cases and 0 deaths; typhoid fever, 16 cases and 2 deaths; measles, 15 cases and 2 deaths; tuberculosis, 55 cases and 20 deaths; smallpox, 0 cases and 0 deaths. The deaths from pneumonia were 4, whooping cough 1, heart disease 19, bronchitis 0 and marasmus 5. There were 11 deaths from violent causes. The number of children who died under one year was 83; the number under five years 102. The number of persons who died over sixty years of age was 45. The deaths in public institutions were 112.

Cerebrospinal meningitis, 1 case and 1 death.

Of the above the following were non-residents: Consumption: 1 case. Diphtheria: 1 case.

Deducting deaths of non-residents, the total is 199. The corrected death-rate is then 16.66.

Bequest of Free Bed, Massachusetts General Hospital. — By the will of the late Lucius Clapp, of Randolph, Mass., the Massachusetts General Hospital receives $5,000 for the foundation of a permanent free bed.

NEW YORK.

Infection from Well. — Nothwithstanding the oft-repeated warning, the old oaken bucket yet continues to be a source of danger in some rural communities. Up to Aug. 16, twelve recent cases of typhoid fever had been traced to infection from one or two old wells at Glen Ridge, Essex County, N. J. Most of the patients are being treated at the Mountainside Hospital, Montclair.

A Centenarian. — Mrs. Sarah Boghassian, said to have been the oldest woman in Yonkers, N. Y., died at her home in that city on Aug. 16, at the age of one hundred and one years. She was a native of Constantinople and after the death of her husband, in 1860, conducted a large tobacco plantation until twelve years ago, when she removed to this country.

Births in July. — The births reported in the state during the month of July amounted to 16,214, more than double the number of deaths, and also of the births, reported in June. In July there were 915 deaths attributed to violence, of which 759 were from accident or other condition and 132 were due to suicide. Of the 759 accidental deaths, 159 were cases of drowning, 93 occurred from railroad accidents and 92 from heat and sunstroke.

Proposed Public Playground. — Plans have been completed for one of the finest public playgrounds in the world, to be located in Van Cortlandt Park, and these are now in the hands of a special committee of the Board of Estimate and Apportionment, who, it is confidently expected, will recommend the necessary appropriation. The tract purposed to be devoted to this object consists of about twenty-four acres, which are now practically waste land, as the greater portion of them is covered with a shallow swamp, constituting a breeding place for mosquitoes and marring the beauty of the park. At the present time there are at Van Cortlandt twenty-four baseball diamonds and a large number of tennis courts and cricket fields, but these are now inadequate for the crowds which frequent them. Among the features of the new playground will be five additional baseball diamonds, five handball courts and a running track 20 feet wide. Outside the track will be erected a modern fireproof grandstand capable of accommodating several thousand people, and under the latter are to be baths of all kinds, including 38 showers for the use of the athletes and players. The plans also include thoroughly equipped gymnasiums, with dressing-rooms for boys and girls. A swimming pool, 75 by 125 feet, will be constructed at the southwest corner, while at the northwest corner there will be a shallow pool, with sandy beach and bottom, for the children to wade and sail miniature yachts in. In the winter, when this pool is frozen over, it will be given over exclusively to the sport of curling. The grounds will afford plenty of space, as well, for the games and carnivals ôf school children, and one great advantage of the place will be that it is close to the Van Cortlandt subway station and thus within easy reach from both Brooklyn and Manhattan. The estimated cost of the entire work of filling in and construction is $144,000.

Current Literature.

New York Medical Journal.
Aug. 14, 1909.

1. Beck, C. *On Some Technical Difficulties in the Distention Method for Hypospadias and Other Urethral Affections.*
2. *Sluder, G. *The Anatomical and Clinical Relations of the Sphenopalatine (Meckel's) Ganglion to the Nose and its Accessory Sinuses.*
3. Kemp, R. C. *A New Container for the Preservation of a Constant Temperature of Saline Solution for Rectal Irrigation or Infusion; Applicable to Proctoclysis, Enteroclysis, Hypodermoclysis and Infusion.*
4. Miller, J. A. *Clinical Diagnosis of Pulmonary Tuberculosis.*
5. Beardsley, E. J. G. *The Presence of Tubercle Bacilli in the Urine of Tuberculous Patients; Their Significance and Dangers.*
6. Cohen, J. N. *The Analogy of Migraine to Rheumatism.*
7. Hawkins, J. A. *Some Observations on Inflammation of the Veru Montanum.*
8. Koenig, C. J. *An Error in Diagnosis Maintained by Microscopical Examination.*
9. Campbell, J. A. *An Interesting Case of Double Uterus.*

2. Sluder reports a few cases of severe neuralgic pain of the migraine type, associated with post-ethmoidal or sphenoidal sinusitis, or both. Believing that the pain was due to pressure on or infiltration of Meckel's ganglion, he made various applications (through the nose) over the sphenopalatine foramen with remarkable effect. The most satisfactory analgesic was a saturated (67%) cocaine solu-

tion, one drop of this usually being sufficient; nearly as good was a 0.4% solution of formaldehyde. He also used injections of alcohol into the sphenopalatine fossa. A case of glaucoma yielded to repeated applications of a 50% cocaine solution. [L. D. C.]

The Journal of the American Medical Association.

Aug. 14, 1909.

1. Hunt, R. *What the Individual Physician can do to Improve the Materia Medica.*
2. Minot, C. S. *Certain Ideals of Medical Education.*
3. Meltzer, S. J. *The Science of Clinical Medicine, What it Ought to be and the Men to Uphold it.*
4. *Colwell, N. P. *Need, Methods and Value of Medical College Inspection.*
5. Councilman, W. T. *Methods and Objects of State Examinations.*
6. King, H. D. *The Moving Picture Show a New Factor in Health Conditions.*
7. *Ostheimer, M. *Help the Mother Nurse the Child, A Plea to Physicians not to begin Artificial Feeding without First Trying to Help the Mother Maintain Her Milk Supply.*
8. *Hess, A. F. *Middle-Milk Mixtures.*
9. *Grulee, C. G. *Etiology and Treatment of Summer Diarrhea in Infants.*

4. Colwell's article on inspection of medical colleges is an advance along the right line and deserves further support.

7. Ostheimer adds another wise plea for physicians to help the mother nurse her baby rather than resort to artificial feeding, and suggests numerous simple practical ways in which this help can be given.

8. Hess advises the use of middle-milk, which has been proved to have a smaller bacterial percentage than top-milk, especially during the summer months and for the children of the poor.

9. Grulee believes that the summer diarrhea of infants is due more to disturbances of metabolism and decomposition of food than to infection. [E. H. R.]

The Archives of Internal Medicine.

July, 1909.

1. *White, W. C., and Van Norman, K. H. *Hyperalgesia of the Skin Overlying Active Lesions in Pulmonary Tuberculosis.*
2. *Chamberlain, W. P. *The Prevalence and Importance of Uncinariasis among Apparently Healthy Southern Bred White Men in the United States Army.*
3. *Tileston, W. *Disseminated Miliary Tuberculosis of the Skin an Important Sign in General Miliary Tuberculosis of Infancy.*
4. *Hiss, P. H., Jr. *Some Problems of Immunity and the Treatment of Infectious Diseases.*
5. *Lyons, R. *The Clot Culture in Conjunction with the Agglutination Test in Typhoid.*
6. *Friedman, J. C. *A Modification of the Sahli Butyrometric Test Meal.*
7. Kolmer, J. A. *A Study of the Blood in Pertussis.*

1. The authors find that hyperalgesia of the skin to pain, heat and cold is present over active tuberculous involvement of the lungs; that it has a very definite distribution corresponding to the limits of active involvement; that with the arrest of activity the hyperalgesia disappears; and that this hyperalgesia depends on the involvement of the lung and not of the pleura. Their results correspond to the segmental distribution of Head. The tests were made with a pin and test tubes of hot and cold water. They emphasize the fact that this hyperalgesia differs markedly from the sensation of pain or soreness on deep pressure which has been often noticed over active lesions.

2. The author finds that infection with uncinaria is very common among southern-bred soldiers during the first three years of service. In 100 men examined, 60 showed uncinariasis. Among new recruits, the percentage is at times as high as 85. Southern-bred soldiers with more than three years' service show a much lower percentage of infection, only 11% in 33 cases. The worms gradually die out, most of them during the first three years, and under the favorable sanitary conditions prevailing in the army at home, reinfection occurs rarely, if at all. The symptoms produced by a light infection are so slight that they cannot be detected by the usual methods. An eosinophile count over 5% is very strong evidence of infection with an intestinal parasite, but one below 5% is no evidence against uncinariasis. In some cases the worm probably lives several years in the intestine. Farm life is very important as a predisposing cause. Among 74 men who had farmed at some time, 81% were infected. Most of the men had gone barefoot in childhood, and over half reported having had ground itch. Southern recruits are less well developed physically than northern ones, and this underdevelopment is at least, in part, due to uncinariasis in childhood.

3. Tileston reports his observations on a specific eruption which occurs frequently in miliary tuberculosis of infants. It is seen sometimes in patients who do not show a tuberculin reaction, and when present is of greater prognostic value than the positive tuberculin reaction, which occurs in so large a percentage of children of the lower classes. The eruption in question indicates almost certainly a fatal outcome. This eruption is due to the deposit of tubercle bacilli in the skin. The bacilli reach the skin by means of the blood current. The rash consists of scattered discrete papules which at the beginning are the size of pinheads and are soon capped by tiny vesicles with cloudy or purulent contents. The vessel ruptures or dries up and its place is taken by a crust. The lesion is about 2 or 3 mm. in diameter and consists of a flat papule, only slightly elevated, of a dull red color, often glistening. The center of the lesion is marked by a sharply defined hollow. Rarely the lesions may be vesicular, but they also show the characteristic hollow. The majority of the spots occur on the buttocks, genitalia and adjacent portions of the thigh. The author reports seven cases.

4. Hiss discusses the subject of immunity, with special reference to the part played by leucocytes in defense of the organism against disease. He describes at length the results of his work in the treatment of disease with extracts of leucocytes.

5. The author believes that the clot culture method of examining the blood for typhoid bacilli should be combined with the agglutination test. The method consists in drawing the blood, allowing it to clot and, after drawing off the serum for the Widal test, planting the clot in sterilized ox-bile and incubating at 37° C. From these clot cultures the diagnosis may be made much earlier than by the Widal.

6. The author proposes a modification of the Sahli test meal, consisting of one-third condensed milk and two-thirds water, the object being to obtain a stable emulsion of fats. The author claims that it has an advantage over the Sahli meal in its constancy of composition, the ease with which it may be prepared and administered, its strong secretory stimulating powers, and the stability of the emulsion. [W. B. R.]

Surgery, Gynecology and Obstetrics.

July, 1909.

1. *Cushing, H. *A Method of Combining Exploration and Decompression for Cerebral Tumors which Prove to be Inoperable.*
2. Primrose, A. *Second Report of a Case of Blastomycosis of the Skin, with Notes on Three Additional Cases of Blastomycetic Infection.*
3. *Hutchings, W. H. *The Treatment of Tetanus by Chloretone.*
4. *Crile, G. W. *Further Observations on Transfusion with a Note on Hemolysis.*
5. *Vander Veer, A. *Thoracic Surgery: Empyema.*
6. Souchon, E. *The Preservation of Dissections of Surgical Anatomy with Permanent Color of Muscles, Vessels, Nerves and Organs by a New Method.*
7. *Moore, J. E. *The Prevention and Treatment of the Sequels of Perineal Prostatectomy.*
8. Mackenzie, K. A. J. *Resection of the Sciatic Nerve. Neuroplasty, End Results, Exhibit of Case.*
9. *Simpson, F. F. *The Choice of Time for Operation for Pelvic Inflammation of Tubal Origin.*

1. Cushing combines decompression and exploration of brain tumors by making a subtemporal osteoplastic flap and then removing from this flap a bone area, thus making

a window decompression. In this region the cortex nearly from pole to pole is explored with a thin spoon-shaped spatula through a small dural incision. The deformity is small and the danger of fungus cerebri lessened greatly.

3. Hutchings, after experimental study of the various methods of treatment in tetanus, is convinced that chloretone is the best substance that has thus far been employed to control the muscular spasms. No other virtue than the control of the spasm is claimed except that it is perfectly harmless. It has no effect on the toxin circulating in the blood nor will it break up the combination between the toxin and the nerve cells. He has treated 6 cases with 5 recoveries. It is given by mouth, if possible, diluted with whiskey, in 30-gr. doses a day. It may be given in oil by rectum.

4. Crile, in his additional notes on transfusion, emphasizes the danger, in the anemic patient, of acute dilatation of the heart, because the anemic myocardium is unequal to performing the increased burden thrown upon it by its engorgement with fresh blood. To avoid this the feet may be lowered, but not before the circulation is sufficient to avoid anemia of the brain. Rhythmic compression of the chest will aid greatly.

As regards hemolysis, it does not necessarily follow that because there is hemolysis *in vitro* there will be hemolysis *in vivo*. Crile has transfused 18 cases of tuberculosis, in most of which the donor's blood hemolyzed the recipient's blood in the test tube, but not in the patient.

5. Vander Veer believes that repeated use of the aspirator in effusions of the chest is not to be condemned so long as the fluid remains sterile and is the preferable method of treatment in malignant cases; that the use of the trocar and drainage tube is advisable after it is shown that the aspirator is no longer affording benefit; that resection of the ribs is absolutely necessary when no improvement takes place under the last method and that this operation should be done early to protect the lung from pressure and prevent adhesions.

7. Moore states that about one out of four perineal prostatectomies is a failure, because of the following complications. Impotency results and there is absolutely no cure for it. Injury to the rectum with resulting fistulæ occurs in about 3% of the cases. Stricture from extensive dissection in the perineum, and trauma to the urethra, results in many cases and may be avoided by greater care in dissecting and avoiding any unnecessary trauma to the deep urethra. Dribbling is the result of trauma to the bladder during enucleation and should be avoided. Epididymitis results from the constant use of sounds after operation, and this should be discontinued.

9. Simpson gives as his reasons from internal operation in acute pelvic inflammations of tubal origin the following: 1. The patient's margin of reserve strength is materially reduced by acute illness of bacterial origin. 2. Cardiac, hepatic or renal insufficiency are liable to occur under the anesthetic in the presence of bacterial toxins. 3. The disease properly treated medically very rarely causes death. 4. Interference with a focus of acute inflammation is likely to spread infection. 5. It is possible in the majority of cases for the patient to develop a degree of immunity which may and probably does lead to actual internal sterilization of pus. 6. The safe time to remove the products of inflammation is not at the height of the attack, but after it has subsided. [E. H. R.]

THE PRACTITIONER.

JULY, 1909.

1. *DUCKWORTH, D. *Notes Respecting the Dietary for Goutily-Disposed Persons.*
2. *GOODHART, J. F. *Treatment of Uric Acid.*
3. *LUFF, A. P. *Treatment of Gout in its Various Forms.*
4. *WEST, S. *On the Relation of Gout to Granular Kidney and to Lead Poisoning.*
5. KIDD, P. *Cardio-Vascular Manifestations of Gout.*
6. TAYLOR, J. *Gout in Relation to Disease of the Nervous System.*
7. GALLOWAY, J. *Cutaneous Manifestations of Gout and Their Treatment.*
8. BANNATYNE, G. A. *Balneological Treatment of Gout, with Special Reference to Bath.*
9. GORE, W. R. *Balneological Treatment of Gout.*
10. RENDALL, S. *Balneological Treatment of Gout at the Continental Spas.*
11. WATSON, C. G. *Changes in Joints in Gout.*
12. HALL, I. W. *Metabolism of Nucleins in Gout.*
13. MCCRACKEN, J. E. *Clinical Notes on Gouty Throat.*
14. SIKES, A. W. *Some Remarks on the Recent Literature of Gout.*

1. Duckworth discusses the diet for persons of a gouty disposition. He takes up the various rules for diet which well-known practitioners and different schools of medicine have long held. Among these he mentions the old controversy in regard to red and white meat. The idea that red meat is harmful he believes is a fallacy. Moderation in all forms of food is the great thing to be aimed at. He emphasizes the fact that it is the patient with gout and not the gout which must be treated, and that each patient has individual idiosyncrasies and is an individual problem to be taken and considered by itself. Liver and sweetbreads are not to be recommended. Strong meat soups and beef extracts are to be avoided, as well as pickled or salted meats. Fish, white and fresh, is one of the best articles of diet. Fruit and vegetables of all kinds he can see no harm in unless certain kinds have a bad effect on the individual patient. Asparagus and rhubarb should be taken sparingly. In regard to wines, alcohol and liquors, the same rule applies. If the patient cannot take them in moderation they should not be taken at all. He discusses the various kinds of wine which are best.

2. Goodhart, discussing the treatment of uric acid, takes up the same subject of diet and discusses the various articles of food which it is advisable to omit. He believes that treatment and relief of constipation in a goutily disposed subject is most important.

3. Luff takes up the medical treatment of acute and chronic gout, the preventive treatment of gout, and the local treatment of gouty joints. He discusses electric light and superheated air baths, and cataphoresis and the treatment of irregular gout. In this last heading he includes gouty dyspepsia and acidity, hepatic torpor, gouty sciatica, neuritis, insomnia and gouty eczema.

4. West discusses the relation of gout to granular kidney and to lead poisoning. He believes that the term "gouty kidney" is a misleading one. He is inclined to think that gout is not a direct cause of granular kidney, nor is lead poisoning, but that both, when associated with any kidney lesion, such as a granular kidney, will cause marked and serious changes. [J. B. H.]

EDINBURGH MEDICAL JOURNAL.

JULY, 1909.

1. *BRAMWELL, B. *Post-Mortem Findings in a Case of Pseudo-Hypertrophic Paralysis; Artefact of Spinal Cord.*
2. MACGILLIVRAY, A. *Notes on the Diagnosis and Treatment of Pneumococcal and Diplo-Bacillary Hypopyon-Keratitis.*
3. DON, A. *Cancer of the Penis and its Extirpation.*
4. GOODALL, A. *A Pharmacological Estimate of the Value of Commercial Samples of the Liquid Extract of Ergot, with Notes on Ergot Standardization.*
5. *PIRIE, G. A. *A Year's Work with the X-Rays in Diagnosis in the Dundee Royal Infirmary.*
6. ROSS, J. S. *Note on the Use of the Roth Inhaler for Open Ether.*

1. Bramwell describes in detail a post-mortem examination of a case of pseudo-hypertrophic paralysis. The article is illustrated with numerous excellent photomicrographs.

5. Pirie records a year's work with x-rays in diagnosis. The article is of interest on account of the excellent radiograms which are published with the article. [J. B. H.]

DEUTSCHE MEDIZINISCHE WOCHENSCHRIFT. No. 28.

JULY 15, 1909.

1. HOPPE-SEYLER, G. *Treatment of Bronchiectases.* (Clinical lecture.)
2. SCHLIPPE, P. L. *The Study of Single Rare Infectious Mononeuritides.*

3. Halben. *Sympathetic Ocular Affections of Unknown Cause.*
4. *Liebermeister, G. *The Form of Tubercle Bacillus not Demonstrable by Ziehl's Method.*
5. Arning, E., and Lewandowsky, F. *The Demonstration of Leprosy Bacilli not Colorable by Ziehl's Method by the Use of Prolonged Gram Staining according to Much's Method.*
6. *Offergeld, H. *The Indications for the Interruption of Pregnancy in Diabetic Women.*
7. Müller, O. *A Case of Extraordinarily Early Appearance of Skin Gummata.*
8. Haedicke, G. *Tar Therapy and its New Establishment through the Introduction of Pittylen.*
9. Porosz, M. *The Hyperemic Treatment of the Urethra by Means of Hot Sounds.*
10. Becker, W. H. *A Case of Extensive Pulmonary and Peritoneal Tuberculosis with Intact Intestinal Mucous Membrane.*

4. Liebermeister considers that tubercle bacilli have granules within them. These granules are not a mark of virulence, but a sign of resistance. Often these granules remain when the bacillus is no longer demonstrable. Ordinarily the capsule of the bacillus stains red and thus its contents cannot be seen. They are Gram-positive granules and, therefore, they can be diagnosed only when other bacilli than the tubercle bacilli may be excluded. Other bacilli have similar granules which are easily confused with the tubercle bacilli granules.

6. Offergeld reviews at some length the question of the interruption of pregnancy in cases of diabetes. He states that, although the two conditions always work against each other, in mild cases of diabetes interruption of the pregnancy is not necessary. In severe cases a loss of carbohydrate tolerance, loss of weight and increase in subjective symptoms are sufficient grounds for interrupting pregnancy. Acidosis in itself is not sufficient ground unless coma threatens. [C. F., Jr.]

Münchener Medizinische Wochenschrift. No. 29. July 20, 1909.

1. *Alt, K. *Experimental Treatment of Paralytics with Arsenophenylglyzin.*
2. Fischer, P., and Hoppe, J. *The Retention of Organic Arsenic Preparations in the Human Body.*
3. Fraenkel, C., Kathe and Bierotte. *A Reaction in the Blood of the Insane.*
4. *Beyer, W., and Wettneben, W. *Inhibition of Cobra-Hemolysis by the Serum of the Insane and by That of Patients having Bodily Diseases.*
5. v. Lichtenberg, A., Dietlen, H., and Runge, W. *Biocystography.*
6. Lüdke, H. *Transplantation of the Spleen.* (To be concluded.)
7. Tintemann, W. *Metabolic Pathology of Epilepsy.*
8. Allers, R. *The Knowledge of the Active Substance in the Hypophysis.* (Preliminary communication.)
9. Nerking, J. *Narcosis and Lecithin.*
10. Peters, J. *A Contribution on the Question of Leukemia.*
11. Heermann. *What can and must be Demanded from the Cosmetic Standpoint of the Radical Operation for Chronic Suppuration of the Middle Ear?*
12. Muck, O. *Periodical Ischemia of the Congested Nasal Mucous Membrane Produceable by the Application of Cold to the Nape of the Neck.*
13. Paysen. *Herniotomies and Other Abdominal Operations in Country Practice.*
14. Kolomoitzew, P. G. *The New Simple Apparatus of Herz for the Determination of Blood Pressure.*
15. Federschmidt. *Two Cases of Coal-Gas Poisoning from the Hygienic and Medico-Legal Standpoint.*
16. Schultz, W. *The Treatment of Acute Coryza in Infants.*
17. Hötzel, M. *Pains in the Knee in Hip Diseases.*
18. Much, H. *The Practical Utility of the Wassermann Reaction.*

1. The curative action of arsenophenylglyzin demonstrated by Ehrlich's experiments on animals with sleeping-sickness determined Alt to try its effect on paralytics. Of the 31 cases having positive Wassermann reactions at the outset, 7 lost the reaction while under treatment. It recurred in 1 of these. The reaction was weakened in some of the other cases. Improvement took place in many of the other cases and particularly in those where the duration of the disease was not more than two years. Of 6 epileptics having strong positive reactions, 4 lost the reaction and 1 ceased to have fits. A study of the lecithin metabolism in one of the paralytics showed diminished excretion of lecithin in the stools following the treatment. In a number of idiotic children having congenital syphilis, the Wassermann reactions were not affected. Why the drug should seem to act so well in some of the cases and not in others, the writer is unable to explain. He intends to carry the work further. Abortion occurred in one case but no other important untoward effects were noted.

4. Having tried in a great variety of diseases the reaction with cobra venom which Much and Holzmann claimed peculiar to dementia precox and to manic-depressive insanity, the writers report the following results: That the serum of healthy people may give the reaction, that it occurs more frequently in bodily diseases, is common in the insane and most common of all in idiocy and in epilepsy. They attribute no diagnostic value to the reaction and believe that it is due to metabolic conditions as yet unknown. [G. C. S.]

No. 30. July, 27, 1909.

1. *Cramer, H. *The Physiology of the Secretion of Milk.*
2. *Weber, L. W. *Psychoses in Relation to Arteriosclerosis.*
3. Eisner, G., and Kronfeld, A. *The Much-Holzmann Supposed Reaction of the Blood Serum of the Insane on Cobra-Venom Hemolysis.*
4. Schultz, J. H. *Studies on the Much-Holzmann Psycho-Reaction.*
5. Plaut, F. *Studies on the Much-Holzmann Cobra-Venom Reaction on the Insane.*
6. Turmann, J. *The Treatment of Tuberculosis with a Specifically-Acting Iodine Preparation.* (Preliminary communication.)
7. Weihrauch, K. *Experiments on the Conjunctival Reaction with Deuteroalbumose.*
8. Betz, O. *The Uniting of Fresh Lacerations of the Perineum.*
9. Meyer. *The Persistance of Leucopenia in a Case of Typhoid Perforation.*
10. Becker, W. H. *Lightning-Stroke as the Exciting Cause of a Psychosis.*
11. Landwehr, H. *Fulminating Purpura Hemorrhagica Resulting in Recovery.*
12. Paysen. *A Simple Trocar for the Aspiration of Pleural Exudates.*
13. Schultz, O. *Heligoland and Hay-Fever.*
14. Lüdke, H. *Transplantation of the Spleen.* (Conclusion.)

1. Cramer reviews and discusses the known facts concerning the development of the breast and lactation. The important points are illustrated by the citation of cases. He says that for normal development of the breast at puberty the ovaries must be present and functioning. The hypertrophy associated with lactation is profoundly influenced by pregnancy, but the ovaries have no necessary share in it. The act of sucking stimulates milk formation by emptying the gland and by mechanical irritation of the nerves in the nipple. Free lactation may be thus established by a child during the progress of a pregnancy, and lactation may be in the same way re-established after interruptions of several weeks' duration. Observations on animals show that lactation may take place when there has been no pregnancy at all and it is not rare for virgins to have a considerable flow of colostrum during the menstrual period. It is probably that a sucking baby if applied at such times would bring about lactation.

2. The writer reports a few cases of temporary mental derangement in patients having well-marked arteriosclerosis. He differentiates the condition from senile dementia and general paralysis on the ground of curability, and from manic-depressive insanity on the history and absence of manic symptoms. Hypochondriacal delusions, hallucinations and loss of memory are the predominating

symptoms. Changes in the pupils and in the tendon reflexes were found. These changes as well as the symptoms disappeared after treatment. None of the patients had had syphilis so far as known. (There is no record of the Wassermann test having been tried.) The treatment consisted of opium and bromide in the more acute stage followed by iodide of potassium. [G. C. S.]

Berliner Klinische Wochenschrift. No. 31.
Aug. 2, 1909.

1. **König, F.** *Number and Variety of Youthful Cripples, and Their Care in Germany.*
2. **Wassermeyer.** *Further Experiences with Isopral.*
3. **Bernhardt, M.** *Some Etiologically Interesting Cases of Arm and Shoulder Paralysis with Observations on the Pathology of Cervical Ribs.*
4. **Buschke, A., and Kuttner, P.** *The Technic of v. Pirquet's Cutaneous Reaction.*
5. **Everling, K.** *Contribution to the Knowledge of Papillary Tuberculosis of the Portio Vaginalis.*
6. ***Glaserfeld, B.** *Abdominal Symptoms at the Beginning of Pneumonia (Appendicitis and Pneumonia).*
7. **Adler, M.** *A Contribution to the Knowledge of Diabetic Lipemia.*
8. **Rosenberg, E.** *The Diagnosis and Treatment of Deep-Seated Diseases of the Large Intestine.*
9. **Aronsohn, O.** *The Psychology and Treatment of Pathologic Blushing.*
10. **Levy-Doen, M.** *Projection of Stereoscopic Roentgen Pictures.*
11. **Seehandler, I.** *The Investigation of Urinary Sugar with the Glucosimeter: A Rejoinder.*
12. **Vidal.** *The Question of Capacity to Suckle.*

6. In the differential diagnosis of pneumonia ushered in with abdominal symptoms, Glaserfeld emphasizes the importance of (*a*) facial expression; (*b*) moist, slightly coated tongue; (*c*) rapid respiration; (*d*) type of addominal rigidity; (*e*) relatively and absolutely high white count. [R. M. G.]

Annales de l'Institut Pasteur.
June 25, 1909.

1. ***Nicolle, C.** *Infantile Kala Azar.* (Conclusion.)
2. ***Weinberg.** *Serum Diagnosis of Echinococcus.*
3. **Chaussé, P.** *Methods of Staining Common to the Actino Bacillus, Actinomycosis and Botryomycosis.*
4. **Viala, J.** *The Antirabic Vaccinations at the Pasteur Institute in 1908.*

1. Nicolle, in this number ot the *Annales* continues his report on infantile kala azar. In trying to infect different animals he found that the dog and the monkey were the only ones which became infected. The dog shows very few symptoms and the disease can only be recognized by puncture tests of the spleen or liver or sometimes by examination of large amounts of centrifugalized blood for the Leischmannia infantum. The monkeys show a decided increase in size of the spleen. Most of his animals were infected by inoculations of material from other cases, but it is possible to infect with material from cultures if used in large amounts. The offspring of infected animals are not infected. Nicolle examined many dogs killed at Tunis and found in one eighth of 1% an infection with Leischmannia. He feels that the source of infection in children comes undoubtedly from the dogs. (The other conclusions in regard to the disease appear in the review of the former number.)

2. Weinberg has applied the complement-binding test for the diagnosis of echinococcus either in the cyst stage or in the intestines. He uses as an antigen the fluid from a cyst. He describes his technic carefully and has done considerable control work and concludes that the test is of value. [C. F., Jr.]

Revue de Médecine.
July, 1909.

1. ***Géraudel, É.** *The Morphological Varieties of Cirrhosis.*
2. **Laignel-Lavastine.** *General Plan of the Pathology of the Sympathetic Nervous System.* (Conclusion.)
3. **Lyon-Caen, L.** *Interauricular Communications; Considered from the Anatomic, Pathologic, Physiologic and Clinical Standpoints.*
4. ***Reynaud, G.** *Clinical Considerations on Hemoglobinuric Biliary Fever.*
5. ***Audibert, V.** *Pleiochromic Jaundice, Caused by the Bacillus of Eberth.*

1. He states that Charcot's classification of cirrhosis into the venous and biliary types is unfounded. As a matter of fact, the distinctive point lies in the amount of new formed hepatic tissue in the course of the irritative process rather than the sclerotic changes themselves. Those livers showing the excessive hyperplasia of parenchyma are the true hyperplastic forms, while those with a minimum amount are the hypoplastic. There are, of course, all gradations between these extreme types and great variations are to be noted in the same liver. But typical of the latter is the small, granular, firm liver so well known at autopsy. The proliferative islands are really not lobules, surrounded by connective tissue, but new liver in the center of the old. The hyperplastic form is of two types: the nodular variety, in which the islands are like nuts in an almond cake; and the cirrhoid form, that known as Hanot's cirrhosis, where the connective tissue zones are condensed by the tremendous overgrowth of liver tissue. The collecting sinuses, which were formerly mistaken for subhepatic veins, are found where the new formed tissue is excessive. Then it is a question of parenchyma rather than connective tissue in all these cases.

4. Reynaud reports two more cases, making a total of seven, of biliary fever, accompanied by hemoglobinuria. The triad of symptoms consists of vomiting of bile, bloody urine and high fever. All the cases show a profound alteration in the blood, characterized by a great destruction of red cells, accounting for the hemoglobinuria. The treatment consisted of subcutaneous and intermuscular injection of quinine. This was very efficacious, except in one case in which the fever and bloody urine returned following injection. It seems very doubtful if cause and effect could be traced even in this case. Subcutaneous injections of salt solution, general tonics and hygiene were all applied. One case showed in the blood the ring forms of aestivo-autumnal malaria, though no crescents could be demonstrated. All the cases recovered, although in some convalescence was very much prolonged.

5. Audibert reports a case of jaundice showing diarrheal but normal colored stools, great weakness and a positive Widal reaction. The urine contained bile, but no urobilins, and there was no alimentary glycosuria. The fever and jaundice continued for three weeks and convalescence was very slow. The patient had never had typhoid fever, so it became a question between a primary infection of the bile passages with the typhoid bacillus, or typhoid fever with jaundice as a complication. The writer chooses the former. In support of his view he cites the work of the bacteriologists in findings of the bacillus in the blood during incubation, of the bacillus in the bile during and after the disease, experimental cholecystitis of hematogenous origin, and the descending infection of the bile passages. He goes on to state that infections of this nature may and probable do cause many of the cases of simple chronic jaundice, that more complicated form associated with splenomegalia, and, lastly, Hanot's cirrhosis. [L. H. S.]

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Correspondence.

A CORRECTION.

Boston, Aug. 19, 1909.

Mr. Editor: In your Journal of Aug. 12, in Correspondence, "On the Evils of Suggestion," the sentence, on *Cancer*, "If you suspect only, should you tell the patient your own fears? I think not," correct as follows:

"I think not, *unless you are prepared to advise exploration or operation.*"

Yours truly,
David W. Cheever, M.D.

RECORD OF MORTALITY

For the Week ending Saturday, July 24, 1909.

Cities.	Reported deaths in each.	Deaths under five years.	Cities.	Reported deaths in each.	Deaths under five years.
New York	—	—	Waltham	—	—
Chicago	534	165	Pittsfield	4	1
Philadelphia	—	—	Brookline	2	2
St. Louis	—	—	Gloucester	6	1
Baltimore	210	108	North Adams	9	3
Cleveland	—	—	Northampton	3	1
Buffalo	—	—	Chicopee	14	12
Pittsburg	—	—	Medford	2	1
Cincinnati	—	—	Beverly	4	1
Milwaukee	—	—	Leominster	5	1
Washington	—	—	Hyde Park	2	1
Providence	—	—	Melrose	4	0
Boston	188	56	Newburyport	3	2
Worcester	41	18	Revere	5	3
Fall River	61	46	Westfield	6	3
Cambridge	23	7	Woburn	5	2
Lowell	31	12	Peabody	—	—
New Bedford	24	15	Marlboro	4	0
Lynn	18	7	Attleboro	1	1
Springfield	28	15	Adams	—	—
Lawrence	21	10	Clinton	3	0
Somerville	13	3	Gardner	3	—
Brockton	6	1	Milford	3	1
Holyoke	23	12	Watertown	1	0
Malden	5	1	Plymouth	—	—
Chelsea	12	1	Southbridge	4	2
Newton	4	—	Weymouth	3	0
Salem	17	9	Framingham	—	—
Haverhill	13	1	Wakefield	—	—
Fitchburg	—	—	Webster	—	—
Everett	4	1	Arlington	4	—
Quincy	4	1	Greenfield	0	—
Taunton	18	6			

LIST OF CHANGES OF STATIONS AND DUTIES OF COMMISSIONED AND OTHER OFFICERS OF THE PUBLIC HEALTH AND MARINE-HOSPITAL SERVICE FOR THE SEVEN DAYS ENDED AUG. 11, 1909.

Pettus, W. J., assistant surgeon-general. Granted twenty-seven days' leave of absence from Aug. 16, 1909.

Gassaway, James M., surgeon. Bureau order of July 20, 1909, amended to read, upon being relieved by Passed Assistant Surgeon M. J. White, directed to proceed to San Francisco, Cal., and assume command. Aug. 3, 1909.

Mead, F. W., surgeon. Granted one month's leave of absence from Aug. 27, 1909.

McIntosh, W. P., surgeon. Granted twenty-one days' leave of absence from Sept. 1, 1909.

Guiteras, G. M., surgeon. Directed to proceed to Savannah Quarantine Station for temporary duty. Aug. 10, 1909.

White, M. J., passed assistant surgeon. Directed to proceed to Philadelphia, Pa., and assume temporary charge pending the arrival of Surgeon H. R. Carter. Aug. 3, 1909.

Ramus, Carl, passed assistant surgeon. Upon the arrival of Assistant Surgeon R. A. Herring, directed to proceed to Honolulu, Hawaii, and report to the Chief Quarantine Officer for marine-hospital duty. Aug. 3, 1909.

Ramus, Carl, passed assistant surgeon. Granted seven days' leave of absence en route to station.

Moore, Dunlop, passed assistant surgeon. Relieved from duty at Honolulu, Hawaii, and assigned to duty at Yokohama, Japan. Aug. 7, 1909.

Trotter, F. E., passed assistant surgeon. Leave granted July 8, 1909, for fifteen days from July 21, 1909, revoked.

de Valin, Hugh, assistant surgeon. Upon the arrival of Surgeon G. M. Guiteras, directed to proceed to Stapleton, N. Y., and report to chairman of board of medical examiners to determine his fitness for promotion to the grade of Passed Assistant Surgeon. Aug. 10, 1909.

Guthrie, M. C., assistant surgeon. Directed to proceed to Stapleton, N. Y., and report to chairman of board of medical examiners to determine his fitness for promotion to the grade of Passed Assistant Surgeon. Aug. 10, 1909.

Atilles, Pedro del Valle, acting assistant surgeon. Granted thirty days' leave of absence from Sept. 1, 1909, with pay, and fifteen days' leave from Oct. 1, 1909, without pay.

Duffy, Francis, acting assistant surgeon. Granted six days' leave of absence from Aug. 10, 1909.

Dynan, N. J., acting assistant surgeon. Granted two days' leave of absence from July 1, 1909, and one day, July 24, 1909, under paragraph 210, Service Regulations.

Goldsborough, B. W., acting assistant surgeon. Granted three days' leave of absence from July 31, 1909, without pay.

Harkin, F. McD., acting assistant surgeon. Granted ten days' leave of absence from Aug. 10, 1909.

Rowles, J. A., acting assistant surgeon. Granted twenty-five days' leave of absence from Aug. 7, 1909.

Savage, W. L., acting assistant surgeon. Granted thirty days' leave of absence from Aug. 6, 1909.

Stevenson, J. W., acting assistant surgeon. Granted twelve days' leave of absence from Aug. 17, 1909, with pay, and a further period of thirty days' leave without pay.

Thornton, M. J., acting assistant surgeon. Granted four days' leave of absence, July 8, 10, 11 and 12, 1909, under paragraph 210, Service Regulations.

Mason, M. R., pharmacist. Detailed to represent the Service at the annual meeting of the American Pharmaceutical Association, to be held in Los Angeles, Cal., Aug. 16–21, 1909. Aug. 6, 1909.

BOARD CONVENED.

Board of medical officers convened to meet at the Marine Hospital, Stapleton, N. Y., Aug. 30, 1909, for the examination of Assistant Surgeons Hugh de Valin and M. C. Guthrie, to determine their fitness for promotion to the grade of Passed Assistant Surgeon. Detail for the board: Surgeon L. L. Williams, chairman; Passed Assistant Surgeon John McMullen; Passed Assistant Surgeon C. W. Vogel, recorder. Aug. 10, 1909.

RECENT DEATHS.

Dr. Daniel L. Sweeney, of Newark, N. J., died on Aug. 20, at the age of sixty-one years. He was born in New York, and was graduated from the College of Physicians and Surgeons in that city in 1882.

Dr. Benjamin Ellis Martin, retired, of New York, died on Aug. 15, at the age of seventy years. During the Civil War he was an army surgeon, serving with the Durgee Regiment of Zouaves. Later he was ship surgeon for the Pacific Mail Steamship Company, and then port surgeon of that line in San Francisco. Dr. Martin was distinguished as a traveler and writer, and among his best-known books are: "About England with Dickens," "Old Chelsea," "In the Footprints of Charles Lamb," and "The Stones of Paris in History and Letters."

BOOKS AND PAMPHLETS RECEIVED.

Treasury Department. Public Health and Marine-Hospital Service of the United States. The Prevalence of Pellagra in the United States. By C. H. Lavinder, C. F. Williams, M.D., and J. W. Babcock, M.D. Washington. 1909.

Treasury Department. Public Health and Marine-Hospital Service of the United States. Epidemic of an Urticarioid Dermititis Due to a Small Mite (Pediculoides ventricosus) in the Straw of Mattresses. By Joseph Goldberger and Jay F. Schamberg. Washington. 1909.

Medical Jurisprudence, Forensic Medicine and Toxicology. By R. A. Witthaus, A.M., M.D., Tracy C. Becker, A.B., LL.D., and others. Second edition. Volume III. Illustrated. New York: William Wood & Co. 1909.

Semmelweis, His Life and His Doctrine. By Sir William A. Sinclair, M.A., M.D. Manchester: University Press. 1909.

The Government Control of Tuberculous Patients in Pennsylvania. By Samuel G. Dixon, M.D. Reprint.

The Clinical Diagnosis of Tuberculosis of the Tonsils. By Lee H. Hurd, M.D., and Jonathan Wright, M.D. Reprint.

History of Yellow Fever. By George Augustin and others. New Orleans: Searcy & Pfaff, Ltd. 1909.

Address.

SURGERY OF THE STOMACH.*

BY JOHN B. DEAVER, M.D., LL D., PHILADELPHIA.

Mr. President and Members of the New Hampshire State Medical Society: When your invitation reached me to deliver the address upon this occasion, it was with great pleasure that I accepted, but with a feeling of want of confidence in myself to do justice to any topic that I might elect to talk upon. However, I have ventured to bring before this body the subject of "Surgery of the Stomach," at the present day attracting so much attention, and, when done in proper cases, doing so much good.

It would be natural to suppose that the stomach would furnish us in its diseases an example of an organ of which the pathology is clear, diagnosis simple and treatment definite. We have under consideration a viscus at the very beginning of the alimentary tract. It can be percussed, palpated and outlined; its contents can be measured and easily withdrawn for chemical examination; indeed, the interior of the stomach may even be inspected. It has certain symptoms peculiar to its own diseases. To the physician it offers a field that can be most easily reached by drugs, local or general in action, and it can be emptied of its contents almost at will. To the surgeon it is easy of access, tolerant of interference and not essential wholly or in part to the maintenance of life.

Yet it is well known that in spite of all these facts we find that the diseased stomach offers us innumerable difficulties in diagnosis and some of our most serious modern problems in treatment. At the very outset we are met by the fact that our methods of diagnosis, at least as far as the surgeon is concerned, are not only sadly lacking in definite features of value, but sometimes even very misleading.

We can determine accurately the size of the stomach and its capacity for emptying itself. Further than this the ordinary methods of examination yield us nothing. When disease of the stomach has gone so far that we are definitely able to palpate a mass somewhere within its limits, we are almost always confronted by an essentially incurable malignant change in the viscus. The chemical examination of the stomach contents, of which so much was at one time expected, has proved disappointing in many ways.

As we have gradually become able to make our determinations more and more accurate, we at the same time have been forced to the conclusion that our chemical findings are of a purely negative value as diagnostic aids.. At best they can but serve as confirmatory in certain instances in which the clinical evidence is so clear as to be beyond question. To this question I shall return later when discussing the value of a gastric analysis in individual affections of the stomach.

Pathologically speaking, the distinctive feature about diseases of the stomach with which the surgeon has to deal is the fact that acute infection, so important a factor in certain other intra-abdominal conditions, plays but a slight part in the surgery of the stomach. We are called upon to deal either with distinctly functional disturbances, in other words, neuroses; or with one of two very grave conditions, ulcer or carcinoma of the stomach.

Functional disturbances and neuroses concern the surgeon only in so far as regards their avoidance when surgical treatment is sought. It is often almost impossible to differentiate a purely functional disease from one associated with marked change in the stomach structure, and all our efforts to keep clear of it and to avoid surgical intervention go for naught because the symptoms seem so definite and are so extremely persistent. Every surgeon of experience has seen cases operated on for supposed ulcer, I take it, in which an almost healthy stomach has been demonstrated upon the operating table.

Of neuroses of the stomach we can only say that they are entirely beyond the realm of the surgeon. It has been lately proposed to perform stomach operations as a cure for recurrent nervous vomiting and other purely neurotic gastric phenomena. I can only say that I regard such surgery as vicious. The desired results can be accomplished far better in other ways. We must not lose sight of the fact that a gastric neurosis is in practically every instance but the local manifestation of a general condition, and that even if by operation we should be so fortunate as to cure the patient of his gastric neurosis, and that is more than doubtful, we would only substitute for it some form of post-operative neurosis, perhaps even more distressing and serious in its final outcome.

This brings us face to face with our real problems in the surgery of the stomach, ulcer and carcinoma.

Gastric ulcer is a disease the cause of which has not yet been determined. We know that it occurs because of some lesion of the gastric mucosa and because of a subsequent inability of the stomach to recover. We know that early adult life and the female sex present us most of the examples clinically diagnosed, and that this corresponds with the older autopsy findings. Lately the toxemic origin of gastric ulcers has been brought forward as a probable explanation of their ultimate cause, but the most we can say with certainty is that they are due to some remote form of chronic infection, possibly auto-infection. The very common association of hyperacidity and ulcer has been used as proof that the former is the ultimate causative condition, yet recent operative work and post-operative observation have led me to the belief that it is very likely that in some way the hyperacidity is caused by the presence of an ulcer, instead of the reverse being true. There are many cases also associated with a normal or even decreased acidity of the stomach contents.

As to classification, it has been customary to group ulcers as chronic and acute. Every ulcer of the stomach, however, is a chronic condition, and it is my custom to consider them in but two classes, the open and the healed or healing. As we will see, the condition of the ulcer has an important bearing upon both symptomatology and treatment.

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*Read before the New Hampshire State Medical Society, Concord, N. H., May 13, 1909.

Ewald states that we usually diagnosticate gastric ulcer when the classical triad of symptoms is present: hematemesis, which can be definitely traced to the stomach, typical and usually sharply localized pain occurring at regular intervals after the ingestion of food and the increase of hydrochloric acid in the stomach contents. However, he goes on to say that it is not necessary to wait until we have this definite combination; and fortunately it is not. I venture to state that by careful study we can make our diagnosis long before the ulcer has reached the stage at which the classical picture is to be recorded.

Pain is undoubtedly the cardinal symptom of gastric ulcer. When we have a pain, sharp, definitely epigastric, coming on immediately or soon after eating, and persisting until the stomach is in some way emptied, we are at once justified in thinking of an ulcer, yet far more frequently in the early stages of gastric ulcer the pain is of an entirely different sort. It does not always amount to real pain, but begins as a feeling of burning or discomfort after meals. The interval after eating which precedes the onset of pain is at first also more variable than later. In the chronic healing or cicatrizing ulcer the patient at the time of the examination will often give a very indefinite history of pain, as the very painful stage of the ulceration has long passed by. The pain, therefore, is a symptom variable as to duration, quality and character. We are safe in stating that some form of epigastric pain or distress is present in every case of gastric ulcer, but often it is never severe enough to give rise to even a suspiçion of its true cause.

Slight rigidity and local tenderness in the epigastrium are important signs of gastric ulcer when found in conjunction with the characteristic pain.

Dyspepsia is a necessary accompaniment of such a grave organic lesion of the stomach as ulcer. It differs in but few respects from that encountered in other forms of upper abdominal disease. Perhaps the one feature of it that might be called distinctive is the frequent maintenance of a good appetite. The patient can eat, but is afraid to because of the distress following the ingestion of food. And we often see in patients with more or less latent gastric ulceration a surprisingly well-maintained standard of general bodily nutrition. The digestive disturbance in gastric ulcer is distinctly not one of enfeebled secretory activity, and hence such food as can be eaten and retained is well prepared for the further chemical changes in the gut.

Vomiting is often a symptom in frank gastric ulcer. It is dependent upon the ingestion of food and results from the pain caused thereby. In a surprising number of cases of gastric ulcer proven upon the operating table we have noted the comparative insignificance of this symptom from a diagnostic point of view. It is more often infrequent and irregular than occurring after every or many meals. Moreover, there are so many conditions affecting the stomach, both intrinsic and extrinsic, that cause vomiting, that from the point of view of differential diagnosis it is valuable not by the mere fact of its occurrence, but only by the time of its occurrence and the character of the vomitus.

The last but in a way the most definite of all classical symptoms of gastric ulcer is hemorrhage. If we except gastric and esophageal varices and cirrhosis of the liver, there are practically no other conditions which give us a frank gastric hemorrhage of fresh blood in large or small quantities. Yet it is in a way a discredit that we consider *hemorrhage* as a *symptom* of gastric ulcer. It should be classed as a complication. It is true beyond a doubt that, with the exception of entirely latent gastric ulcers (and there are but few, if any, truly without symptoms), we should diagnose our stomach ulcers long before hemorrhage makes them only too manifest. Unfortunately this is done in comparatively few cases. It has not yet been sufficiently impressed upon physicians at large that serious dyspepsia with marked pain means more, in practically every instance, than a mere "gastritis," and very often it means "gastritis" due to a defect in the stomach mucosa, i. e., *ulcer.*

The differential diagnosis of gastric and duodenal ulcer is not an easy one. The latter shows pain at a longer interval after eating, hemorrhage is rare until very late, and melena is more common. Moreover, we have more commonly in duodenal ulcer that characteristic "hunger pain" caused by excess of acid in an empty stomach and *relieved* by food.

Should a diagnosis of ulcer of the stomach be made, what must be our line of treatment? Amongst those who still follow almost entirely the medical method of treatment I can find but one man of prominence who takes an optimistic view of that method, — Ewald, of Berlin. The statistics and conclusions of practically every other frank observer prove conclusively that our treatment of gastric ulcer by medical and dietetic means is, in the majority of instances, a failure as far as a true recovery is concerned; yes, even as to the temporary alleviation of pain.

Another evidence that the ordinary treatment of gastric ulcer is unsatisfactory is to be found in the fact that we are continually hearing of new drugs and dietetic methods; the old ones would not be changed if they were satisfactory. Some years ago the Ewald-Leube method of starvation and liquid feeding was practised universally; now we have that of Lenhartz, which calls for immediate feeding and rapid increase in diet. The results in each are poor, but perhaps about equal. Does not that prove beyond a doubt that the unfortunate patient recovers in spite of his diet, instead of because of it?

Perhaps that is putting it a little too strongly. Let us say rather that under careful diet, rest in bed, etc., only a small percentage of cases really recover under medical treatment. Patterson (1906), in an analysis of 72 cases treated medically, found that while all had been discharged cured, only 19 were permanently well, 46 of the 72 had still their symptoms, had submitted to operative treatment or had died. So that only about one fourth of the supposed cures were cured. Murdoch reports 69% of cures in a small series of cases. Still more recently, Spriggs, in a series of 37 patients traced, some of whom were treated by the ordinary methods and some by the Lenhartz method, found that but 15 were well after leaving the hospital. The others still have their symptoms and their ulcerations. In the Massachusetts General Hospital, of 187 cases treated, collected by Greenough and Joslin, the initial mortality was 8%. Eighty per cent were discharged as cured or relieved. After a period of five years, of 114 patients who could be traced, 57 had had recurrences, while 15 additional cases had died of gastric disease, making in all 20% of deaths.

It would be useless to cite you further statistics to show that the medical treatment of gastric ulcer is not all that it might be. What, then, is our method of cure to be?

I am not exaggerating when I say that in surgery we find relief for most cases of gastric ulcer and for most of its complications. No one will say that our treatment is always successful, or that it is always free from risk, but it certainly gives us results far beyond those achieved by any medical means. In ulcer cases of recent duration it is, of course, unobjectionable for medical treatment to be tried. By this means a small (a very small) percentage of patients will be cured temporarily and a few will have no recurrence of their trouble, or at least will seem perfectly well for many years.

For the purposes of the surgeon, gastric ulcer must be considered from several viewpoints:

1. Gastric ulcer without active complications.
2. Gastric ulcer complicated by active hemorrhage.
3. Perforated gastric ulcer.
4. Gastric ulcer complicated by perigastric adhesions.

In simple gastric ulcer our endeavor must be, in surgical just as in medical treatment, to procure if possible such change in the secretions of the stomach as will tend to lessen both duration of the ulcer as well as its possibility of recurrence.

The operation of choice in a gastric ulcer is a gastro-enterostomy, the formation of an opening between the stomach and jejunum. This accomplishes both the results desired. In some way the secretions of the stomach are changed. That is to say, if there be hyperacidity, the operation causes a diminution in the hydrochloric acid which is found in the stomach, while when there is deficiency in acid the percentage rises after operation. In other words, the gastro-enterostomy at once influences the gastric secretions and tends to make them more nearly normal. This has been the experience of Kocher, Patterson and others who have especially investigated the subject.

In performing gastro-enterostomy I now use by preference the posterior operation, with "no loop." The peculiarity of this operative method lies in the fact that we leave no long loop of intestine when bringing the bowel over to the stomach, and that in making the anastomosis I follow Mayo's plan, making the stomach incision incline from left to right, from above downwards, and, of course, placing it in the pyloric portion of the stomach, not at the fundus.

It must not be supposed that the operation of gastro-enterostomy will cure every case of even simple gastric ulcer. Nevertheless, there are great advantages in its favor. The initial mortality nowadays is very small, probably, in benign conditions of the stomach, not over 3%; with many surgeons, below 2%. In reckoning the ultimate cures, it must be borne in mind that operation is undertaken usually in cases which have long defied medical treatment, or in which symptoms have recurred after more or less temporary relief from medical treatment. There are few patients operated upon who are not at the time of operation suffering from a more seriously diseased stomach than they possessed at the time medical treatment was first instituted. This being considered, it is evident that the relative number cured by operation far exceeds those cured by medical treatment alone. In my own cases, collected by Dr. A. D. Whiting, 62.1% of those traced ended in permanent cure, a far different picture, I am sure, from that which would have been presented after persistent medical treatment. The results of Kocher, Mayo and other very eminent surgeons lead to the same conclusions: that gastro-enterostomy does cure gastric ulcer, and that the cure is permanent.

It is necessary here to sound a note of warning about the choice of a case for operation. It is more than important after we open the abdomen and expose the stomach to know what to do and what not to do, to be able to perform the merely mechanical portion of the work. An ulcer to be benefited by treatment must be an ulcer large enough to see and feel and make itself very evident on the operating table. As Dr. Wm. J. Mayo so well pointed out several years ago, we can do nothing but harm by operating upon cases in which we suspect but cannot find an ulceration. I believe that every means should be exhausted to determine the true state of affairs before we actually perform an operation with a view to curing the condition. A stomach not diseased will be harmed by a gastro-enterostomy, one with functional trouble only will be more harmed. If necessary, we should even open the stomach and look for the ulceration rather than perform a perhaps useless gastro-enterostomy.

In certain cases of ulcer further surgery may be indicated. In other words, resection of the ulcer-bearing area is sometimes indicated. I have done such resections both in pyloric ulcer and for the cure of saddle ulcer of the lesser curvature. We cannot, of course, hope to do this when there is extensive ulceration of the fundus or of the anterior or posterior wall.

Why, if gastro-enterostomy gives such brilliant results, should we do any more than this? The answer is to be found in our conviction that in very many cases of gastric carcinoma the disease takes its origin upon the site of an old ulcer. Mr. Moynihan, in a recent article upon cancer of the stomach, states that of 125 cases which he had operated on and carefully analyzed, "approximately two in every three have had a history of previous gastric ulcer." Dr. W. J. Mayo, in 180 cases of resection of the stomach for carcinoma, found that in 97 or 54% of his cases the carcinoma had sprung from the base of an ulcer. Mayo Robson found that 59.3% of his cases of carcinoma of the stomach operated upon gave a previous history of gastric ulcer. My own experience, though I am not able to present definite statistics, leads me to the same conclusion. There is, I think, no more difficult question for the surgeon to decide, even after the abdomen has been opened, than this question of whether an ulcer along the lesser curvature, or close to the pylorus, has already begun to undergo carcinomatous transformation. Therefore, while gastro-enterostomy will cure two thirds, or even three fourths, of the cases of gastric ulcer, we make assurance doubly sure when we excise the ulcerated area. Little is added to the initial mortality of the operation when the gastrectomy is done by one who has had experience in the operation, and were the possibilities of cancer to be placed fairly before the patient, I have no doubt that he would gladly assume the slight added risk.

While posterior gastro-enterostomy by the no-loop method is the operation of choice, I have had, before I adopted this method, good results with the ordinary long loop method, when it has been supplemented by an entero-enterostomy between the two limbs of the small gut. This much diminishes the probability of a vicious circle being formed, a thing rare since the use of the short loop, but not infrequent before that. When it is absolutely impossible to approach the posterior surface of the stomach, I do an anterior gastro-enterostomy, supplementing this also by an entero-enterostomy.

The technic of all these operations is that usually described, using the clamps and an inner suture of fine catgut, supplemented by an outer one of fine linen thread. There are two details in the performance of gastro-enterostomy the neglect of which may lead to bad results. The first is the making of an opening of proper size and excision of the mucosa to prevent a possible valve formation. The second is the suturing of the stomach by several fine sutures to the opening in the rent of the transverse mesocolon, so that strangulation cannot possibly occur. I also place one stitch about three quarters to one inch to the cardiac side of the anastomosis to prevent subsequent kinking of the bowel.

We have thus far treated merely of acute or open gastric ulcer in its practically uncomplicated form.

We next have to consider the treatment of gastric ulcer actively bleeding. It has been suggested that operation in these cases is indicated and that it is proper in case a vessel is bleeding to open the stomach and seize the bleeding point. It is but proper to state, however, that the results of operative interference in actively bleeding ulcers are very poor. As a general rule it may be stated that whatever chance of recovery such a patient has is destroyed by operation. Dieulafoy and Robson and Moynihan have recorded instances of ligation of the bleeding point, yet this can rarely be done satisfactorily. The mortality of medical treatment in acute gastric hemorrhage is low, in surgical treatment high; therefore we must leave the patient alone in order to make his recovery possible. Not only have the results of operation been poor in acutely bleeding ulcer, but in the chronic recurring form of bleeding we have had results almost equally bad. Severe recent hemorrhage is a definite contra-indication to gastric surgery.

Perforated gastric ulcer must be treated by operation. Except in those rare instances of slow or subacute perforations, in which adhesions block the opening into the general peritoneal cavity, the prognosis is absolutely fatal. As perforation is said to occur in 4% of all cases and to cause 80% of deaths in gastric ulcer, we have here a problem of some importance. The diagnosis of this condition I need hardly dwell upon, except to remind you that after or even during the initial period there are a number of conditions which give similar symptoms. Thus in the absence of a definite history of the previous illness, it would be practically impossible to distinguish between a perforated duodenal and a perforated gastric ulcer, while after peritonitis has set in, beginning perhaps in the right iliac fossa by gravitation of infectious material, appendicitis would be very closely simulated.

If a patient has a perforated gastric ulcer his chance of recovery depends upon early operation. This is to say, in nearly every instance the rapid sequel of a perforation is a diffusing, then a general, peritonitis. Occasionally there may be found a subphrenic or perigastric abscess, but fatal general peritonitis will occur in 99% of cases at least. It is our duty, then, to operate early and to anticipate the general purulent peritonitis, to prevent, if possible, the occurrence of a condition which, when fully under way, we cannot hope to cure. The present mortality is still 50% because the cases do not come to operation early enough. It has been found that in cases diagnosed and operated upon within the first twelve hours the mortality is 25%, in twenty-four hours it becomes almost 50, after the first day less than half can be saved, and after the second day less than one fourth.

When the abdomen is opened for a gastric perforation we have three indications for treatment in the order named:

1. An opening in the alimentary canal.
2. A diseased stomach.
3. A peritonitis.

The hole in the stomach should be closed by Lembert sutures, if possible, or, if this is not feasible because of the induration about it, by oversewing it with a portion of omentum. Excision of the ulcer is too extensive an operation when time is of such great value. I occasionally use, in small ulcers, a purse-string suture, reinforced by the usual Lembert stitch.

The diseased stomach should be treated at the same time, i. e., we should do a gastro-enterostomy in operating for perforated gastric ulcer. This both cures the fundamental condition and prevents a recurrence of the perforation. Le Conte and others think that mere closure of the opening is sufficient surgery upon the stomach, but I have always believed, with few exceptions, that gastro-enterostomy should be performed, for the reasons given. With improved technic but little time need be used in its execution. The same point holds good in perforated duodenal ulcer. The peritonitis requires active treatment. Every case of perforated gastric ulcer requires drainage, whether pus be as yet present or not. I drain by a tube to the pelvis, through a suprapubic stab, and close the upper wound. Otherwise I treat every case along the lines indicated in the treatment of a general peritonitis, no matter if it has not yet progressed to that stage. The patient is sat up in bed, food by mouth is withheld for forty-eight or even seventy-two hours and enteroclysis by the continuous method is used. The results have been good, as I have had six cases with no deaths, my assistant surgeon, Dr. A. D. Whiting, having operated upon one of these.

There still remains for consideration under the heading of gastric ulcer that class of cases associated with extragastric conditions. These are comparatively few in number, but furnish some of our most important cases and our most satisfactory ones. The release of the stomach from its adhesions, together with treatment of the primary condition by the usual methods, is indicated.

In association with gastric ulcer we still have to consider two conditions, in which dilatation of the stomach plays a cardinal part, and the formation of hour-glass stomach.

Dilatation of the stomach in ulcer may be due to a pyloric stenosis or due to pylorospasm caused by the ulcer, but without direct mechanical interference with the pylorus.

Where we have an actual stricture at the exit of the stomach, a gastro-enterostomy will be of the greatest value. It drains the stomach and relieves the toxemia caused by stagnation. In a certain proportion of these cases, Finney's pyloroplasty will give excellent results, especially if the stomach is not greatly dilated and still retains the tonicity of its walls, but I consider gastro-enterostomy, with or without resection, as preferable. When the dilatation is due to a reflex pylorospasm due to ulcer in the pyloric region of the stomach, operation directed to the cure of the fundamental condition always gives brilliant results.

When we have the formation of an hour-glass stomach due to ulcer, either resection, gastro-gastrostomy or gastroplasty in conjunction with gastro-enterostomy is indicated, and is to be preferred to the performance of a double gastro-enterostomy draining each pouch.

Before considering the other great divisions of gastric disease, it will not be out of place to mention briefly several other gastric conditions occasionally seen by the surgeon. I have already mentioned the necessity for the avoidance of operation in neuroses of the stomach, that is to say, of avoiding operations upon the stomach itself. It is, however, true that many a case of gastric neurosis, so called, can be cured by surgical interference in other portions of the abdomen. In a recent paper I have attempted to show how rare an independent gastric neurosis is. I have seen many instances in which marked gastric symptoms alone denoted the presence of gallstones, pericholecystic adhesions or a chronic appendicitis. It is well known that biliary calculi often make their presence known by symptoms of indigestion only, and we must be on our guard against overlooking them. Occasionally a resultant secondary gastric neurosis takes the form of a pylorospasm or spastic condition of the pyloric sphincter, which may in every way simulate pyloric obstruction, or merely have pain in the pyloric region, etc., as its most salient features. I have lately observed a number of cases of chronic appendicitis in which all the symptoms were referable to the upper abdomen and were promptly relieved by appendectomy.

Cardiospasm, analogous to pylorospasm, is less well adapted to surgical cure. It must be treated by bougies and dilators, and only as a last resort should we open the stomach to divulse the cardia.

Closely allied to dilatation as a result of pylorospasm, or secondary to other intra-abdominal disease, is gastrectasis, a dilation of the stomach. Generally it seems to be independent of any lesion beyond the stomach, though often found in patients otherwise debilitated. The stomach loses its elasticity and muscular power, though the pylorus remains patulous and generally becomes dilated, flabby and powerless, the seat of stagnated food and fermentation. Results in these cases, as far as can be stated from my experience, are perfect in every instance, the relief being secured by gastro-enterostomy and drainage of the stomach.

In gastroptosis, on the other hand, operation gives little or no relief. The condition is but a part of a general visceroptosis and is better treated by an appropriate belt for the local condition, supplemented by general treatment for the accompanying neurasthenia almost invariably found. Particularly do I disapprove of operations attempting to hold up the whole viscus. They are almost invariably failures.

Of acute dilatation, I may say that I have never encountered this condition, either post-operatively or otherwise. I believe this is due to the fact that I always use early and frequent lavage in persistent ether vomiting or food accumulation.

All the benign diseases of the stomach combined, however, give rise to fewer fatalities than those attributed to gastric cancer. Mr. Moynihan, in commenting upon the 1,500 deaths a year from this disease in England alone, states that "the cases that we have cured are so few as to be almost negligible." Unfortunately this is true and so far we have made but little progress in this grave condition. In spite of improved technic and low initial mortality, our end results are still of the worst. It is not difficult to understand why this should be so. It is principally because the disease is not diagnosed early enough, and but too often cannot be in the present state of our knowledge.

Carcinoma of the stomach is, as are malignant growths in other parts of the body, at first purely local. In over three fourths of the cases it is situated near the pyloric end of the stomach, where it is favorably located for excision. Our endeavors to effect a greater number of cures must lead us in two directions, prevention and early diagnosis and operation.

Prevention of gastric carcinoma is possible in but one way. We have seen that two thirds of all cases of cancer of the stomach are engrafted upon old ulcer of the stomach. If, then, we so educate ourselves and the medical profession that these cases are not temporized with, but are sent promptly to the surgeon, when a diagnosis is fairly definitely settled, we shall have taken a great step towards lessening the incidence of cancer. As I see more and more of these cases, I am continually impressed with the causative relation between cancer and ulcer of the stomach. Even in those instances in which we can get neither a history of antecedent ulcer nor demonstrate its previous existence by microscopic means, it is not improbable that it has been the basis for the neoplasm.

So far as we know, in the cures of gastric ulcer we have exhausted our means for the prevention of gastric carcinoma. The next question that confronts us is that of early diagnosis.

Early diagnosis in gastric cancer, as in all other forms of upper abdominal disease, is difficult, at times impossible. At the outset let us throw aside as a basis for diagnosis the classical picture of gastric malignant growths as pictured in the textbooks. They give us cachexia, retention vomiting, signs of a gastric growth. Associated, they are not symptoms of gastric cancer, but of its long-continued neglect, evidences that it has been allowed to progress to the incurable stage. Dr. Crile, of Cleveland, in a recent article expressed the hope that cachexia and glandular enlargement would soon cease to figure in the textbooks as symptoms of cancer. In gastric cancer we can substitute palpable tumor and retention vomiting for glandular enlargement.

To diagnose a cancer of the stomach early in any instance we must pay attention to what Mr. Moynihan has called the "inaugural symptoms." When in a patient beyond or even under middle life, especially if he has had a history pointing to gastric ulcer, we find the onset of a dyspepsia or even an aversion to food, associated with gradual loss of flesh and slight anemia, we are well justified in at least beginning to suspect some malignant change. It is of course true that gallstones, duodenal ulcer and even pancreatitis at their very outset give rise to a dyspepsia very similar to that found in disease of the stomach itself. The differentiation is extremely difficult, it is true, but the further progress of the illness may soon show it in its true colors. The patient becomes gradually a little languid and weak, his aversion to food may take the form of a dislike for special articles, particularly, as Kocher has pointed out, of meat. The blood count drops, the color index being low. The leucocytes may show a slight polynuclear increase. The patient complains of distress in the epigastric region. Indeed, "the common symptom of cancer of the stomach is pain" (W. Hale White), and we should be doubtful of our diagnosis if it be not present in some form. Often it is not described as pain. The complaint is of a pressure or heavy feeling in the stomach, or of a sensation after eating as if the food did not leave the stomach. As the disease progresses the patient becomes thinner, weaker and more anemic; his gastric symptoms increase and the eructations of gas become more frequent, and there may be added occasional vomiting. When the disease has reached this stage we are justified in opening the abdomen. To wait until a diagnosis is certain is to sacrifice all chance of cure, generally even of temporary benefit.

When the disease has progressed so far that a tumor is palpable, the prognosis is very grave and the same may be said of retention vomiting. It is not often that we have vomiting as an early sign, except in those cases in which, fortunately, the pylorus is occluded very early. I say fortunately, for when the stenosis is rapid and marked the growth may still be intragastric, as was the case in a woman upon whom I operated several years ago and who is still entirely well.

There is no excuse for failing to note retention of food until we have retention vomiting, for we are able accurately to determine the motility of the stomach by means of a test meal, removed after a certain period of time, preferably a full meal taken in the evening and washed out in the morning.

This brings us to the question of gastric analysis. Heralded some years ago as a certain means of diagnosis, the gastric analysis is nowadays, as far as a diagnosis of organic disease of the stomach is concerned, absolutely worthless. The absence of free hydrochloric acid was looked upon as a deciding point in favor of carcinoma of the stomach. It is in this disease but a sign of stagnation and fermentation, — a late sign. The acidity is but slightly altered in early carcinoma, and we frequently have an acidity in another common disease of the upper abdomen, i. e., gallstones. Moreover, it has lately been pointed out that carcinoma in other portions of the body may markedly diminish the free hydrochloric acid in the stomach.

Hale White lays stress upon the x-ray examination of the stomach, after the ingestion of bismuth, to determine its size and pyloric patulousness. My own experience with this method of examination is limited, but with expert radiographic work it might be valuable.

We see, then, that early carcinoma of the stomach is extremely difficult to diagnose. We can almost coincide with Mr. Moynihan in his plea for more frequent "exploratory operation," or, as I would prefer to call it, "early operation for upper abdominal disease." At the stage in which cases reach us now our task is almost always hopeless.

At times pylorectomy or, better still, partial gastrectomy, is possible, in conjunction with a posterior or possibly an anterior gastro-enterostomy. The mortality of this operation is about 4 to 20% in the hands of competent operators, not a low percentage. But of the 80% who recover, temporarily at least, a few will be permanently cured. Of course the operation can be successful only if the whole growth, with the possibly involved glands, can be excised. The existence of extensive glandular metastases along the borders of the stomach bodes ill for the patient, even if all the supposedly involved glands can be excised. When an excision is done I prefer to do this before the gastro-enterostomy, for the amount of stomach removed will govern the length of the loop and the location of the gastro-enterostomy opening. I also always do the two operations at one time. The operation in two stages exposes the patient to two etherizations, and after his first improvement following the gastro-enterostomy often he cannot be gotten to submit to a second operation.

I consider partial gastrectomy superior to the old method of pylorectomy, removing that portion of the stomach lying between the first part of the duodenum and a line dropped perpendicularly from the cardia to the greater curvature.

When only a gastro-enterostomy can be done it often relieves the patient wonderfully, particularly, of course, if there be pyloric obstruction. It saves them at least from death by starvation and gives them the ability to eat if not to assimilate food. As compared to gastro-enterostomy plus excision, it is a poor makeshift at best.

The after-treatment of all stomach operations for carcinoma, as well as for benign conditions of the stomach, is simple. The patients sit up in bed from the start to secure better drainage of the stomach and primarily for the avoidance of possible lung complications, which, after upper abdominal operations, have in the past not been uncommon. No food is given for twenty-four to seventy-two hours, liquid diet is given for about eight to ten days, and at first, if necessary, nourishment is given with the routine saline by the bowel. Early and frequent lavage is the only treatment for post-operative vomiting that avails anything. I get my stomach cases out of bed early and believe they are benefited by this method.

In all benign cases I believe that proper medical treatment, diet and hygiene are of importance after operation. This is the best time to obtain good results from medical treatment.

In conclusion, we can sum up the present situation in gastric surgery as follows:

1. The treatment of ulcer surgically is highly satisfactory, but not perfect in its results.

2. With less danger in operating because of our present improved technic, excision or resection of gastric ulcer will probably become more frequent.

3. Chronic dilatation of the stomach is curable by gastro-enterostomy, whether the pylorus be patulous or not.

4. Gastroptosis does not respond to surgical treatment.

5. Neuroses of the stomach are fit for surgical treatment only when their cause, being without the stomach, can be removed. Operations on the stomach for functional gastric conditions are always failures.

6. Carcinoma of the stomach in many instances would be curable if diagnosis could be made early. Until our diagnosis is improved our results will continue to be poor. Unless we explore earlier and *more* often, and do not consider the responsibility of such procedure a grave one, we cannot hope to progress in the surgery of malignant growths of the stomach.

Original Articles.

ON THE IMPORTANCE OF DISTINGUISHING SIMPLE ROUND ULCERS OF THE DUODENUM FROM THOSE ULCERS WHICH INVOLVE THE PYLORUS OR ARE ABOVE IT.*

BY E. A. CODMAN, M.D., BOSTON,

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I fear that it will seem disappointing to some of you that I have not chosen a subject on which to address you which would be more instructive in every-day practice. Probably many of you think of duodenal ulcer as a rare disease; certainly this impression is pretty general among clinicians and practitioners. One of the objects of my paper is to show that I believe duodenal ulcer to be a common instead of a rare disease. I believe it is so common that every practitioner sees many cases of it, although he rarely recognizes them. The duodenal ulcer which gives severe gastric pain two or three hours after meals, and which is characterized by bloody stools, is the classical picture. Such classical cases are occasionally met with; the diagnosis is fairly certain and, as you know, the mortality is very great. It is my belief that such cases really form but a small fraction of the cases of duodenal ulcer that exist. Let us compare its frequency with that of acute appendicitis, which certainly is not a rare disease. I believe there are good reasons for thinking that duodenal ulcer (including those cases which are called acute perforating and also chronic cases) is nearly as common as acute appendicitis.

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* Read before the Worcester District Medical Society, April 14, 1909.

For convenience we may divide duodenal ulcers as we see them clinically as follows:

1. Those that are recognized because of perforation into the general abdominal cavity.
2. Those that are recognized because of perforation with localized abscess, particularly subdiaphragmatic abscess.
3. Those that are recognized by profuse hemorrhage in the stools.
4. Those that are recognized by characteristic chronic symptoms without profuse hemorrhage.
5. Those which are confused with gastric ulcer or which result in pyloric ulcer or stenosis.
6. Those that result in periduodenal adhesions.
7. Those that pass for gastric neurosis or hyperacidity.
8. Those that cause no symptoms.

Just which numerical proportions we should ascribe to each of these classes it is difficult to say. I want first to speak of the type which causes perforation and resembles acute appendicitis.

A year ago I published a brief paper in the BOSTON MEDICAL AND SURGICAL JOURNAL for Feb. 13, 1908, entitled "Observations on Six Cases of Acute Perforating Ulcer of the Duodenum." In this paper I stated that in the past surgeons had frequently failed to distinguish these cases of perforating duodenal ulcer from cases of acute appendicitis even at operation. I believe that many cases of perforating duodenal ulcer have been operated on and have lived or died without the thought occurring to the surgeon that the case was anything else than appendicitis. I know that this has been so in some of my own cases. In the first 100 cases of acute appendicitis which I operated on, I met, as far as I knew at the time, no case of perforation of the duodenum, but in the last 100, every sixteenth case has been a perforation of the duodenum. This proportion is possibly too large and is in part due to mere chance, but I want later to show you some figures taken from the card catalogue of the Massachusetts General Hospital which tend to support this contention.

Please bear in mind that it is only within ten years that perforations of the duodenum have been intentionally operated on at all. It was only in 1900 that Weir, in his presidential address to the American Medical Association, brought this lesion to the consideration of American surgeons. By a most exhaustive study he was able to collect only 51 operated cases from the literature. It is interesting to see how the statistics have changed since that carefully prepared paper was written. For instance, he says that gastric ulcers probably outnumber duodenal as 12 to 1. I am about to say that duodenal ulcers probably outnumber gastric in a greater proportion than 2 to 1.

But Weir's paper did great service in calling our attention to the fact that the symptoms of acute perforation of the duodenum are practically identical with those of acute appendicitis, though if the question of a possible duodenal perforation is always borne in mind in cases of acute appendicitis, especially in those where a general peritonitis exists, fewer errors would be made. At the risk of repetition of this important point, I want to read a quotation from my own paper of last year. "I believe that in the past (and even in the present) we have been operating on these cases, supposing that they were peritonitis from appendicitis, and that we have sometimes removed the appendix as a scapegoat because it was inflamed and covered with fibrin *externally*,

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EXPLANATION OF PLATES.

FIGS. 1 and 2. These drawings were made from a case which died from perforation. The drawings do not show the area of induration about the ulcer. As a matter of fact, in this particular case the area of induration was small. Notice the rounded edge of the mucous membrane where it is infolded and compare with the microphotograph of cross section in Fig. 4. Compare both with Fig. 3 and see what would happen during contraction of the pylorus. We do not know how the longitudinal fibers act, but it may be that during the activity of the pylorus the ulcer may be pulled at times into a longitudinal fissure and at times into a transverse. When the muscles are all relaxed it is round or occasionally rather diamond-shaped.

FIG. 4. Section of duodenal ulcer showing heaped-up mucous membrane at edges and base of cicatricial tissue. Note the interruption of muscle layers by cicatricial tissue. Note the layer of Brunner's glands in the submucosa. These glands seem to be especially striking about the periphery of ulcers. Note the areolar tissue with large artery and vein beneath the ulcer and between it and the pancreas. Imagine how, during contraction of the muscular layers, this ulcer would be folded in a crease like a fissure in ano, and mucous membrane would be apposed to mucous membrane. This infolding is shown even more strikingly in Fig. 10, which was taken from a similar case which had perforated and later died of subphrenic abscess.

When this ulcer heals by the reproduction of new mucous membrane over the cicatricial tissue we will get the appearance found in the next three figures.

FIGS. 5, 6, 7. These sections were taken parallel with the long axis of the gut in another case which died of subphrenic abscess some weeks after perforation. Just outside the pyloric ring was a ridge of mucous membrane resembling the pyloric ridge but more cicatricial looking. At one end of this ridge was a small ulcer of the usual size and appearance. On close inspection the ridge seemed to be the scar of a healed encircling ulcer or of a series of round ulcers. Like lupus in the skin, the ulcer appeared to have healed and advanced at the same time.

These sections were taken through different portions of this ridge. They all show that the mucous membrane, glands and all, has been replaced over the cicatricial base. They all show an interruption of the muscle layers by cicatricial tissue as the only sign that an ulcer had been present. This contrast is brought out particularly beautifully by Mallory's connective tissue stain. In this particular case it was easy to demonstrate this scar tissue because in the first place the healing had probably been pretty recent, and in the second place the cicatrix was a linear encircling one, and it was only necessary to take a section across it. Imagine the difficulty of finding the cicatrix of a simple round ulcer from which all inflammation had subsided and the parts had returned as nearly as possible to normal. The cicatricial gap would be as small in both dimensions as these are in one. It would probably necessitate serial sections of the whole first inch of the duodenum.

The change in the mucous membrane is so slight that it is unlikely that any indication would be found by inspection of the inner surface. Ulcers of the mucous membrane alone would have no scar.

FIG. 8. Section from the case spoken of on page 317.

On opening the duodenum at autopsy the appearance of the mucous membrane was so nearly normal that it was difficult to demonstrate any lesion. Probably there has been some postmortem digestion of the mucous membrane itself, but this section shows a sharp interruption of the muscular layers and but little of the layer of Brunner's glands remaining. Notice the large amount of inflammatory tissue.

FIG. 9. A section from a case which died of hemorrhage showing that the erosion of the ulcer has involved a large artery in its base. The clinical history of this case was another instance of the fact that those which bleed at all bleed freely. (By permission of Dr. J. H. Wright.)

There are several other instances in Dr. Wright's collection which illustrate this same fact.

FIG. 10. Section from another case which died of subphrenic abscess some time after perforation. This illustrates the infolding of the mucous membrane and also that fact that the cut ends of the muscle layers appear heaped up by retraction.

FIGS. 11, 12, 13. Illustrate the transformation of the simple round unit duodenal ulcer into the encircling ulcer by coalescence or lateral invasion and then the transformation of this into the pyloric ulcer by progression stomachward. The lower lip of the ulcer is apparently the pylorus when the true pyloric mucous membrane has been destroyed.

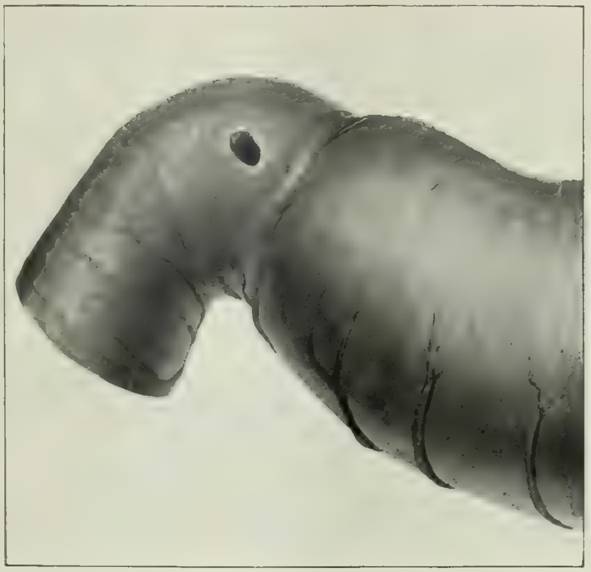

Fig. 1.

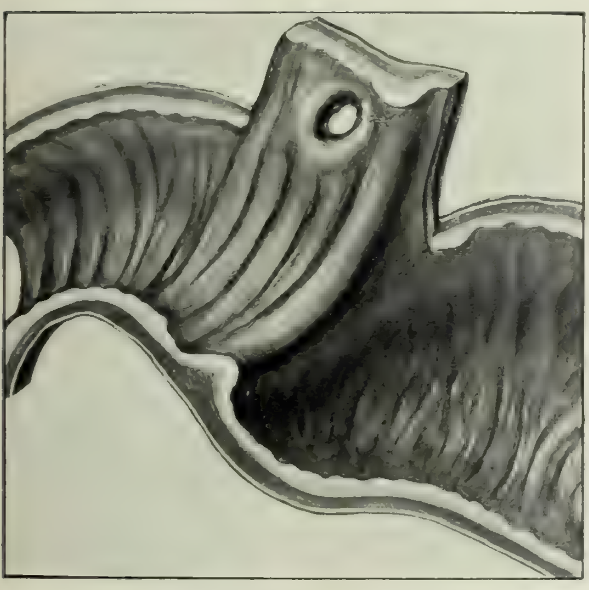

Fig. 2.

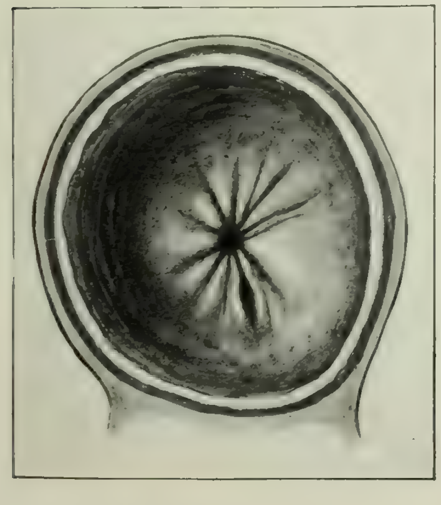

Fig. 3.

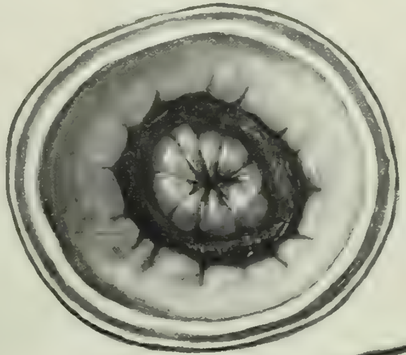

Fig.

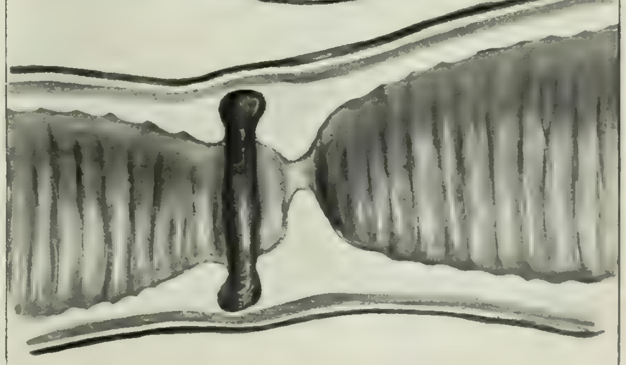

Fig.

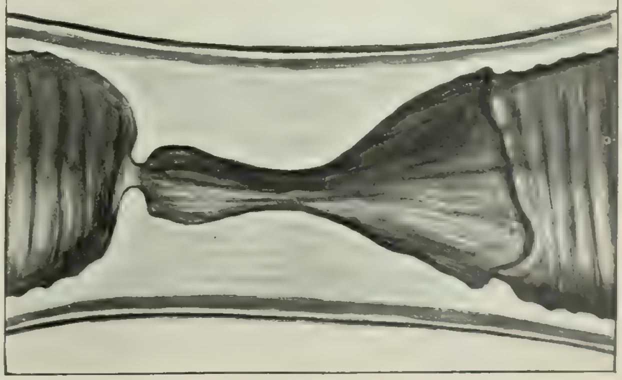

Fig.

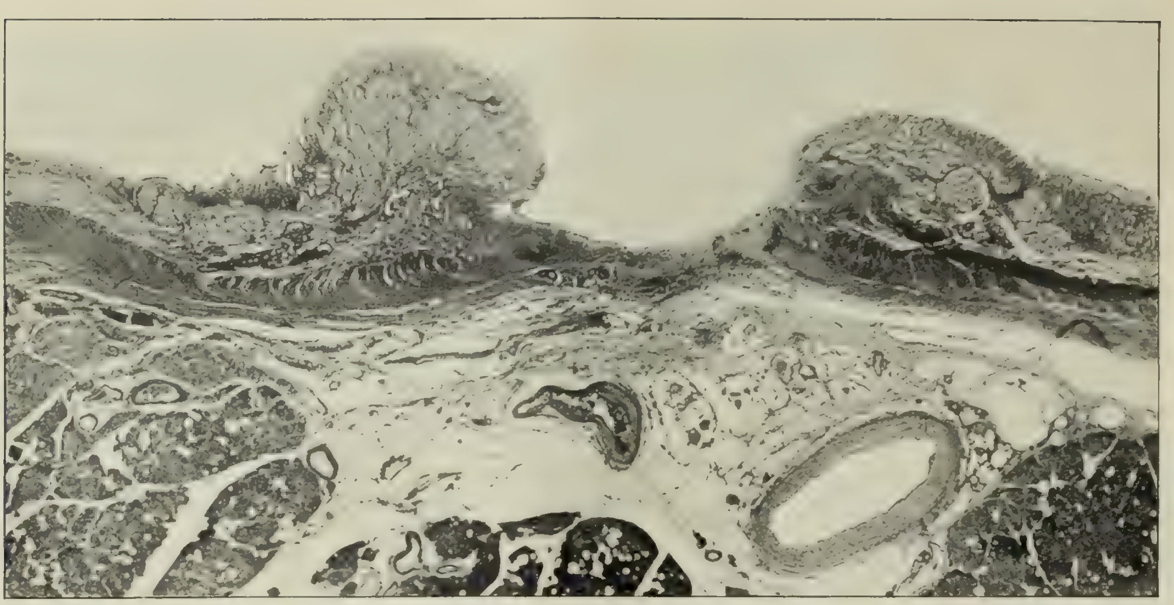

FIG. 4

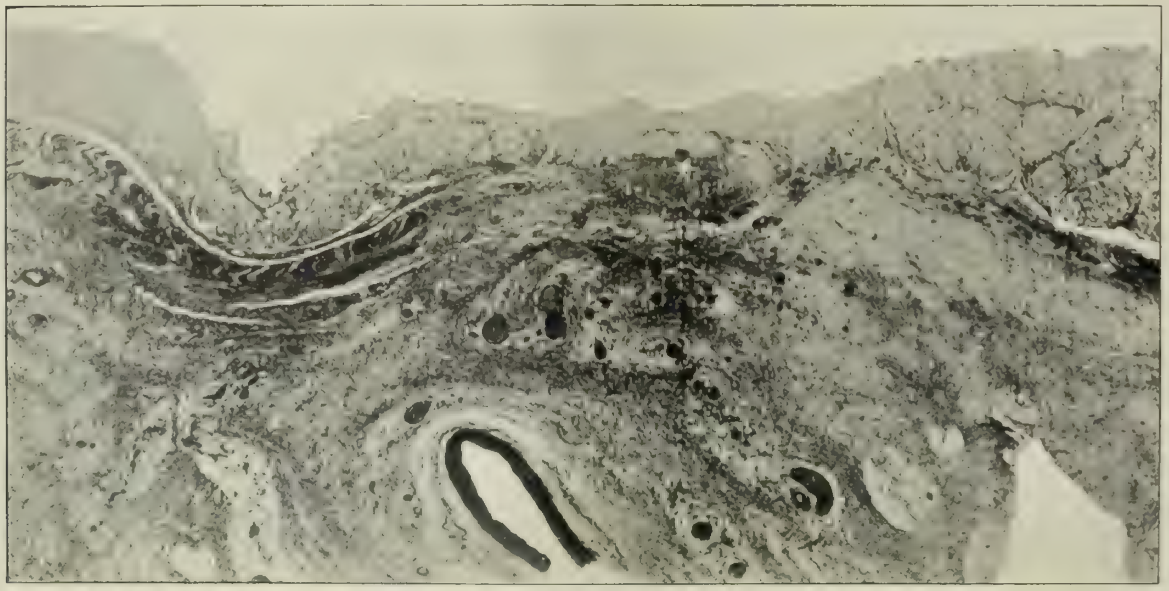

FIG. 5.

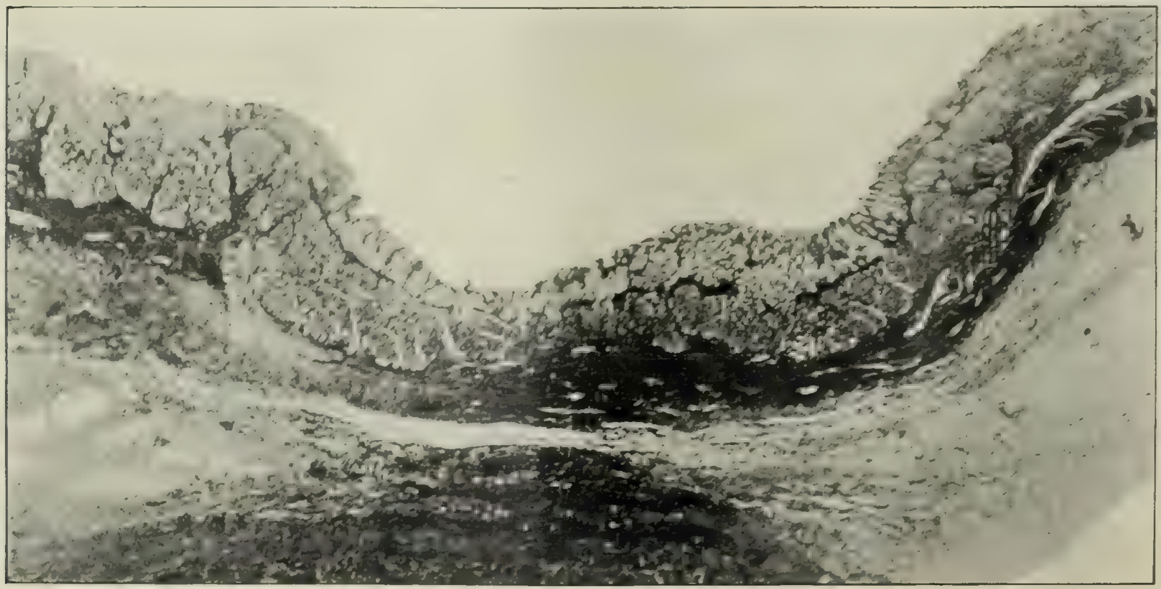

FIG. 6.

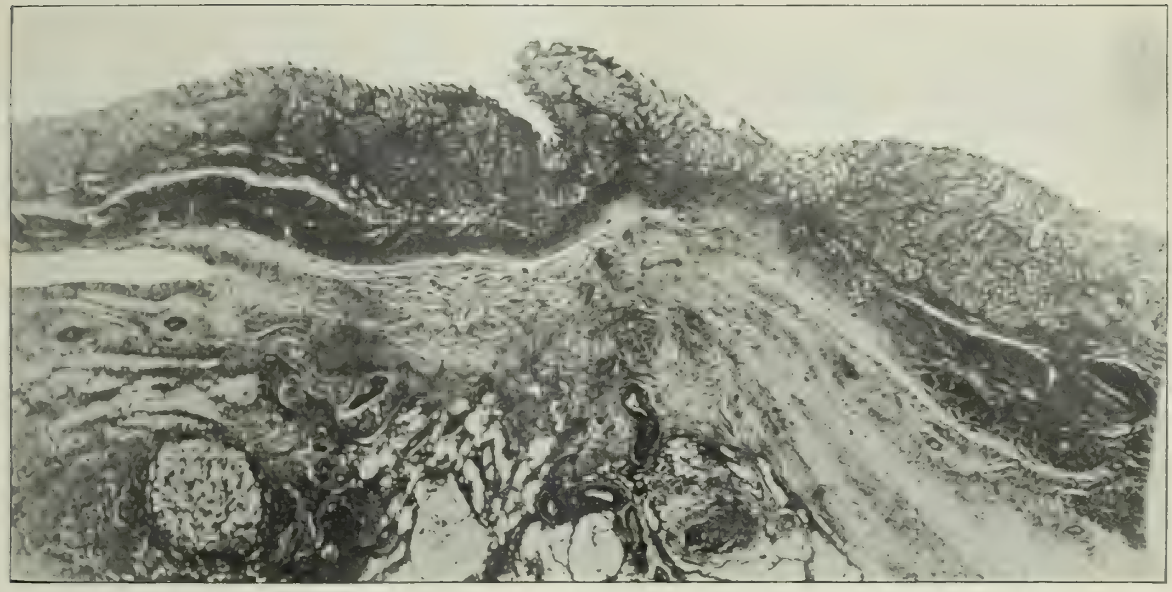

Fig. 7.

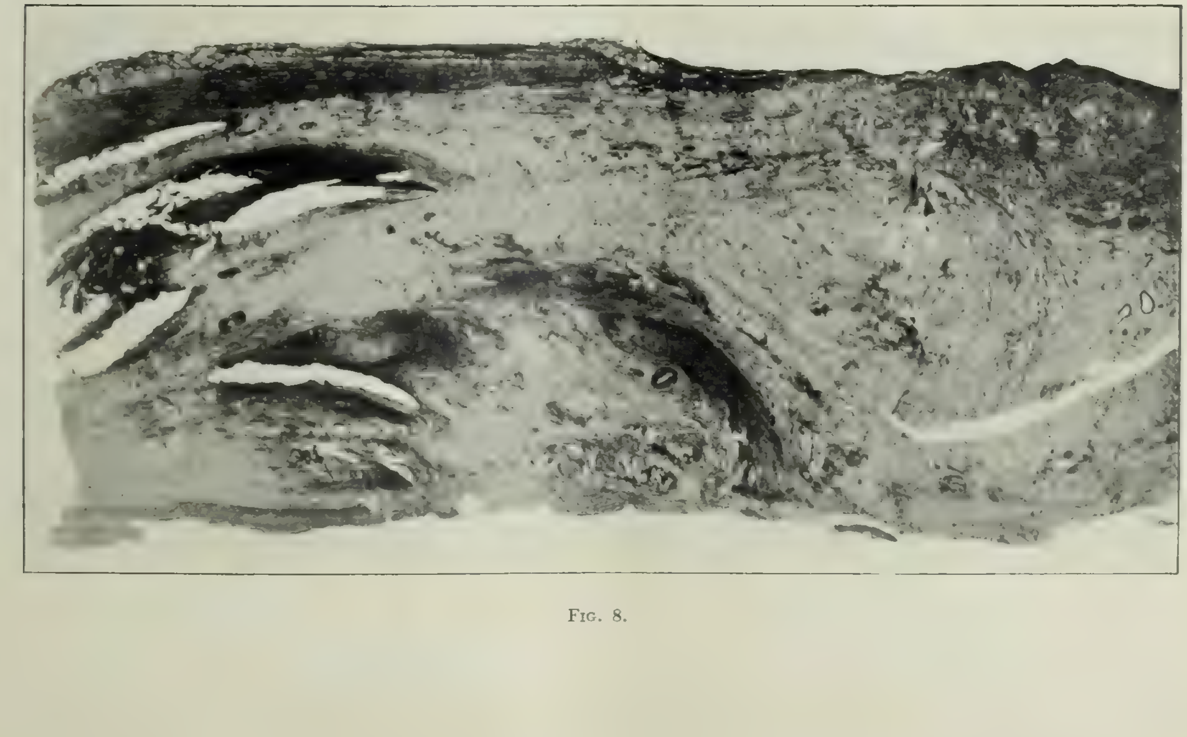

Fig. 8.

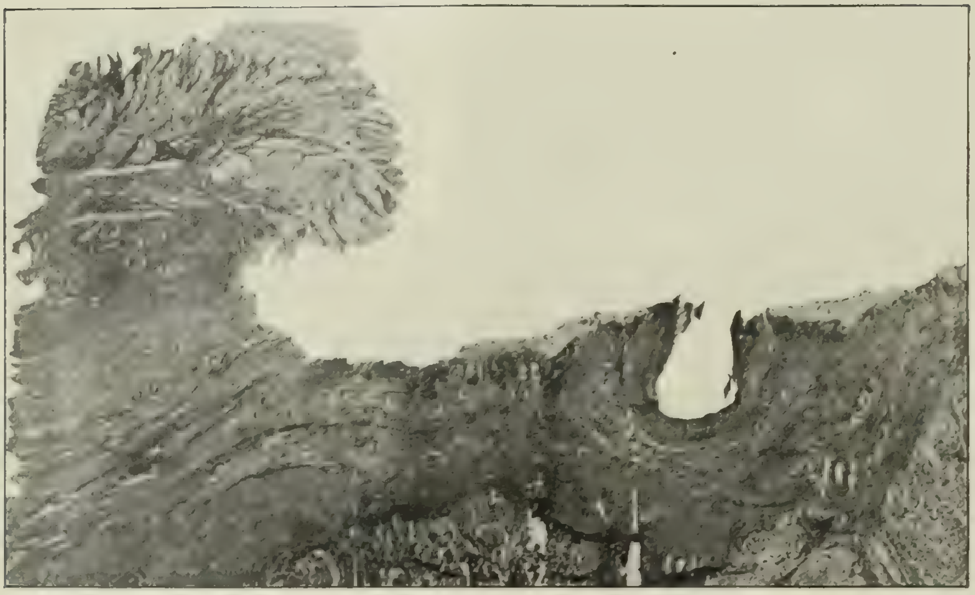

Fig. 9.

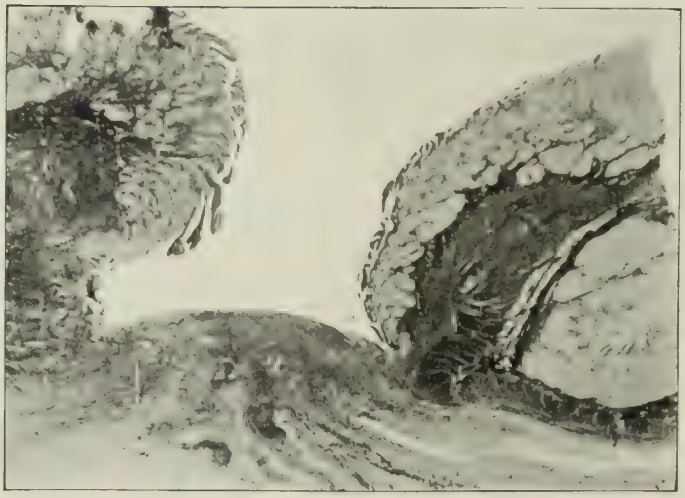

Fig. 10.

and have not observed that *internally* there was no ulceration or gangrene of the mucosa. The cases have lived or died without our thinking of duodenal perforation in connection with them. Of course, it is well known that appendicitis is the usual pre-operative diagnosis for acute perforation of the duodenum, but I further say that we have allowed it to be our operative and post-operative diagnosis as well. It is only three years since I showed my second case at one of the clinical meetings of the Massachusetts General Hospital. It was the first case at this hospital which had been diagnosed at the operation and had recovered, although my first case the year before had lived two months after being successfully sutured. Both of these, before operation, I mistook for appendicitis. I pointed out then that previous cases in the records, with one exception, had only been diagnosed at autopsy. Since that case I have had 3 more cases at this hospital and one in private practice in which I have made a provisional second diagnosis of duodenal perforation and thus the operation greatly aided. Three of these have recovered. During the last five years I have operated at this hospital on 5 cases of perforated duodenal ulcer and 82 cases of acute appendicitis and general peritonitis from appendicitis, a proportion of about 1 to 16. During this same five years all the other seventeen surgeons together have operated on 12 cases of perforated duodenal ulcer and 1,130 cases of acute appendicitis and general peritonitis from appendicitis, a proportion of about 1 to 100. During the three years previous to 1903, the proportion of all the hospital cases, including my own, was 1 to 580 of acute appendicitis. These figures must mean something even to the non-believer in statistics. There is little danger of these cases being confused with anything but acute appendicitis, for they simulate them almost exactly. I do not believe that it is mere accident that so many of these cases have fallen to my share. I have in all cases looked at the appendix first, and believe that this should always be done. In two cases I had to remove the appendix and open it to convince myself that it was not the cause of the trouble, so inflamed was its peritoneal surface. On the other hand, in several appendix cases I have thought of perforated ulcer, but fortunately looked at the appendix first.

" It does not follow from the fact that a case recovered after removal of the appendix and drainage of the peritoneum that the case was not one of perforated ulcer, for drainage alone may be sufficient to let the ulcer close and seal with fibrin. I believe that such cases have occurred occasionally at this hospital and are to be found now in the records as appendicitis."

I may add to this that in the year 1908 these proportions have fallen still lower, those of the other surgeons being 1 to 60 and my own, 1 to 14.

It seemed to me extraordinary that so many duodenal ulcers should fall to my share, but it seemed still more so that during these years I have had no cases of perforated gastric ulcer, while the other surgeons have had a good many.

I have recently looked over the descriptions of the twenty-four operations catalogued as perforated gastric ulcer at this hospital since 1899 and have been appalled by the inaccuracy of the house officers' localization of the point of perforation. I find such items as this: " Behind liver on anterior wall of stomach near greater curvature," or even more indefinite descriptions. The most common statement was: " On anterior wall close to pylorus was found a round perforation." In at least two instances autopsies on such cases showed that the perforation was in the first part of the duodenum.

In these 24 cases classified in our card catalogue as perforated gastric ulcer, the situation of the perforations were as follows:

On anterior wall, 3. Near cardiac end, 6. Near pyloric end, 14 (2 proved by autopsy duodenal). On lesser curvature, 1.

(Owing to the inaccuracy of many descriptions these figures are worthless as defining on which side of the pylorus the ulcer lay.)

On reading between the lines, most of the 14 cases " near the pyloric end," and possibly some of the others, should probably be classed as duodenal ulcers, of which during the same period there have been 23 cases classed distinctly as duodenal perforations. Among these, mistakes of localization are much less likely. Probably duodenal perforation is much more common than gastric. Thus our proportion is at least 25 to 22 and might be 37 to 10.

Such inaccuracies of observation are by no means confined to this hospital, for a glance at the reports of cases operated on for " perforated gastric ulcer " in other places show many cases which probably were duodenal. A goodly proportion of cases reported as perforated gastric ulcers which gave a previous history of but slight dyspepsia, and the immediate symptoms of which have resembled acute appendicitis, and which at operation have shown bile-stained fluid, especially if accompanied by little or no gas, and which state that the ulcer " was near the pylorus," were probably duodenal and not gastric. Instances of such reports are too numerous for me to need to specify individual instances, but I am sure the future will bear me out in this statement. No one need take offense at these statements, for confessedly, before Weir's paper, we were all operating on duodenal ulcers and mistaking them for appendicitis.

Mayo and Moynihan, in their most recent papers, admit this error in the past in chronic cases.

In the *Annals of Surgery*, 1904, page 900, Mayo says: " Up to two years ago, 11% of the gastric and duodenal ulcers which came under our care involved the duodenum, 89% the stomach. During the past year, with more careful observation, we find 20% duodenal ulcer or combined with gastric ulcer."

In the *Annals* for 1908, page 892, he says: " Duodenal ulcer, which is the lesion in nearly two thirds of our cases."

In the same number of the *Annals*, page 876, June, 1908, Moynihan says: "The number of duodenal ulcers was relatively very small in the earlier cases, but has gradually increased. Latterly I have operated more frequently for duodenal than for gastric ulcer, and think it not improbable that many cases in which the lesion was formerly supposed to be in the pylorus were incorrectly classified."

In cases where operation is done for perforation, the surgeon makes it his business to find the ulcer, close it and get the patient off the table. The identification of the pylorus seems of secondary importance, but since Mayo has made this an easy matter by calling our attention to the arrangement of the blood vessels over it, the situation of the perforation should now always be recorded. It seems ungracious to say so, but most surgeons certainly do not know the pylorus when they see it. Unless they expressly look for it, their observation is apt to be inaccurate. If the case recovers it seems to make little difference.

Thus, if it be admitted that a large proportion of the gastric perforations were really duodenal, the frequency of duodenal perforation compared to acute appendicitis with abscess would be at least 1 to 40 at our hospital, and since in my own cases it is 1 to 16, I may be pardoned in thinking it should be possibly still lower. In the year 1907–8, at the Massachusetts General Hospital, this ratio (1 to 16) occurred also in the cases of the other surgeons, if we include the "gastric perforations."

Now what proportion of all the duodenal ulcer cases are those that perforate? This is a question that no one can answer, but there are good reasons for believing that it is but a small proportion. If we could show that only 1 out of 40 perforated and caused general peritonitis it would be a pretty good proof that my previous statement that chronic duodenal ulcer might be as common as acute appendicitis is correct.

In the first place, let me show you what a simple round duodenal ulcer really is. In this paper I do not refer to ulcers of the mucous membrane; I am speaking only of deep ulcers which involve the muscular coats. Acute duodenal ulcer is probably a misnomer; the perforation is acute but the ulcer is not. These three specimens are good examples (specimens demonstrated, see Fig. 1); in fact, these simple ulcers, when they have not spread, are as like one another as peas in a pod. They are so small and insignificant looking that you may easily overlook them in the folds of mucosa. As a rule they are from 1 to 2 cm. in width and look like a bullet hole. They usually occur just outside the pyloric ring, so close to it that when its sphincter muscle is tightened they must lie in the folds of mucosa much as a fissure in ano lies in the sphincter ani. About the periphery of this little crater you find a greater or less degree of inflammatory induration just as one does about a furuncle. This feeling of induration is very deceptive and probably varies greatly during short periods of time like the induration about other sores, the actual crater being sometimes surprisingly small. In a case which I shall speak of later, the tumor felt as large as an egg at operation. At autopsy the crater was only 2 cm. in diameter. In another case the tumor was thought to be cancer and the autopsy showed only a very narrow incomplete encircling ulcer. The single round ulcer is the unit; if it spreads, it first encircles the lumen of the gut and then later progresses stomachward. (See Figs. 4, 11, 12, 13.)

It seems to me a good homology to compare ulcer of the duodenum with fissure of the anus. Suppose that you look from the distended duodenum at the contracted pylorus. The appearance would not be unlike an anus. You will observe that most specimens of duodenal ulcer are close to the pylorus; in fact, so close that they must lie practically in the puckered folds of mucous membrane just outside it — almost folded in it. In this specimen, for instance, imagine how closely the general relations would correspond with a case of fissure in ano. (Fig. 3.)

This might help to explain the freedom from pain that occurs in these patients when the stomach is full and the pylorus closed. It gives us an explanation of pylorospasm, too, and of the exacerbations which these patients are subject to from time to time, just as the soreness of a fissure varies with occasional attacks of local inflammation. The parallel may be carried farther, too, in comparing the strictured condition which results from the prolonged spasm due to fissure.

It also gives some explanation of the tendency which these ulcers show to be chronic. Their relation to the sphincter prevents their healing, because they are constantly being opened and folded in again by the action of the pylorus. When folded in neither gastric juice nor bile can irritate them, but during acute exacerbations the very presence of induration about them may keep the raw surface from infolding.

These insignificant little ulcers may prove fatal in three different ways: (1) by perforation, (2) by hemorrhage and (3) by starvation due to stricture of the pylorus. But if they do not cause death, they may heal in time; we do not know how long this takes because in cases with a long, chronic history there are always periods of comparative freedom. In such cases we do not know whether it is the same skunk under the barn all the time or another one. It seems to me unreasonable to suppose that every such ulcer must grow worse. I have confidence enough in the *vis medicatrix naturæ* to think that it may heal most cases of such simple lesions. I have, however, operated on three chronic cases, in one of which symptoms had existed over ten years, in which the the ulcer appeared exactly like those I have seen in perforated cases, just as small and insignificant looking. On the other hand, I have one specimen which shows two old scars adjacent to a recent one and find descriptions in Dr. Wright's autopsy records of several others.

Having now seen what a simple round duodenal ulcer is in gross, let us try to find what kind of a scar it leaves, for if these ulcers are common and if some do not perforate or spread, but heal naturally, we ought to find their scars in the duodena of patients dying from other causes.

Do autopsy statistics offer any information as to the healing of duodenal ulcers as shown by cicatrices, except in cases where an active ulcer is also present? I have asked Dr. Wright and Dr. Richardson if they ever see at autopsy any cicatrices which might have been formed by old, round ulcers in the duodenum as they do in the stomach. No; and they doubt if any evidence would remain in the mucous membrane. Can you tell me whether such a spot as the ulcer forms in this specimen would leave a recognizable scar if it healed? (See Fig. 1.) Does healed mucous membrane, after a loss of substance like this, show characteristic changes under the microscope — absence of glands, for example? According to Ziegler, it leaves simply a deposit of cicatricial tissue in the deep layers, and the mucous membrane is replaced, glands and all.

I have been fortunate enough to find in the autopsy records a case of perforated duodenal ulcer which died some months after the perforation, as these cases often do, of subphrenic abscess. Dr. Wright had saved a section of this ulcer, which had partially healed between the time of perforation and death. This section shows most clearly the heaped-up mucous membrane at the edges of the ulcer, beneath which are the retracted ends of the cut muscle. The base is cicatricial tissue. One can readily see that when the mucous membrane has again healed over this area that the picture will be exactly like the figure in Ziegler, which is practically the same as Fig. 7. The only way to detect that there has been an ulcer is a gap where the muscle layer is interrupted instead of being continuous.

I want also to show another slide, Fig. 8, from a man who had been sick several months, whom I saw last summer with Dr. Fernald, of Cohasset. This patient was moribund when I saw him, with symptoms of cerebral abscess and abscess of the lung. I declined to operate but made a provisional diagnosis of perforated duodenal ulcer followed by subphrenic abscess and abscesses of liver, lung and brain. At the autopsy, which was done by Dr. Fernald and myself, the diagnosis was found to be correct, but the ulcer in the duodenum was partially healed, so that I was almost uncertain as to its having existed. There was a retroperitoneal abscess in close relation with the duodenum. On opening the duodenum there were three small suspicious areas apparently covered by mucous membrane. Two appeared like faint scars beneath the mucous membrane and the third resembled a recently healed spot of granulation tissue. All three were about one-half inch outside the pylorus and separated by intervals of normal tissue. The duodenum was taken out with a portion of the stomach, stretched on a board and hardened in formalin. Recently Mr. Brown has made for me some very successful celloidin sections, taking in a whole width of the duodenum and passing through the purplish area and the two cicatricial looking areas. Unfortunately the mucous membrane is not well preserved, owing to rough handling and post-mortem digestion, but when one undertakes to trace the muscle layer, three gaps where it is replaced by cicatricial tissue can be found. I am satisfied that these areas represent three ulcers, two of which had long ago healed and one only recently. It is not uncommon to find such scars of healed round ulcers in the neighborhood of an active ulcer. These scars would escape notice unless the active ulcer called attention to it. (Figs. 5, 6, 7.)

I want also to speak of another case of perforated duodenal ulcer which was operated on by Dr. Beach. The patient recovered and a year or two later re-entered the hospital with acute intestinal obstruction from volvulus caused by adhesions. He was operated on and soon after an autopsy was done. The record of the autopsy is very full in other respects, but makes no mention of the condition of the duodenum except to speak of the mucosa of the intestines being normal. The scar must have been so small as to escape the notice of an exceptionally careful pathologist. It is probable that he did not know of the history of perforation, as no note was made of search for the ulcer.

It is fair to say, therefore, that the results of healed round duodenal ulcers would be overlooked by pathologists, and it is doubtful if they could always be found even by careful search. Therefore, autopsy statistics are of no help to us in telling the results of those which do not bleed or perforate. Thus the absence of autopsy observation of duodenal scars has little or no weight against the supposition that duodenal ulcer is a common disease. On the other hand, a series of observations of microscopic sections of the first inch of the duodenum in a hundred male subjects past the age of forty ought to have much weight in determining whether these scars are common. I believe that such scars are like four-leaved clovers, which we pass by without seeing unless we look for them.

We have now reached our second heading: Those that perforate and cause localized abscess.

It by no means follows that cases which perforate into the general abdominal cavity all die unless operated on. Just as in appendicitis a certain stage of the acute peritoneal irritation gives the picture of general peritonitis with board-like abdominal rigidity, these cases, too, may later localize and form a walled-off abscess. Two typical cases of this kind have been recently reported in the Boston Medical and Surgical Journal, by Wiseman.[1] In two of my own acute cases a film of fibrin had already sealed the perforation. In another which I will show you, the omentum had promptly done its policeman's duty and had neatly laid a finger over the perforation.

Did time permit, I could cite from the Massachusetts General Hospital records, and from the literature, numerous cases of this kind which illustrate that the protective action of the abdominal spasm, the rapid emptying of the upper intestine by vomiting, the quick closure of the perforation by a plaster of fibrin and the usual formation of plastic adhesions have brought about a spontaneous cure. Sometimes the local abscess thus formed probably seeks a spontaneous exit through the intestine like those abscesses about the appendix. Sometimes it is opened by the surgeon in the epigastrium and the cause is not determined; sometimes, having extended down the outer side of the ascending colon, it simulates an appendix abscess exactly; sometimes it is simply slowly absorbed and leaves a legacy of periduodenal adhesions. One of its most common tricks is to locate between the liver and the diaphragm and cause subphrenic abscess. Probably the reason of this is that what gas escapes usually seeks this situation and in this way holds a space for the abscess to locate in, just as fluid gravitating to the pelvis leads to secondary abscesses after acute appendicitis. Occasionally these cases of subphrenic abscess perforate the diaphragm and cause "pneumonia" and "abscess of the lung" and are discharged through the bronchi, as in the case I have alluded to. Probably a good percentage perforate posterially or abut on the pancreas. Some cases of "pancreatitis" where the head of the pancreas feels thickened are perhaps cases of duodenal ulcer.

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[1] Boston Med. and Surg. Jour., vol. clx, no. 11, March 18, 1909.

These atypical cases of duodenal ulcer are most interesting, but I must pass on, for my main intention in speaking of them is to carry on my argument about the probable frequency of this lesion. When we have included these cases they will still further reduce the proportion of 1 to 40, probably divide it.

The third division, those that are recognized by hemorrhage. These are the classical cases which have justified the clinical diagnosis.

I am inclined to think that those which bleed at all bleed freely because, on account of their situation, they happen to erode the pancreaticoduodenalis artery or one of its large branches, while if they are situated farther from this artery they will wall themselves off by a dense inflammatory wall of cicatricial tissue which controls the smaller vessels.

I have two specimens which to a certain extent indicate this. One is a portion of the wall of an ulcer of this type which I removed from a patient whose symptoms had existed for many years without hemorrhage. The guaiac test was negative. I excised the base of the ulcer and at the same time did a modified Finney operation. The result has been most satisfactory.

In the excised portion of this ulcer you may see under the microscope the dense sharply defined wall of cicatricial tissue which existed in this case. One can easily imagine why the guaiac test was negative in such a case, for it seems as little likely to bleed as certain old dense ulcers of the leg which need scarification. I have recently been told by Dr. Franklin White of a large indurated stomach ulcer which gave no guaiac reaction in the feces or stomach washing.

The other specimen is from a patient whose history was marked by the tendency to hemorrhage. Death was due to a tremendous hemorrhage immediately following gastro-enterostomy, which I did with the desire of being conservative. Presumably my manipulations started the bleeding. The specimen shows very clearly why. An artery is exposed in the base of the ulcer, and from the fact that it stands out in the wall of the ulcer in relief, I take it that it had been exposed for some time before the final hemorrhage occurred. (Fig. 9.)

I want also to present two old dried stomachs from the dissecting room, a glance at which shows how important the accidental situation of the ulcer may be in regard to hemorrhage. Although these stomachs were tied off at the pylorus, the arrangement of the vessels of the stomach and duodenum are not unlike and show the same anemic intervals. If we may judge anything by these specimens, we may say that hemorrhage as a symptom depends on whether or not there happens to be an artery of considerable size within the radius of the ulceration. If the artery is not of considerable size, it is possible that, owing to cicatricial limitation, the ulcer will cause no appreciable bleeding, not even enough to show with the guaiac test.

(To be continued.)

◆

ON THE PRESENCE OF TUBERCLE BACILLI IN THE BLOOD IN TUBERCULOSIS.

BY M. A. DAILEY, M.D., BOSTON.

(From the Pathological Laboratory of the Boston City Hospital.)*

RECENTLY, attention was called by Rosenberger to the value of examination of the blood for tubercle bacilli as a diagnostic procedure in tuberculosis. At the instigation and under the immediate direction of Dr. Thomas Ordway, I decided to test this method, for if the bacilli could be found in the blood, it would be of great aid in diagnosis, prognosis and treatment.

The material used consisted of two cases with presumably normal blood, one normal blood (5 ccm. in 5 ccm. of citrate normal salt solution, inoculated with a platinum loopful of known tuberculous sputum), two cases of miliary tuberculosis seen at autopsy, fifteen clinically advanced cases of tuberculosis, in the sputum of all of which tubercle bacilli had been found, and which were running a temperature.

The normal bloods, and the normal blood inoculated with tubercle bacilli, were used simply to develop technic. In the latter specimen, a tubercle bacillus was found after three quarters of an hour's search.

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*I am indebted to the courtesy of the pathological staff, of the visiting physicians and surgeons of the Boston City Hospital and to Drs. Tileston and Holmes, of Long Island Hospital, for many favors and help granted me.

It has been the predominationg idea in this work to take a fair number of cases and work them out thoroughly from all possible points of view.

The methods of work were patterned exactly after those of Rosenberger. Absolutely new slides, new syringes and new pipettes were used. Tested, freshly-made stains were employed. Pipettes were cleaned in concentrated nitric acid. Syringes were boiled in caustic soda. Syringes, pipettes and citrate solutions were sterilized by means of the autoclave. Three slides from every case, except one in which two slides only were examined, four slides in most cases, were looked over for a half hour or more each.

The slides were stained in three ways: by the Koch-Ehrlich method (in the cold for twenty-four to forty-eight hours), by the Ziehl-Nielsen method (in an oven at 56° C. over night), or heating over a burner to steaming for a minute. They were decolorized by Gabbet's or by Pappenheim's method, or by 20% HCl in 70% alcohol, followed by methylene blue as a counterstain. These different methods of staining and decolorizing were adopted to obviate the possibility of not finding the bacilli by any one method.

Five cubic centimeters of blood were taken from each patient, or from the heart's blood at autopsy in the two cases of miliary tuberculosis mentioned, and smears were made from the sediment which collected over night in the 2% citrate normal salt solution. Seventeen guinea pigs were inoculated with from 1 to 2 ccm. of sedimented blood (fifteen with the blood from advanced tuberculosis cases, and two with the heart's blood from autopsy on the general miliary cases).

Results. — Microscopically from the smears: In every case, unquestionable artefacts, that is, bodies retaining the red stain, were found. In three cases, a single body was found in each which could not be differentiated microscopically from the tubercle bacillus. In no case could a positive diagnosis of a tubercle bacillus be made.

Macroscopically, from the autopsy on the guinea pigs: All the pigs had to be killed. All except two were allowed to live over thirteen weeks, these two being killed at twelve weeks. All the pigs gained in weight and were in good condition. Many of them bore young; one of them at the time of killing was delivered of two young pigs by Cæsarean section, both of which are alive and healthy. Notice was taken at autopsy of glandular enlargement; none was present in any case. Sections from spleen, liver and kidneys were preserved in formaline for microscopical examination in all cases; sections of suprarenals, placenta, heart and lungs in some cases. In no case could a diagnosis of tuberculosis be made at autopsy; in only one case was a doubt present, and that in a spleen, in which certain nodules could be ruled out.

Microscopically, sections mounted in celloidin and stained in hematoxylin and eosin. Sections showed not even a suggestion of a tuberculous lesion, except in one case, where a small focal inflammatory lesion was found in the fat tissue adjoining the pelvis of a kidney; a stain for tubercle bacilli proved negative.

Summary. — Blood from seventeen cases of tuberculosis (two of miliary and fifteen of advanced tuberculosis) inoculated into guinea pigs failed in every instance to produce the slightest evidence of the disease. Stained smears of the blood from the seventeen cases showed occasionally bodies resembling tubercle bacilli.

Conclusions. — The only reliable test for demonstrating tubercle bacilli is animal inoculation and the production of the characteristic tuberculous lesions with the bacilli in them. This test applied to the blood of seventeen cases of miliary and advanced tuberculosis failed in every instance to demonstrate tubercle bacilli. It is reasonable to conclude, therefore, that virulent tubercle bacilli are not ordinarily demonstrable in the circulating blood of tuberculous patients.

Staining tests (on which Rosenberger bases his arguments and conclusions) are not reliable. The results he obtains may be explained in at least three ways: (*a*) as attenuated tubercle bacilli; (*b*) as artefacts; or (*c*) as acid-fast bacilli of some sort introduced as a contamination in some one of the steps employed in staining, or deposited on the slide by the fingers in the process of cleaning or manipulation.

This further conclusion seems warranted: that the demonstration of tubercle bacilli in the blood by means of staining methods is wholly unreliable and hence of no clinical value.

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THE DESIRABILITY OF FURTHER EXTENSION OF UNDERGRADUATE NURSING SERVICE.*

BY FRANK W. PATCH, M.D., FRAMINGHAM, MASS.

Conservation has become a watchword of the new century. The late President of our great country succeeded in arousing the nation to some realization of the waste of natural resources, and now even the city of Boston is pledged to a forward movement which, among many other plans, proposes to see to it that the public property of the city, schoolhouses, parks, churches and other municipal effects, shall be put to a broader usefulness and made to serve the community along new lines. Millions of dollars are invested by the city in schoolhouses which are for the most part closed during two months of every summer, not to speak of two days of every week throughout the entire year. In churches, the showing is even worse:

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*Read before the New England Association for the Education of Nurses, May 27, 1909.

closed and locked six days out of seven, fifty-two weeks of the year. To be sure, there may be difficulties in putting schoolhouses and churches to any other use than those for which they were originally intended, but, by a casual observer, it would seem as though less waste might be possible.

If the above is true of certain of our idols, may it not be wise for us to inquire into the use that is being made of another opportunity for public service, that of which physicians and nurses are the especial conservators — the hospital and training school for nurses? Are we making of this combined institution all that we might? Are we returning to the community full value for the great trust they have reposed in us?

I am sure this audience will pardon me when I say that we are not. The hospital and training school have not yet begun to reach the full measure of development that the public has a right to expect. They have as yet been chiefly concerned with the pathological side of community life. They are performing for the sick a service similar to that which the prisons perform for the criminal contingent, — largely that of taking care of the results accruing from an incomplete understanding of the elements of healthful living on the part of the great public, — for it is inconceivable that sickness is the rightful heritage of man. It must be warred against until overcome. The movement has already begun. We see in modern research work, in survey work, such as that recently carried on in Pittsburg, and in the individual work of great numbers of far-seeing physicians, evidence of a real advance, but the actual humanitarian growth of the institutions in which we are so largely interested, as related to the wonderful problems of preventive medicine, are as yet only seen in the distance by the scouts among us. Do not misunderstand me. It is a self-evident fact that the work of hospitals, and of the men and women who make the hospitals possible, has been untiring and splendid; no word of criticism shall ever pass my lips, but new visions of usefulness are opening before us and, without unusual effort, one may now look forward to the time when the educational features of the hospital may be its greatest claim to our continued interest.

The especial problem before us to-night is, What the training school for nurses may do to help, for "to help one another" is the greatest privilege on earth. In considering the question, may we not venture to look upon the modern training school for nurses not as a mere department of the hospital, existing solely for the benefit of that institution, but as a great modern institution in itself which is in co-operation with the hospital. It has grown into being in our midst quietly yet persistently, doing a splendid work in fitting hundreds of young women for useful service and at the same time serving the constantly increasing demands of the hospital itself. This work has grown so rapidly that repeated changes in method and organization have become necessary, and much discussion is even yet heard as to just what may be the best means of handling the many-sided subject of the training of nurses, the relation of the school to the hospital, and the length of the course which young women should be asked to undertake. Training schools have had difficult problems to solve, constant and laborious service to perform. In the multitude of duties at hand, is it not conceivable that they have not yet come to a full realization of the immensely important rôle they may some time be called upon to play in the life of many urban communities? In the past, training schools have, perhaps, suffered largely through misconception. They have been considered *solely* as a necessary means to the caring for actual hospital patients, and also as offering young women a training that should help them to a livelihood. But this is *not* all. The greater opportunities of education in the humanities and service to the community at large have not, as yet, played any considerable part in the principles underlying the development of training schools. On the whole, they have not enjoyed organization on what most of us would consider the broadest foundation possible. This is not said in a spirit of criticism, for it only emphasizes the fact that training schools are still a very modern institution, that they have accomplished wonders in the few years they have been in existence, that they may have a greater future than their originators ever dreamed, and that it is for us nurses and physicians of to-day who are, in a way, their sponsors, to strive by every possible means at our command to build our schools into the great force for good which they are capable of being. An intelligent, educated nurse, filled with the enthusiasm of youth and knowledge, is a possible center of great influence for good in any community where she may serve. The educational value of such a woman, both as a social worker and, later, as the matron of her own home, is of great importance, yet, under the present form of the organization of our schools, we limit the service of these women, first, to the four walls of the hospital, and, later, when they have become graduates, to the comparatively small proportion of the community who are able to pay from twenty to twenty-five dollars per week for the service rendered. The great bulk of the people who earn anywhere from six to thirty dollars per week, as heads of families, are obliged, in case of illness in the home, to accept one of two alternatives, — apply for charity, or burden themselves with a debt which it may take them years to overcome. Is there no way by which this situation may be improved? It has been suggested from time to time that schools should be established giving short courses, in other words, an incomplete training, to those desirous of serving for less pay than that allowed the regular graduate. For several reasons this plan has never made great headway; young women fitted by nature for the life of the nurse are seldom satisfied to stop with the limited training. An insight into the work gives rise to further desire for knowledge, and before many years she has fitted herself to command the usual remuneration. Then again, it is doubtful if the people in general will ever be satisfied, in serious illness, in accepting anything less than the regularly trained hospital nurse. What, then, may we do, in the face of an evident necessity, to fulfill the reasonable expectations of the community? At present it would seem as though the most urgent need might be met in some degree by a further *extension of undergraduate service.*

Already loud murmurings are heard from various quarters at the length of time now given to the training of a nurse. Three years is thought by many an unnecessarily long period to be required, and laudable reasons are advanced in support thereof. Granted that three years is an excessive period to spend in hospital duty alone, two years in the hospital and one in the homes of the community, under systematic supervision, is certainly none too long for a well-rounded training. That this is not a new thought in technical training is evidenced by the time-honored practice of all medical colleges in requiring clinical work at the bedside by senior students. Theological schools send out their older pupls to fill pulpits during the summer months, and no worthy engineering student would expect his diploma before he had been a member of one or more parties in the field.

Is there not here an opportunity to render a far greater service to the community than is now done? May we not thus expect to double the present efficiency of the training school as an institution and, with a comparatively slight additional expense, increase the usefulness of the service by a very great degree? Such a plan would open up many new questions in training-school management, to be sure, but no insurmountable ones. Wise men and women, determined to study the possibilities without prejudice, could adjust such a plan, in conjunction with the work of the great urban hospital, without especial difficulty. It would require, first, certain financial resources, but not more than could easily be obtained the moment a definite working plan offering results was in the hands of responsible parties. The important thing in asking the support of the public for any project of this nature is to have, at the outset, a well-defined plan, completely thought out in detail. If it is worthy and practical, and persistently adhered to, supporters will come forward and it will succeed. The number of pupils would then be gradually increased by at least one third, possibly more. It would be necessary to pay these pupil nurses a moderate allowance to provide for personal needs during training. Proper but not necessarily expensive housing accommodations must be supplied, but the whole of this housing need not be within the hospital walls. It might be found better policy to house a part of the number in the midst of the greatest need, possibly a section somewhat removed from the hospital, but near the source of call. In addition to the above, some reorganization of the teaching force would undoubtedly be needful, especially as the success of the plan must depend largely on teaching efficiency and a complete system of supervision of the work of pupils outside, as well as inside, the hospital. Graduate teaching nurses, familiar to some extent with the demands of social service, would, at first, have to be selected with great care, and only those with an especial love of the work and unbounded tact could be considered. It is not an easy position, that of supervising instructor, following pupils in all conditions of home life, acting as mediator for all differences, and hygienic autocrat in the face of numberless difficulties. Only third-year nurses might be sent out, if thought best, yet it would undoubtedly be wiser to divide the service between second and third-year pupils. By following such a plan as is here briefly outlined, a hospital of the capacity of the Massachusetts General would have not less than fifty pupils for service in the community. If all the large hospitals in a city the size of Boston should unite in a similar service, it is easy to see to what an extent the demand for low-priced nurses would be met, what an immense further service the training school would be rendering to that part of the people of the city now almost deprived of efficient nursing service. These pupils would be sent into families at prices varying from seven to twelve dollars per week; their earnings, being turned into the treasury of the school or hospital, would go a long way toward defraying the added expense incident to the conduct of the larger school and the added supervision. The earnings would be a legitimate source of income, provided they were used strictly for school purposes, as would certainly be the case, and would relieve those receiving the benefit of the service from any suspicion of being made objects of charity. In the course of time we might reasonably expect, under this plan, to have several hundred undergraduate nurses ready for service in the city of Boston. These pupils would not compete with graduates, but would fill an altogether undeveloped field; moreover, they would create, in time, a greatly-increased demand for the services of the trained nurse through an enlarged familiarity with her worth. What is of still greater importance, they would supply expert nursing service to the great body of middle-class families who are now practically cut off from such opportunity.

It is not to be expected that a plan for the further use of undergraduate service such as is here described can ever be generally adopted without vigorous opposition. Healthful, fair-minded opposition deserves our whole-hearted respect. If the plan can be thus considered, we feel sure that in time it will win its way. In closing, let us briefly note what may be said in its favor, trusting that discussion will bring out the opposite side.

First: Undergraduate extension service will settle the controversy between the advocates of two years and those of three years as a proper period for the nurse to spend in training.

Second: It will give the pupil a wonderful opportunity for further object study in her profession along social and humanitarian lines.

Third: It will relieve, in some measure, the financial drain in the conduct of the training school.

Fourth: It will produce a body of nurses with a more fully-rounded education, better grounded in the humanities, better fitted to handle the countless practical problems arising during sickness in middle-class homes, and more suited to become centers of personal influence in later life.

Fifth: It will, in a large measure, meet a real and crying demand for an efficient nursing service on the part of a great self-respecting body of people who are able and willing to pay moderately for that which they are evidently unable to have at "regular rates."

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RESULTS OF MAYO'S MODIFICATION OF GILLIAM'S OPERATION FOR SHORTENING THE ROUND LIGAMENTS.

BY HAROLD W. BAKER, M.D., BOSTON,
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THE merits of the different operations for the cure of retroversion of the uterus have been very extensively discussed from a mechanical and embryological standpoint during the last few years. In choosing an operation to cure this displacement, it is of far greater importance to select one which will give the best end results rather than one which appears theoretically best. Therefore, it is from this standpoint that I shall discuss the operations for the cure of retroversion of the uterus. It is impossible in this short article to take up all the different operations devised; therefore, I shall speak only of the four most generally used, each of which is the representative of its own type. These are: Ventral fixation, or suspension; intra-abdominal shortening of the round ligaments, i. e., folding round or broad ligaments upon themselves intra-abdominally; Alexander's external shortening of the round ligaments, and Mayo's modification of Gilliam's internal shortening of the round ligaments.

In selecting one of these operations for the cure of retroversion of the uterus, there are two primary and most important factors that must be taken into consideration. First, an operation that will assure a permanent cure; and second, one which will not cause any painful or dangerous after complications.

In discussing which of these four operations gives the best results as to permanency of cure, I cannot do better than give the results obtained by these different operations at the Free Hospital for Women.

The statistics of the ventral suspension or fixation, internal shortening of the round ligaments, and Alexander's external shortening of the round ligaments were compiled by Dr. Graves, as reported in the BOSTON MEDICAL AND SURGICAL JOURNAL of July 4, 1907. Those of Mayo's modification of Gilliam's operation for shortening the round ligaments were obtained by notifying all the patients having had this operation performed at the Free Hospital for Women to report to my clinic for my personal inspection and examination. Out of seventy-one notified, fifty-nine reported. These cases had been operated upon from four months to three years previously.

	Operations.	Per cent. recurrences.
Ventral suspension or fixation,	213	9
Internal shortening of the round ligaments,	35	31
Alexander's external shortening of the round ligaments,	191	12
Mayo's modification of Gilliam's internal shortening of the round ligaments,	59	0

From these statistics it is evident that the method of internal shortening or folding the round ligaments upon themselves intra-abdominally gives much too large a percentage of recurrences to warrant its procedure. I have seen several cases in which the uterus has attained the first degree of retroversion before the patient has left the hospital after this operation.

I have always considered Alexander's external shortening of the round ligaments the best operation for cases in which there are no pelvic adhesions, and I can only account for the large percentage of recurrences by the fact that there must have been some adhesions present which were not diagnosed at the time of operation, as Dr. Graves suggests,[1] and, therefore, were not suitable cases for this operation.

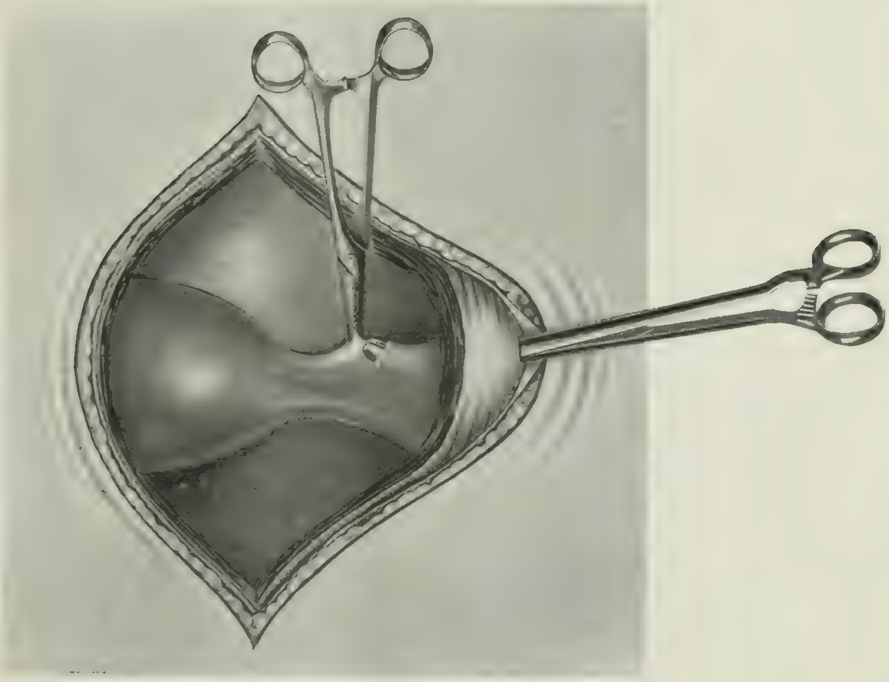
The results in the operation of ventral fixation or suspension, with only 9% recurrences, seems to be very good, although not as good as by Mayo's modification of Gilliam's internal shortening of the round ligaments, with no recurrences.

Now, before taking up these operations from the second standpoint, I think we may discard the operation of intra-abdominal shortening of the round ligaments and folding upon themselves as having too many recurrences to warrant its procedure, and also Alexander's operations, unless we can feel sure at the time of operation that the uterus is free, movable, and that there are no pelvic adhesions or other abdominal disease, i. e., of appendix, gall bladder, kidney, etc., present.

I suppose that the one operation done more for the relief of this displacement of the uterus than any other is ventral fixation or suspension, probably for the reason that the displacement so seldom recurs, and the readiness with which it can be done. The after complications of fixing the uterus to the abdominal wall in women during the childbearing period are so well known that I shall only mention them:[2] Abortion, rupture of the uterus or the necessitating of Cæsarian section being performed at the time of parturition.[2,3]

At the present time, I think most surgeons and gynecologists recognize this fact and never do a ventral fixation or suspension during the childbearing age.

These are not the only complications arising, however, as many cases are reported in which urinary symptoms,[4] even incontinence, occur after this operation, as well as strangulation of



the intestine, by this abnormal adhesion between the uterus and the abdominal wall.

Therefore, while this operation gives good results as far as recurrence of the malposition of the uterus is concerned, the after complications are much too numerous and dangerous to warrant its procedure.

In Mayo's modification of Gilliam's operation for the internal shortening of the round ligaments we have an operation which not only gives perfect results, but also one which can give no after complications, as the uterus is returned to its normal position and held in this position by its normal anatomical supports.

As the technic of this operation does not seem to be very well understood by all operators, I shall describe it briefly here. After making a median incision, the uterus is brought up into view and the round ligaments grasped at the elective point, generally about one and one-half inch on either side of the uterus, then a pair of curved (Kelly) clamps are passed with the curved surface next to the fascia above the rectus muscle to the internal ring; here the clamps are turned, the point now being down, passed through the ring and out along the round ligament, *underneath the peritoneum*, to the place of election marked. Here the peritoneum is broken through and the round ligament grasped, as shown by illustration, the snap removed and the clamp pulled back, inverting the ligament on itself to the abdominal incision. After this has been repeated on the other side, the two ligaments are sutured together and the incision closed, having replaced the uterus in its normal position, being held there by its normal supports.

I must agree with R. S. Hill,[5] that the failures of this operation reported by D. J. O. Polak, must be due to faulty technic, as none of these have been present in our series.

Since writing the above, I have examined six of the fifty-nine cases reported in which this operation was done, who have subsequently gone through normal labors, the uterus remaining in perfect position.

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[3] Peterson: Am. Med. and Surg. Jour., vol. xxix, no. 12, December, 1907.
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STUDIES IN PSYCHOPATHOLOGY.

The Psychotherapeutic Value of the Hypnoidal State.

BY BORIS SIDIS, M.A., PH.D., M.D., BROOKLINE, MASS.

(Continued from No. 9, p. 292.)

IV.

XVII. H. M. Age twenty-seven. Male. Canadian. Family history is good. Looks pale, anemic and frail. Has little education, but very intelligent, sensitive, restless and has a tendency to worry. About a year ago, he began to feel depressed, to worry about his health; thinks he suffers from tuberculosis. His physician assures him that nothing is the matter, but he has uncontrollable fear of consumption and the idea keeps on recurring to his mind. Up to the age of nineteen he was perfectly well. He was then laid up with a sore knee for a few weeks. He had time enough to brood over the knee and read some literature on the subject. He thought it was tuberculosis and worried very much about it. The knee, however, got well and gradually he forgot all about it, although the idea of tuberculosis often made him feel uncomfortable, and the idea of " water in the knee " used to flash through his mind, to pass away the next moment. A year ago, however, he happened to lose his work, he became depressed, began to worry and to brood over his financial troubles, slept restlessly, suffered from anorexia and began to lose flesh. One day the idea of the knee and the fear of tuberculosis suddenly got possession of him. He could not rid himself of the idea of tuberculosis. If in the clinic the physician assures him that he is all right, he feels better for a couple of hours; but often it does not last even as long as that. The least pain, cough, heart beat, a feeling of chill or heat and the like bring the idea and fear of tuberculosis back to his mind with renewed energy. He is obsessed by the fear of tuberculosis and feels he is doomed to certain death.

Hypnosis failed, but hypnoidization did yeoman service. The patient's mental condition began to improve rapidly. He was no longer troubled with depression, insomnia and fears; began to gain in weight, appetite improved, felt energy flowing in, began to look for work in real earnest, finally found it and kept at it since.

XVIII. Mrs. M. C. Age thirty-two. American. Family history good. Patient is well developed physically and mentally. Never had any trouble. Has been known in the family as " strong minded, no nerves." A year before the present trouble set in, patient suffered from a severe attack of the grippe. Menstruation, which was before painless and normal in amount, became painful and scanty, accompanied by headaches, indisposition, irritability, crying spells and backache, which lasted long after menstrual period was over. There was a slight, somewhat thick, leucorrheal discharge. The family physician ascribed the symptoms to endometritis, mainly cervical, and treated her with absolute rest, fomentations, injections, scarification and dilatation of the cervix and finally curetted the uterus. As the patient grew worse under the treatment, she was taken to a gynecologist, who, after an examination, declared the whole trouble was due to retroflexion of the uterus and suggested an operation for reduction. The operation was duly performed, with the result that the nervous symptoms became intensified and the attacks increased in violence and duration. The turn of the nerve specialist came next. Hysteria, neurasthenia and the more fashionable " psycho-asthenia " have been diagnosed by various neurologists. The patient was put on Weir Mitchell's rest treatment. The result was disastrous, the treatment made of the patient a complete wreck, with depression, worry, introspection and morbid self-analysis.

When the patient came under my care, she was in mental agonies, a perfect wreck. I gave up the famous Weir Mitchell rest treatment, sent away the nurse, released the patient from solitary bed confinement, told her to leave the sick room, to give up dieting and medicines and return to a normal, active life. Of the various psychotherapeutic methods which will be described elsewhere, the hypnoidal state played a very important rôle. The patient began to improve rapidly, and finally all her physical mental symptoms disappeared. The patient continues for over two years in excellent condition of health and tells me she feels better than she has ever felt before.

XIX. Mr. J. R. Age twenty-eight. American. College education. Family neurotic. Patient is greatly emaciated. Appetite is poor. Bowels are costive. Sleep is disturbed by dreams and is usually restless. He is emotional, impulsive and is apt to have periods of unusual well feeling alternating with periods of depression. In such periods of depression he is apt to become taciturn, gloomy, retiring and brooding over his health and mental troubles. For a couple of years in succession he somewhat lost in flesh, caught colds and coughed. The fear of consumption seized on him and he went to Arizona for his health. He was possessed by the fear of tuberculosis, although the best specialists assured him that his trouble was largely of nervous origin. In Arizona, the patient lived a regular normal life in the open air, regained his physical health and got rid of his fear of tuberculosis and colds. This, however, did not last long. A couple of years later, when he happened to catch a cold, the fear of tuberculosis reappeared. Any irritation in the trachea, any little cough due to some dust, any little congestion in the pharynx, meant a cold with its underlying fear of "consumption." This fear was further emphasized by a very near relative who happened to suffer from colds. The patient was also obsessed by other insistent ideas. When he saw numbers, such as the date of the year, for instance, he added them and used to like that certain numbers, such as 25 or 35, should come out. If the results did not come out, he kept inserting figures or subtracting until the desirable result was obtained. When he saw words, he looked at the letters and wanted that a certain number of "i's" and "r's" should be there. If the number of letters did not suit him, he inserted "i's" and "r's" to suit himself. The insistent ideas of this kind, however, were not accompanied by any emotional disturbances.

The treatment of the case covered a period of about two years. The condition was obstinate, difficult to control. The symptoms kept on recurring with great insistency. Persistent treatment, however, during the hypnoidal state, finally reduced the fears and the insistent ideas. The patient lost his fear of consumption, did not catch so many colds; he cared little if he did catch any. His brooding disposition left him and he devoted himself to his work.

XX. Mrs. J. F. Age twenty-eight. American. Married. Family history good. For many years has been suffering from headache, backache, general fatigue, weakness in the eyes, which occasionally becomes very painful. The headaches were sometimes very intense, so that the patient was in agonies, the pains extended all over the head, shooting down the back. There were present sore spots in the back of the head, the pressure on which made the patient feel more relieved. During menstruation, the headaches became more severe than usual. She also complained of various pains in the right iliac region. Patient's appetite was irregular, nothing tasted well to her, nutrition was poor, constipation present. She suffered occasionally from bulima. The muscular condition was rather flabby. Heart in good condition, though somewhat irregular, due to the patient's nervousness. No albumen in the urine. A gynecologist diagnosed salpingitis and advised an operation on account of adhesions formed. The patient, however, refused to be operated. Patient gets a headache as soon as she reads a few pages in a book. This suggested the oculist, who measured her with a pair of glasses, but the eyes were as weak as before, the headaches were as easily induced and as persistent and severe as ever.

When under my care, after trying the gynecologist with his tampons and pessaries, and then again the oculist with his glasses, I was forced regretfully to abandon the advice of both professions and turn to my hypnoidization. The patient was glad to find that she did not need all those complicated professional outfits, and after a year's treatment felt, as she put it, "younger than ever." The dysmenorrhea disappeared, the headache was gone, the eyes without spectacles felt far stronger and did not ache; she gained in flesh, in color and in strength, and is now in good health.

XXI. Miss G. A. American. Age fifty-five. Father died of pneumonia. Mother died of fatty degeneration of the heart. Three brothers died of various forms of cardiac lesions. One of the sisters had acromegaly and died of heart trouble. In the collateral branches of the family there are histories of tuberculosis. Patient looks poorly nourished; her appetite is completely gone. Menstruation stopped some ten years ago. Patient suffers from insomnia, headaches, backache, general diffused pains all over the body, complains of lassitude and loss of interest in what goes on about her. She feels very despondent and has acute crying spells. She is afraid of losing her mind. When a child, used to suffer from night terrors. When about the age of twelve, she took a long, fatiguing journey with her parents. She was so exhausted that on her return she was aphasic and paraplegic and was confined to bed for six months. The present condition set on a few years ago; she has lost the sense of smell and of taste and is very much depressed.

I must confess that when I undertook the case I did not expect any favorable results. It was an old, chronic, insidious case. The age of the patient as well as the family history were by no means encouraging. The patient did not go into a hypnotic state and I had to use the hypnoidal state. The first couple of months the treatment dragged along indifferently. All I could then say was that the patient did not get worse under the treatment. The hypnoidal state, however, gradually admitted me into the patient's early history and I obtained important clues to her symptoms. Here comes in the value of the knowledge of the course and development of the malady and the consequent help in the treatment of the dissociated systems. With a better insight into the abnormal psychology of the case the hypnoidal state could be used to better advantage. The patient began to improve rapidly and at the end of the fourth month of treatment by hypnoidization completely recovered. It is now more than four years since the end of the treatment and I may say that the patient has not had a single relapse, she continues to stay well, she has become an energetic social worker, greatly valued for her indomitable energy as well as cheerfulness of mind. People who know her say that "wherever she goes she brings sunshine with her." A new life was awakened in her. The subconscious reserve energy which has remained dormant in her for so many years has become unlocked and utilized in her ordinary daily life.

In the control of alcoholism the treatment by hypnoidization has yielded extremely satisfying results. The principle of subconscious reserve neuron-energy stands out clear and distinct in such cases. We shall return to this aspect of psychotherapeutics in its proper place; our object here is to bring out the efficacy of the hypnoidal state. A few cases will, perhaps, best illustrate my meaning.

XXII. Mr. G. S. American. Single. Age thirty-seven. Family history is good, except that one maternal uncle was a victim of drink habit. Patient is physically well developed. A physical examination showed an irregular heart due to drink and excessive smoking. Liver enlarged and cirrhotic. The patient was just brought after a debauch, was weak, nervous and shaky, with quite an extensive tremor of the hands. He began to drink when in school as a matter of boon companionship, and since then became addicted to the drink habit. He kept on drinking regularly and at times actually soaking in alcoholic beverages. He has gone through a series of treatments in various establishments for the cure of alcoholics, but with no appreciable results. As soon as he got out of the sanitarium, he immediately went off on a debauch. A number of times he suffered from severe attacks of delirium tremens. The family despaired of his condition and he himself proposed to give up business and devote himself to his obsession.

Under a rigorous treatment by the hypnoidal state, the patient began to improve steadily. His physical and mental conditions grew in strength. After a few months' treatment, he went back to his business. The man has become completely reformed in his habits of life. He is now manifesting an extraordinary activity, devotion to and steadiness in his work. No one suspected in him before such capacities of business management, such foresight and energy in carrying on his business. New stores of subconscious reserve energy have welled up from the depths of his being. He has become another man at whom his own brothers are surprised on account of the extraordinary change produced.

XXIII. J. L. Irish. Protestant. Age fifty-seven. Family history good, except for the fact that his brother is also addicted to drink and has been under my care for a few weeks, with the result of leaving off drink for two years and, after having had two relapses, has completely recovered. Patient is a printer by trade and has been drinking for over thirty years. While he is usually kind natured, when under the influence of drinks he is violent, abusive, offensive and even brutal to his wife and eight children, who are afraid of him. From his sister and wife I have the information that periodically patient goes off on a long spree and spends all his money, neglecting his wife and children, and when he comes home he brutally abuses everybody in the house. "It is not a home, it is a hell," as his sister puts it. In his better moments the patient himself admits he is a brute, but that drink has the best of him. He must keep away from drink completely, because the mere taste of it sets him going. An examination reveals the presence of arteriosclerosis.

I attempted to put the patient into the hypnotic state, but I found the hypnoidal state would meet with less resistance and suspicion. Hypnoidization then was the order of the day. The patient began to improve, was less nervous, slept better and, what was more important, stopped drinking and did not crave for liquor. After three weeks of treatment, by means of hypnoidization, the patient was discharged. He did not drink for a whole year, but, coming in contact with other workmen in the union, he was invited to drink, could not refuse, and once more was started on his old career. He came back to me and this time I worked at him for a month with more perseverence. Throughout the treatment, the hypnoidal state was used. The patient has given up completely his drink habit, has no craving for liquor, works regularly at his job and no longer associates with companions who are given to drink. His sister and wife keep me regularly informed of his condition and the report for the last two years has been: "John is very good, he is a gentleman, treats the children well." He has become a model father and a good husband.

XXIV. C. T. Age thirty-two. American. Single. Family history bad, his father drank, was off on sprees, and was drowned while in a state of intoxication. A maternal as well as paternal uncle were confirmed drunkards, and there was drunkenness in the collateral branches of the family. The patient learned to drink when very young. His mother, who volunteered the information, told me that she suspected that the patient learned to drink at the age of seven. Since that time the drink habit grew on him, and finally he took to liquor and became a habitual drunkard at the age of twenty. The physical condition of the patient is good. The patient is of a very mild disposition, but it seems as if the alcohol has soaked out all the good of him. He has no ambition and is not fit to do anything, as he is constantly under the influence of drink stimulants. He has no will, no responsibility and nothing of any importance can be intrusted to him. Socially, he is ostracized by his relatives, but he seems to mind it little.

I must confess that the family and the personal history, as well as the condition of the patient, greatly discouraged me. I felt there was no chance for him, no use of trying even. The family insisted on treatment, even if there was only one chance in a thousand the patient will be saved. The mother was specially anxious to put him under my treatment, as he was her only son. The treatment of the patient lasted for about a year and was carried out by means of the hypnoidal state. To my great surprise, and contrary to my expectation, the patient has completely given up his drink. In fact, he changed so much that even his own mother wondered at the transformation. He became ambitious, manifested a self-control which none who knew him had ever suspected in him. He became methodical, systematic and conscientious in his work and showed an unusual ability in management. From being weak and unreliable in character, he became firm and trustworthy. His abilities were soon noticed and appreciated, and he has since become a manager of a large Western concern. I may add that the only trait that remained to him from his former life were his kindheartedness and effusiveness. Nowhere have I seen such limitations, moral weakness and lack of capacity becoming changed to strength of will and purpose combined with ability to guard and guide complicated interests of a large business. I must say that after a case like that with so little hope I am more guarded as to the possible outcome in treatment, even of apparently the most hopeless alcoholic case. There is more efficacy in the treatment during the hypnoidal state than I have dared to think of.

V.

Before we conclude our present studies, it may be well to give an outline, however brief, of the general character of psychopathic states and of the psychopathological mechanism which brings about favorable therapeutic results in the hypnoidal state. In our previous studies, published in this JOURNAL, we have attempted, by a series of clinical cases investigated by means of the hypnoidal state, to establish the relationship between the symptoms of recurrent mental states, to which many of the cases reviewed here belong, and phenomena of mental dissociation. We have pointed out that a dissociated, subconscious system reacts reflexly with an energy uncontrolled and unrestrained by other systems. Associated systems, on the other hand, control, regulate and inhibit one another, with a consequent saving of neuron-energy. We have further pointed out that in a group of associated systems each component system becomes less accessible to external stimulation, as far as reaction is concerned,— it responds less readily with a discharge of energy. The external stimulus must rise above the ordinary stimulus to set the system into activity. In proportion as the complexity of the group of systems grows, the threshold to which the group reacts keeps on rising, and may, in fact, even amount to a total inhibition.

This principle of rise of threshold and of total inhibition due to group-complexity is well illustrated by the remarkable experiments carried on in Professor Pavlow's laboratory.[9] By the term "unconditional reflex," Pavlow means to indicate the response which the animal with a fistula in the secretory glands, such as the salivary glands, for instance, reacts by secretion of saliva to a stimulus coming within the experience of the animal, such as bread, meat and other foods used by the animal. By "conditional reflex," Pavlow indicates the reaction, made by the operated animal, to a stimulus artificially associated with the unconditional reflex. Thus, during the time the animal is fed, a light is flashed or a whistle is sounded. After a series of repetitions, twenty, thirty or a hundred, the animal reacts with secretion of saliva to that artificially associated stimulus, optical or auditory. Now here comes the specially interesting work of Pavlow and his collaborators: When another stimulus is in its turn associated with that of the conditional reflex, the result is not an increase, not an indifference to, but a total inhibition of, the conditional reflex. Vasiliev, working in Pavlow's laboratory, associated the sound of a metronome with the conditional reflex of a scratch stimulus. He finds that the process of inhibition runs in three phases for intense associated stimuli and in two phases for weak ones. Savadsky[10] has modified the conclusions of the previous investigators, but he affirms the fact that an intense stimulus, an intense sound, completely annihilated the secretion due to scratch-stimulation, while a weak stimulus, a weak sound, produced a lesser effect. He found that the external stimulus disturbs or inhibits the condition of the nerve centers, inhibits the condition which is predominant at that moment, stimulating the inhibitory stage and inhibiting the excitatory stage; in other words, *inhibiting whatever process is at that moment taking place.*

	I Phase.	II Phase.	III Phase.
Scratch stimulus	1.6cc.	1.0	2.0
Scratch stimulus and sound of metronome	0	0.4	0
Scratch stimulus		0.3	2.6
Scratch stimulus		0.6	1.2
Scratch stimulus and sound of metronome			0

The following tables showing the inhibitory influence of intense stimulations associated with the conditional reflex may serve as an illustration. The conditional reflex is formed from a scratch-stimulus, intense whistle, or intense sound of bell as simultaneous extraneous stimulation.

	MAGNITUDE OF THE CONDITIONAL REFLEX IN DROPS. Parotid Gland.						
	1st ½ m.	2d ½ m.	3d ½ m.	4th ½ m.	5th ½ m.	6th ½ m.	
	0	0	0	4	5	7	
Intense sound of	0	0	0	7	12	12	
whistle →	0		0	1	2	2	←The effect of simul taneous stimulation
	1	0	3	7	14	17	
Intense sound of	1	0	0	8	10	12	
bell →	0	0	0	0	0	0	←The effect of simultaneous stimulation
	0	0	0	0	2	8	
	0	0	0	3	5	10	

In summarizing the work of previous investigators in Pavlow's laboratory, Orbeli says: "Vasiliev and Mishtovt have shown that any phenomenon indifferent in itself may not only become a source of a new conditional reflex, but may become a special inhibitory agent in relation to the existing conditional reflexes; it is only requisite that the phenomenon should be repeatedly associated with the conditional reflex in such cases when the latter is not reinforced, that is, when not accompanied by the unconditional reflex. If, for instance, phenomenon *A* coincides in time with the unconditional reflex of the salivary gland, the phenomenon *A* becomes a source of conditional salivo-secretory reflex. If, however, in cases when *A* comes separately without the unconditional reflex, a new phenomenon *B* is associated with *A*, *B* gradually becomes a source of inhibition of the conditional reflex. The relation formed is such that *A* phenomenon by itself calls out a secretion of saliva, while in association with *B* does not call out any saliva; that is, *B* inhibits the action of *A*. That phenomenon is termed in Pavlow's laboratory "conditional inhibition." *B* is the conditional inhibition in relation to the conditional reflex on *A*. This quality of the nervous system to work out special cases of inhibition makes the conditional reflexes an extremely delicate and perfet-index of reactions of the organism to its external environment. The animal reacts only to those phenomena which really coincide with that or other specific stimulation and serve as signals of the latter. When, however, an extraneous stimulus becomes associated, a stimulus which serves as a signal of unreality of the nervous phenomenon, the reaction becomes arrested and the organism thus rids itself of fruitless labor."[11] On the strength of his own experiments performed on the visual reflexes of the dog, Orbeli comes to the same conclusion with Vasiliev and Mishtovt, Babkin and Savadski, "that every phenomenon which coincides with the conditional reflexes in all cases when the latter is not accompanied with the unconditional reflex becomes an inhibition in relation to that same conditional reflex."[12]

Similarly, in the experiments now carried on in my laboratory, I find that when a galvanic deflection is brought about by a specific stimulation of painful character, the co-existence of another stimulation is apt to decrease the magnitude of the galvanic reflex. If the stimulation be a pinch, a prick or a snap on the skin or on the nose, the simultaneous association with a different stimulation coming from another source, such as intense sound, a loud shout, tends to act as an interference, as an inhibition, decreasing the magnitude of the deflection and increasing the latent period. Furthermore, the *expectation* of the disagreeable or painful stimulation calls forth a galvanic deflection.[13] If, now, the expected painful stimulation is associated with a stimulation coming from a new extraneous source, the result is not an increase, but a decrease, of the magnitude of the reflex, with an increase of the latent period. In many cases the decrease may amount to a total inhibition of the deflection. The more complicated those new associated stimulations become, the less is the galvanic reflex in response to the painful stimulation. Thus, if the expectation of a snap on the nose be simultaneously associated with a loud shout or with another intense stimulation, to which the patient does not react with any emotional excitement, the galvanic deflection to the original disagreeable stimulation becomes considerably diminished and even totally abolished. On the other hand, the magnitude of the galvanic reflex becomes enhanced, while the latent period becomes shortened with the exclusion of external stimulations, such as by closure of eyes and complete repose.

(*To be continued.*)

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Medical Progress.

REPORT ON DERMATOLOGY.

BY J. T. BOWEN, M.D.,
AND
H. P. TOWLE, M.D.

1. Radiotherapy of Superficial Epithelial Cancer.
2. Treatment of Leprosy with Chaulmoogra Oil and Nastin.
3. Diseases of the Skin in Animals Communicable to Man.
4. Impetigo Contagiosa.
5. Trade Cancers.

RADIOTHERAPY OF SUPERFICIAL EPITHELIAL CANCER.[1]

Lenglet and Sourdeau, from Brocq's clinic in the Hôpital St. Louis, reported 122 cases of epithelioma of all kinds, but especially superficial epitheliomas of the skin treated by radiotherapy, since March, 1906. In an introductory note, Brocq protests against the reaction that has come to pass with regard to the Röntgen rays, too much exploited at first, later brought into disfavor by the Finsen treatment and by radium.

Of these 122 cases, 59 were either seen again or heard from. Of these, 7 had died, 2 were failures, in 3 there were recurrences but without importance, 11 were under process of treatment, and 36 were quite healed.

The 7 cases were all in subjects who were affected with deep-seated malignant forms of cancer. It was found that the radiotherapy was much aided by curetting beforehand and that recurrences occurred much oftener where the curetting had not been thoroughly performed. It was never found that superficial epitheliomata were aggravated when treated by the x-rays. The writers are convinced that, in the case of cancers that are in the domain of dermatology, the proportion of failures does not exceed 5 to 10%. The first sitting is the most vigorous, and the succeeding sittings are held only once in three or four weeks. Finally, the following conclusions are reached: As a rule 6 H has not been exceeded. Violent reactions have never been attempted. The treatment has never been followed beyond strictly necessary limits. No ulcers from the rays have been produced. Very small amounts have been employed, scattered over a long time. Thorough curetting before the application of the x-rays has been an absolute rule. If, after one or two careful curettings and five or six consecutive exposures to the x-ray, the lesion is not healed, then resort should be had to surgery. In the opinion of the writers, there is no treatment of cutaneous epitheliomata superior to the combination of curetting and radiotherapy.

TREATMENT OF LEPROSY WITH CHAULMOOGRA OIL AND NASTIN.[2]

Nastin belongs to the newer remedies recommended for the treatment of leprosy. The respective merits of these two drugs have been recently the subject of a discussion between Unna and Deycke. Unna took the ground that nastin was a serviceable remedy, although it was not capable of producing any complete immunity. He considered that the best results were obtained by treatment with the chaulmoogra oil, and recommended, in addition, the use of his well-known local treatment of the skin in suitable cases. Deycke claimed that nastin was a remedy that directly attacked the lepra bacilli, which exerted its action from within outward upon the disease and was capable of producing an amelioration or cure of leprosy without other therapeutic measures. Both of these dermatologists agreed that a combination of these methods would most probably give very good results.

Kupffer was induced by these communications to publish his own results obtained in the hospital for lepers in Kuda, Russia.

Oleum gynocardiæ, or chaulmoogra oil, has for many years been used in the treatment of leprosy, and observations recently made have not only confirmed its therapeutic value, but almost raised this remedy to the rank of a specific.

According to Talwik, chaulmoogra oil owes its value to the fact that it increases the number of white blood globules, and also raises the bactericidal capacity of the body. This drug is used in several forms. Internally, it is best prescribed in gelatine capsules, milk, wine and different tinctures, in the dose of from five to thirty drops; it is also given subcutaneously several times a week, but the injections are very painful and cause often permanent induration of the skin, or abcesses. Another objection is that the oil must be warmed immediately before the injection, as it is solid at the temperature of the room. It is also difficult to get this drug in a pure state. Furthermore, many patients are not able to take it on account of the gastric disturbance. For these reasons, attempts have been made to produce preparations which should not contain the disagreeable qualities of the oil, but without marked success.

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[1] Ann. de Dermat. et de Syph., February, 1909.

[2] Kupffer, A.: Lepra, January, 1909.

Cases which are treated with sufficiently large doses of the chaulmoogra oil for a continued period show almost always an essential improvement of their condition and a disappearance of the symptoms, and this, in the case of a mild form of disease, may reach a point where one can speak of a cure, in case a recurrence does not set in. This is especially true of the macular form of leprosy, in which the general condition has not yet been seriously affected. The better the leper bears the oil, the better chance has he of improvement or cure. Unna has said that if all patients could tolerate this drug in the necessarily large doses, chaulmoogra oil would bear the same relation to leprosy as mercury does to syphilis.

Kupffer is ready to bear out this claim to the full, supported by eight years' experience in the hospital for lepers. In his experience, many cases of macular type have so far lost the symptoms of the disease that nothing of a positive nature can be discovered, and up to now there have been no recurrences. In the tubercular form, results are much more difficult to obtain, although they occur. Several cases of severe tubercular leprosy were cited in which the patient had apparently completely recovered. It is to be noted that in the case of the writer, a large number of comparatively mild cases are met with. In his experience, a considerable proportion of the lepers were unable to tolerate the chaulmoogra oil at all, or could take it only in too small doses.

Nastin, which was introduced in the treatment of leprosy by Deycke, is a bacterial fat body which is obtained from cultures of an organism isolated from a case of severe leprosy called streptothrix leproides. Nastin is employed in the form of injections in an oily medium. The injections should be made not in the muscles, but subcutaneously. Three preparations of varying degrees of strength have been used. In case reaction occurs, all symptoms of reaction must be allowed to disappear before using it again. In the use of nastin, all cases of leprosy must be rejected in which the internal organs are affected, or which are complicated with severe anemia, cachexia or nephritis. In all other cases the remedy is indicated, and its introducer claims for it most favorable results.

Kupffer, using the remedy in the leper hospital, has only once seen a severe general or local reaction from it, although he has always proceeded very cautiously. He was able to satisfy himself that nastin really softens and causes the disappearance of nodules of leprosy. He had never seen so rapid a disappearance of the tubercles with any other form of treatment. Especially favorable and rapid results were attained in cases in which treatment by nastin was combined with that by chaulmoogra oil. Injections of nastin are almost entirely painless and can, therefore, be employed with sufficient frequency. While the treatment with nastin simply means an addition to the means of cure with those patients who bore the chaulmoogra oil well, in the case of those patients who could not tolerate the oil it was of very great value. A case was cited in which the symptoms were very severe which was greatly benefited by the use of nastin.

The writer believes firmly in a combined treatment with nastin and chaulmoogra oil, and claims that he has in this way obtained results which he could not have got with chaulmoogra oil alone. The writer considers the fact that nastin is an agreeable remedy, which may be used without danger and without in any way disturbing the patient, to be a very great advantage. It is a very great advantage that the remedy, working from within, outward causes the products of leprosy to disappear without producing large scars.

DISEASES OF THE SKIN IN ANIMALS COMMUNICABLE TO MAN.[3]

Considering first the vegetable parasites which are found in the skin of man and domesticated animals, a prominent example cited is the disease dermatitis contagiosa pustolosa canadensis, to which horses are especially liable and which appears to be analogous to our impetigo. It was brought into England from Canada in 1877, and carried over Europe by English horses. It was called "horse pox" by English veterinary surgeons. It is characterized by an eruption of vesicles, pustules and crusts, resembling human impetigo. The severe cases may be accompanied by deep suppuration, by lymphangitis, etc., but there is never any systemic disturbance. It is often rebellious to treatment and is commonly found in the region of the saddle or girth, and is often carried to other horses by saddles, harnesses, etc. It is very contagious, not only to animals, but to man. The bacteriology of this affection is uncertain. Some investigators have isolated a micro-organism that they think identical with the acne bacillus, but this has not been verified.

With regard to the cases of so-called pemphigus in domesticated animals, it is probable that most of them correspond to the bullous forms of human impetigo. Some of these cases are undoubtedly communicable to man. A case of severe pemphigus in a dairyman who contracted the disease by inoculation from a bullous eruption on the teats of a cow has been reported.

With regard to tuberculosis, that of the skin in man and in animals is usually a benign lesion, generally remaining local, and in animals tending to self-inoculation. There are many examples of the transmissibility of cutaneous tuberculosis from animals to man by inoculation. Lupus has been observed in farmers who had put cream from tuberculous cows on open wounds. Cases are also reported in butchers, cooks and people who have to do with animal products.

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[3] Roberts, Leslie: Brit. Jour. Dermat., March, 1909.

Glanders is not, strictly speaking, a disease of the skin. The acute forms are blood infections and the chronic forms are marked by a peculiar form of dermatitis which ends in necrosis and ulceration. All the lesions of glanders are contagious, especially those of the mucous membrane of the nose, and it is in this way that stablemen and others are infected.

Anthrax in man is always the result of inoculation through a wound or inoculation of the skin, and is always derived from the anthrax of domesticated animals, e. g., horses, cattle, sheep, goats. Anthrax is the only disease in which skin, hair and wool are capable of transmitting the infection to man. It is frequent among tanners, saddlers, shoemakers, etc.

The various forms of ringworm are included under the heading "keratomycetes," in that they are characterized by their power of living on the keratinized products of human and animal skin, which they break up and digest by means of keratolytic ferments. According to some authorities, calves are most frequently subject to infection from the keratomycetes, and next to them dogs. Rabbits, guinea pigs and mice may be inoculated with the trichophyta. Ringworm is common in some districts, and rare, or unknown, in others. It is common in Holland, France and Switzerland. Dogs and cats frequently transmit the infection, and in some instances it may be passed from one host to another through a neutral intermediary. Epidemics have occurred both in animals and in men where large numbers have been affected.

It has been asserted that ringworm in cattle is usually confined to the head and neck, but may occasionally cover the whole body. There is apparently more or less purulent exudation. In adult cows and bulls there is a tendency to spontaneous cure, whereas ringworm in calves is very rebellious.

In the dog, ringworm is most common on the head and extremities, but is sometimes universal. Often there is no inflammation, and the affection looks like alopecia areata.

Ringworm is comparatively frequent in the horse, especially in France, where it is known as "herpes contagiosa." Epidemics in cavalry regiments have occurred. Multiple circular patches are seen on the back, shoulders and sometimes on the head. The hair is broken or has fallen out. The affection is not usually pruritic.

Ringworm is found also in sheep, deer and in birds, and from all of these is transmissible to man.

Favus in animals produces symptoms much like those in man. It forms the same yellow, cup-shaped masses of scales and fungus. In cats, it is found generally on the paws, claws and ears, and this points to its infection through the mouse, which is often affected with favus. It seldom attacks horses. In fowls, it is known as "white comb," the comb being covered with a gray crust. Fowls have been successfully inoculated with human favus. As a rule, favus is transmitted from person to person, and contagion from animals to man is rare.

With regard to animal parasites, Leuckart states that more than fifty distinct species infest the body of man. They are found in various organs and systems, such as the skin, intestines, brain, eye, etc. As regards the skin, we are practically limited to a consideration of the sarcoptes. By veterinarians, three species of acar which infect domestic animals are distinguished: (1) the sarcoptes, the female which burrows into the skin the same as does the sarcoptes hominis; (2) the dermatokoptes, which is non-burrowing; (3) the dermatophagus, also non-burrowing. It is said that all the sarcoptes of domesticated animals are transmissible to man. The dermatokoptes and dermatophagus die quickly on the human skin and produce only slight irritation. It is probable that the sarcoptes of several species of animals are transmissible only to that species, but the sarcoptes of man may be transmitted to the horse.

Scabies in domestic animals is a much more serious affection than in man, and if not cured may cause great debility and, in sheep, a fatal ending. Scabies may affect horses, sheep, dogs, cattle, goats, cats and hens. It also has been seen in lions, leopards, lamas, camels and serpents. Also parrots and pigs may be affected. The sarcoptes of animals are distinguished from those of man only by small differences as to size. They are thought to be varieties and not distinct species. Man is more likely to contract scabies from the horse than from any other domestic animal. In the horse, it usually begins on the head and neck and is usually limited to the head, neck and shoulders. The itching is very severe, especially at night, and circumscribed bald patches appear early in the disease, with papules and vesicles. There may be much induration and fissuring, and the disease may spread over the whole body, the animal finally dying of exhaustion. In milder cases, the animal may recover.

IMPETIGO CONTAGIOSA.[4]

Lewandowsky first reviews the history of our bacteriological knowledge of impetigo contagiosa, beginning with the work of Unna and Frau Schwenter-Trachsler, who considered, as is well known, that the cause of this affection is a specific coccus, or two varieties of a kind of coccus, which is different from the streptococcus and staphylococcus. The cocci are found in small chains of from six to eight members in the impetigo crusts. This coccus was considered to be quite different from those found by Unna in eczema.

Sabouraud's investigations were the next of great importance. He had previously considered the staphylococcus aureus as the cause of impetigo contagiosa; but his later investigations brought him to a conclusion that it was the streptococcus Fehleisen which was the specific agent. He considered that the previous errors had been made by confounding the two affections called "impetigo," as well as by faulty bacteriological technic. By means of a new technic, which was based on the cultivation of the streptococci in fluid media, he succeeded in cultivating the streptococcus with a mixture with other bacteria, especially staphylococcus. The streptococci were found at the very earliest stage of the process before the formation of the vesicle — in the erythematous stage. The impetigo vesicle remains clear so long as it contains the streptococci in the pure culture.

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[4] Lewandowsky, Felix: Arch. Dermat. et Syph., February, 1909.

Ecthyma, he declared, was analogous to impetigo, differing only in its affecting the lower layers of the skin.

As a summary of the different views which are held as to the cause of impetigo contagiosa, the first is that it is due to a specific coccus; (2) that it is caused by the staphylococcus pyogenes; (3) that it is due to the streptococcus; (4) that the combination of staphylococcus and streptococcus is responsible for it.

The material for investigation was one hundred cases of impetigo contagiosa, which were observed in the clinic in Berne during the last year. The larger number of patients were children in the first years of their life. There were no real epidemics of impetigo contagiosa, but most of the cases appeared sporadically or belonged to small house endemics. He did not succeed, like many others, in tracing a follicular beginning of the affection, or a division into primary and secondary vesicles. The rapid disappearance of the vesicular stage is usually a characteristic of impetigo contagiosa, and in many of the patients examined there were no vesicles to be seen, the affection having reached its crusted stage. He agrees with Sabouraud and Török in not separating impetigo circinata from the ordinary impetigo. The result of the bacteriological investigations was that in the one hundred cases of impetigo examined, streptococci were always found, partly in pure culture, partly mixed with the staphylococcus aureus, but much more numerous than the latter. Second: In the primary pustular lesions of ecthyma, the streptococci were found in the larger number of cases in pure culture, less commonly contaminated with occasional staphylococci. Third: In the large bullæ of the ends of the fingers, streptococci were found, partially pure, partially contaminated with staphylococci. Fourth: A case of impetigo-like dermatitis was observed in which only staphylococcus aureus and not streptococci was found in the primary vesicle and beneath its crust. Fifth: In the small number of cases of pemphigus neonatorum, either staphylococcus or staphylococcus mixed with streptococcus (the streptococci, however, being in small number) were found. Sixth: In the so-called impetiginous eczema, both streptococci and staphylococci were found, as is true, also, in different serous lesions of other dermatoses. Seventh: By intra-epithelial inoculation of pure cultures of streptococci, impetigo contagiosa was produced; by deeper-seated inoculation, ecthyma. Eighth: Attempts to inoculate with staphylococci obtained from impetigo were usually unsuccessful, or only produced an abortive pustule. In one case large bullæ, which did not, however, tend to form crusts, were produced. Ninth: In most serous and pustular lesions of the skin which were produced artificially, the staphylococcus aureus appears after a longer or shorter time, and even when it could not be previously demonstrated on the normal skin. It was found, also, that pustular lesions could be produced by chemical agents without the aid of bacteria. Tenth: Staphylococci from pus, impetigo, eczema and some other affections are influenced by agglutinating sera in the same way. The same is true of cocci cultivated from artificial lesions. Not infrequently occasional samples of staphylococcus are found in the normal skin which act like the typical staphylococcus pyogenes aureus in respect to agglutination.

On the whole, it will be seen that the conclusions of Lewandowsky are essentially a confirmation of Sabourand's work. Sabouraud's investigations are added to in that this investigator has proved the presence of a preponderance of streptococci over the staphylococci. He has also supplied a want in Sabouraud's deductions by proving by positive inoculation that streptococci actually cause impetigo. He cannot, however, agree to Sabouraud's law that the streptococci produce serous, the staphylococci pustular, lesions. He found staphylococci in many instances in vesicles, and once produced large bullæ experimentally with staphylococci.

The usual signs of reaction of the skin to an invasion with the common ubiquitous staphylococci and streptococci are those affections which we class under the name of pyo-dermatitis, and one of the most common of these is impetigo contagiosa, or vulgaris, which is produced by a superficial inoculation of streptococci in the epithelium. It is often the parts about the mouth and nose which are macerated by chronic nasal catarrh which form the avenues of infection; and also, it is often the case that itching produced by pediculi is the cause of scratching the epithelium of sound skin, and streptococci then inoculated by the finger.

Lesions caused solely by the staphylococci are only the impetigo of Bockhart, periperitis, and abscess of the sweat glands in infants. The rôle of staphylococci in other skin affections, in which they are so frequently found, is by no means clear. They are of little consequence in the common impetigo cases. The writer's investigations led him to the conclusion that it cannot be assumed that the staphylococci are the sole agents in transforming the vesicular lesions into pustular lesions, as the streptococci are quite capable of doing this by themselves.

In conclusion, the writer's researches go to show that the significance of staphylococci with regard to the course of eczema is yet unexplained and the subject requires much new histological and experimental investigation.

TRADE CANCERS.[5]

The observation was made some time ago that workmen whose skin was exposed for a considerable time to certain chemical irritants developed multiple warty growths which, in the further course of the disease, took on exactly the character of cancer. This affection was first observed in chimney sweeps, and later a quite analogous manifestation was seen in those who had followed other occupations, especially those engaged in working with tar and paraffin; so that one speaks to-day of a tar or paraffin cancer, just as the term "chimney sweeps' cancer" had been used. The especial interest of this affection lies in the fact that its origin, in greater part, is due to the irritating action of chemical agents. It was seen that the continual contact with soot, which happens daily in the life of the chimney sweep, rapidly has the same results, namely, to produce in individuals predisposed to such affections of the skin multiple cancer of the skin.

Cooper asserts that the soot collects in the folds of the skin, and, in places where the outer skin is very thin and the corium very vascular, produces an irritation, by means of which an ulceration is formed which has great similarity to a cancer, particularly to a cancer of the lip.

Volkmann was the first to call attention, in 1874, to a similarity of cases of cancer of the scrotum in workers with tar and paraffin to the chimney sweeps' cancer of the English writers. In this tar and paraffin cancer the parts of the skin which come especially in contact with the raw products exhibit signs of inflammation and irritation. The skin is covered with small lesions which sometimes take the form of acne, sometimes represent large papules. There is also a severe itching, which has caused the workmen to speak of "tar itch." Gradually, pigment spots appear, the epidermis becomes thickened throughout, continuously or in the form of miliary nodules. Finally, multiple warty growths appear, which develop into cancerous growths if the patient continues his occupation. It is a fact of interest that in both the chimney sweeps' and in tar and paraffin cancers, the lymphatics are affected either not at all or at least comparatively late in the disease.

Ludwig, by chemical investigations, has found that tar and soot contain the same irritating matter as does tobacco, the well-known irritative action of which has been so often cited as the cause of cancer of the lips. He has especially shown that carbolic acid is present in all these substances, and from this has drawn the deduction that carbolic acid is the irritating substance in the production of cancer. It had been previously asserted that hard coal did not produce these affections, but the writer cites several cases in which this occurred.

When it is considered how many workers in these occupations are daily and for years exposed to the damaging influence of these chemical substances, it is not easily comprehended why the development of these multiple skin cancers is on the whole a rare occurrence. It must be supposed that the sound skin in most cases offers a sufficient protection to the damaging agents. Possibly a constitutional predisposition may be a factor. We can, however, truly say that skin that has been exposed for a long time to these damaging substances is especially inclined to the development of epithelioma. Much can be done in the way of hygiene to offset the damage caused by these irritants. Cleanliness and frequent bathing are of great importance; and at the first appearance of warty growths of the skin in the case of a laborer in these occupations, some other occupation should immediately be adopted, if possible.

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Reports of Societies.

AMERICAN CLIMATOLOGICAL ASSOCIATION.

THE TWENTY-SIXTH ANNUAL MEETING, HELD AT FORTRESS MONROE, VA., JUNE 4 AND 5, 1909.

THE President, DR. CHARLES E. QUIMBY, of New York City in the chair. Dr. Quimby took for the subject of his address

THE ELEMENT OF RATIONALITY IN MEDICAL SCIENCE.

This he defined as that quality of thought and action by which they may be logically justified as in harmony with truth, and the ultimate object of medicine, the control of disease. Medicine involves two spheres of activity, those of thought and action in the most intricate and puzzling manner, so that it is little wonder that we often lose the guiding thread of rationality; and we must make a sharp distinction between the principles and the practice of medicine. Proven truth and theory, probability and possibility, pure chance and blind empiricism, each and all have their legitimate place in medicine; and upon each, at one time or other, we are compelled to base momentous action. Hence the basic lapse from rationality that permeates and weakens the entire body of medical science. It is the failure to hold each of the enumerated terms strictly to its proper place and value which, under the seductive influence of our ambition to have all work truly scientific, ends in the assumption that everything can and must be explained. As a result we accept the most plausible or the first-suggested explanation of a condition or process, simply because it is possible, adopt and proclaim it as truth, and speedily forget that we are joining that great majority who "know so many things that aren't so." Dr. Quimby condemned that attitude of mind that assumes *a priori* that all intellectual products "made in Germany" to be absolute truth; likewise, all *ex cathedra* statements. He cited the sad experience with tuberculin, the reckless use of which, despite Koch's warning that it would kill living tubercular tissue, was a clear case of irrationality that cost twenty years of waiting to overcome. This form of error is humiliating but eventually yields to truth. Dr. Quimby quoted Prof. William James, the pragmatist philosopher, who defined rationality as that quality of thought which makes it more easily thinkable. This definition may serve the speculative philosopher.

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[5] Zweig, Ludwig: Dermat. Zeitschr., February, 1909.

But for us, pragmatists by profession, rationality must ever mean that quality of thought and action which makes them unthinkable and undoable in any other than one way.

Dr. J. Madison Taylor, of Philadelphia, read a paper on a

MOVABLE CAMP FOR TUBERCULOSIS PATIENTS.

This novel and attractive suggestion was made to him by Mr. Frank Pinkly, of Casa Grande, Ariz., and was accompanied by details of the organization and outfit required in an arid region like Arizona. The plan involves moving camp every week or two so as to change the scene and local conditions, making a stage of fifteen or twenty miles, so as to provide against monotony, isolation and restricted amusements. In this way the higher elevations may be utilized in winter and the lower elevations in summer. Skilled packers, teamsters, cooks and helpers, as well as a doctor and a manager would be required, and an elaborate outfit of tents, wagons, teams, saddle horses and an abundant commissary. Cows could be taken along, and hens readily moved. The plan proposed applies to the more robust or convalescent patients. From Phœnix, Ariz., three main routes would be open: First, south to the Gila River and up that river to the higher country east or southeast of Phœnix; second, east up the Salt River through the present Tonto dam site and into the mountains east of Phœnix; third, north over the desert and into the mountains toward Prescott. Phœnix is a little over eleven hundred feet high, and has a pleasant winter climate. One hundred miles along any of these routes would put one well up in the cool country at elevations of four or five thousand feet. The 4,500-foot level would be reached in the seventh camp, allowing fifteen miles between camps. Details as to the number and size of tents; the character of supplies and their transportation; the relative duties of the manager, the doctor and the employees; the plans for striking tents and pitching them and the whole paraphernalia were given in detail. The only limit to luxuries would seem to be the cost. Provision was also made for those who at times might be too weak to travel.

Dr. H. Longstreet Taylor, of St. Paul: I object to the idea of a movable sanatorium as a practical thing. In the sanatorium, fresh air, rest, good food and discipline are the essentials, and the movable camp would upset the rest and destroy the discipline.

Dr. James M. Anders, of Philadelphia, read a paper on

THE INCIDENCE AND CAUSES OF TUBERCULOUS HEMOPTYSIS.

He divided the cases under two heads: Those caused by congestion of the bronchial mucosa and lung texture, and those due to ulceration or erosion of blood vessels, or rupture of miliary aneurisms. The earlier hemorrhages in pulmonary tuberculosis are only rarely dependent upon congestion or erosion of the bronchial mucous membrane, the usual source being the pulmonary vessels. The second pathologic stage, or that of commencing destruction of the capillary blood-vessels, is probably the one at which hemoptysis is most rife. In advanced pulmonary tuberculosis fatal bleedings are usually from a ruptured aneurism in a lung vessel or erosion of a pulmonary vessel. Hemoptysis occurs in about 28.7% of all cases. Dr. Anders has collected, for a basis of study, 5,891 cases of pulmonary tuberculosis in Philadelphia hospitals and clinics. There were more cases among males than among females. It is most prevalent during December, January and February. It has generally been held that a steady stimulating cold has a preventive influence, but Dr. Anders' cases lead to an opposite conclusion. Hemorrhage has a strong tendency to recurrence. In 69% of the instances, hemoptysis appeared in the first and early part of the second stage, or that of softening. These results are in accord with Dr. Anders' previous investigations, and they likewise support the views expressed concerning the pathogenesis of the condition. The paper was illustrated with four charts.

Dr. E. L. Shurly, of Detroit: In regard to women, we all know that they recover from hemorrhages much more readily than males, on account of the peculiar power of the trophic or sympathetic nervous system which will set in motion the active recuperative functions of the body. I think also that women are less frightened by hemorrhages than men. I have known some of the bravest men that ever were born under our flag entirely wilt from the spitting up of a little blood, and in severe hemorrhages from the throat or nose I have always had a great deal more difficulty in keeping up the pluck of the male sex than I have had with the female. And this is especially true, I think, in regard to hemorrhages from the chest. Now I presume that this physical and mental characteristic lies in the fact that menstruation coming on every month furnishes the physiologic element, aside from the other fact that probably a woman has more courage than a man. I believe it applies to all walks of life, that woman has more lasting courage than a man.

Dr. Anders in closing: My habit has been to use guaiacol carbonate regularly for many years in the treatment of pulmonary tuberculosis, in ascending doses, just as I formerly used creosote. Now, what I should like to know, is whether the gentlemen present have observed that guaiacol carbonate increases the tendency to hemoptysis. In many cases it comes on after one begins the use of guaiacol, and in these cases stopping the guaiacol is followed in turn by a lessened tendency to bleeding.

I recall one case of sudden death in a female which, however, did not occur under my immediate observation. A girl of twenty years, whom I had seen once or twice before she left Philadelphia, went West, and I learned from her mother, subsequently, that on a certain Sunday morning she developed a severe hemorrhage, at a great altitude (about eight thousand feet), and suddenly expired. That case, however, was not embodied in my statistics, because she had not been under observation for a sufficient length of time. The point I endeavored to make was not that fatal hemorrhage may not occur and with great suddenness in the female, but rather that it is distinctly infrequent as compared with its occurrence in the male.

Dr. Harry Lee Barnes, of the Rhode Island State Sanatorium at Wallum Lake, read a paper on

THE PROGNOSIS OF FEBRILE CASES OF PULMONARY TUBERCULOSIS.

The amount of lung involvement should be considered in connection with the presumable duration of the disease, for this is the most practical way of measuring the virulence of the infection against the patient's resistance to that infection. If five lobes are involved after five years, the prognosis may be much better than when two lobes have been involved in two months. Intelligence, self control and willingness to co-operate are of great importance. It usually matters little whether the pneumonia or typhoid patient has intelligence, but if the tuberculous patient is so lacking in common sense and character that he cannot or will not follow a physician's advice, he may pay for his foolishness or willfulness with his life. Dr. Barnes showed that of fifteen patients in the incipient stage who left the sanatorium against advice, 40% were well, 40% were living and 20% were dead. The results in the case of all incipient cases discharged in due course by the sanatorium, and taken on an average of eighteen months after discharge, showed 85.7% well and 14.3% dead. The data presented by Dr. Barnes showed that the patients who reject our advice throw away half their chances of getting well and keeping well. Financial considerations do not greatly influence the results in the case of Dr. Barnes' patients, since a comparison of the subsequent histories of pay patients with those of all patients according to the condition on discharge results unfavorably to the pay patients, as shown by tables which were given. All the patients treated were from the working classes, but free patients are usually followed up by visiting nurses, and better results are thus obtained.

Dr. James M. Anders, of Philadelphia: It is quite true that the duration of the fever is of more importance from the standpoint of prognosis than the height of the temperature present. Of that we see constant illustrations. It is also true that the pulse is a guide with reference to the question of prognosis. But it should be pointed out that the pulse is very much under the influence of the sympathetic nervous system, and that the nervous element in some cases, at least, if the tuberculosis is prominent, may explain the frequency of the pulse, and in those cases, of course, it would be a less serious omen. Now in this connection it is very important to use certain remedies with a view of testing the nature of the rapid pulse rate. I have found, following the teaching of Dr. Jacobi, that digitalis, used judiciously, will slow the pulse decidedly, and particularly if used in connection with nervines in those cases in which the rapid pulse rate is in part due to nervous causes. It has much less influence in the septic cases which also give a more unfavorable prognosis.

Dr. H. L. Taylor: Did I understand Dr. Barnes to say that race had no prognostic significance?

Dr. Barnes: I said it had little, comparatively, with the other influences.

Dr. Taylor: It seems contrary to my experience, for I have never known a member of the colored race to recover from this disease, and I practiced for four years in the South; I have seen few Hebrews that were not able to recover, other races coming along between these extremes.

Dr. Herbert B. Whitney, of Denver: The experience of Dr. Barnes and others who have read papers to-day coincides with mine in regard to the negative value of physical signs in the chest after apparent recovery. I have been surprised in a practice of many years to note how very seldom I find any entire disappearance of physical signs, especally in incipient cases, which have never, perhaps, presented anything more than a few râles at an apex. It has been a very common experience with me many years after recovery still to find an explosion of dry râles at the apex after coughing in patients who perhaps for ten years have had no cough or expectoration, and who were in a condition of perfect recovery, as far as could be determined from their general condition.

Dr. David R. Lyman, of Gaylord Farm Sanatorium, Wallingford, Conn., read a paper on

THE CUTANEOUS REACTION OF LAUTIER AND SOME STUDIES IN CONTROLS.

This cutaneous tuberculin reaction of Lautier is claimed to have a greater degree of accuracy than is obtainable with any other of the skin tests and is very simple. Without any preparation of the skin, Lautier applied to the outer surface of the arm two or three drops of a 1% solution of old tuberculin on a pledget of absorbent cotton. This was covered with a gutta percha shield and held in place by a dressing for forty-eight hours. The reaction consists of the appearance of vesicles containing a colorless liquid and set on raised reddened papules, usually discrete, sometimes agminated. These gradually dried and disappeared in from three to ten days. Lautier claimed that this reaction is uniformly present in all cases of tuberculosis and absent in the non-tuberculous. Dr. Lyman used the von Pirquet and Ligniere tests simultaneously in 58 cases at Gaylord Farm. Two were excluded from the analysis because they were negative to all three tests and failed to react to 8 mgm. of tuberculin subcutaneously. In the 56 cases in which the diagnosis was confirmed by the presence of bacilli or by positive subcutaneous reaction, 52 were positive to the Lautier test, 41 to the von Pirquet and 31 to the Ligniere. The Lautier was positive five times when both the others were negative, and never negative when the others were positive.

Dr. Lyman also applied the test on 6 clinically healthy persons. One, a physician, reacted, and later he tried the eye test, developing a marked reaction. He also used as a control pepton bouillon prepared exactly as in the manufacture of tuberculin, but without having any tubercle bacilli grown in it. This was used one month after the original test in all the 56 cases. The result was that 16% reacted to the plain bouillon control. These results seemed to cast doubt on the specificity of the skin reaction to tuberculin. In a later series of tests with simulaneous controls very unsatisfactory results were obtained.

Dr. Edward R. Baldwin, of Saranac Lake, N. Y.: There is such confusion in the results of this test that it seems to me it is time to bring back to the medical profession the fact that the cutaneous test and the tuberculin tests in general have not so much value as positive diagnostic tests, but are rather of confirmatory value; that they vary very much in their reactions because of the differences in the sensitiveness and absorptive properties of the skin; and that only with a very distinct reaction with a small dose can an interpretation of any value be made in adults.

Dr. Lyman's results with the broth seem to me to be accounted for by the fact that the skin was irritated by the prolonged contact with the glycerin, as he tells me he used the broth in full strength.

Dr. Harry Lee Barnes, of Wallum Lake, R. I.: Dr. Lyman sent me a bottle of peptone bouillon and asked me to try it as a control. I used it on 100 cases of pulmonary tuberculosis. Six to ten drops were applied to the arm of each patient and the moistened area covered with sterile cotton. I inspected the arms twenty-four and forty-eight hours after the test and in no case was I able to see any redness or abnormality of the skin.

Dr. Jay Perkins, of Providence, R. I.: In the use of this tuberculin another fact must be taken into consideration, and that is that the varieties of the different manufacturers are not the same. When this ophthalmic test first came out Dr. Baldwin kindly sent me some tuberculin that he had prepared, which I used apparently with good results and without any severe reaction. Then we used quite a large amount that came from a commercial house. With that I got very severe reactions. I then started in with a 1% and a 2% of Koch's original tuberculin, and with that I got no severe reactions, not a single one, even with the 2%. In using the cutaneous test, I helped start another clinic in the use of that recently, and the man in charge told me he was not getting any reaction. He said he was using one of the popular tuberculins on the market. His results differed entirely from my own where I was using the imported Koch's tuberculin. It seems to me that we must take into consideration the fact that the different varieties do not react the same.

DR. F. M. POTTENGER, of the Pottenger Sanatorium, Monrovia, Cal., read a paper entitled

FURTHER OBSERVATIONS UPON RIGIDITY OF THE CHEST MUSCLES AS A SIGN OF INVOLVEMENT OF THE PULMONARY PARENCHYMA.

This sign was described by Dr. Pottenger in the *Journal of the American Medical Association*, March 6, 1909, and in the *American Journal of the Medical Sciences* in May, 1909. It consists of a rigidity of the muscles of the chest wall, particularly of the intercostals. By making gentle pressure with the tips of the fingers over the intercostal spaces the experienced touch will detect a resistance on the part of the muscles that overlie the inflamed parts which is like that noted in the muscles of the right lower quadrant of the abdomen in appendicitis; in the right hypochondrium, in hepatic colic; or the general rigidity of the abdominal muscles when general peritonitis is present. Dr. Pottenger claims that this is a constant sign and the rigidity is greater over dense infiltrations than over infiltrations of lesser degree. It is likewise greater over recent lesions. Dr. Pottenger suggests that both the superficial and deep muscles be palpated, the superficial with light and the intercostals with firm pressure. The sign is easiest to detect in those who do not have too much subcutaneous tissue and whose muscles are normally not too firm. The muscles evincing this sign were examined microscopically and it was found that the substance of the fiber was replaced by a homogeneous substance. In one specimen this was broken up into irregular masses such as are found in so-called waxy degeneration of the muscle. In all these hyaline areas there were apparently between the replaced fibers extremely long, delicate nuclei. They appeared to be the nuclei of endothelial cells of either the blood or lymph capillaries.

The sign is also present in pneumonia, pleurisy and emphysema.

Dr. Pottenger also contributed a short paper entitled

A NEW PHYSICAL SIGN, PROBABLY A SKIN REFLEX, WHEREBY SOLID ORGANS SUCH AS THE HEART AND LIVER AND INFLAMMATORY PROCESSES FOUND IN THE LUNGS AND PLEURA MAY BE DETECTED BY PALPATION.

This was attributed to a contraction of the erectores pili.

DR. J. M. ANDERS: Dr. Pottenger's article was one of great scientific as well as practical interest. I think some of his explanations, however, are perhaps open to mild criticism. His explanation of defective expansion of the upper portion of the lung, e. g., that it is probably due to the presence of muscular rigidity, does not fit all of the facts. Pleuritis often precedes the lung lesion and is constantly associated with it; and this may be responsible for lack of expansive motion; and pleuritis with marked fibrosis of the lung texture also explains the retraction which we so constantly see in advanced cases. So that many factors, in addition even to what I have mentioned, must be considered in attempting to explain the lagging as well as the retraction or contraction which we observe both in early and in late cases.

DR. A. JACOBI, of New York: For lanolin to be absorbed it must be mixed with water. I have found that in using iodide of potassium in the usual form of an officinal ointment I have had to wait several days sometimes for iodin to appear in the urine, whereas, if a few drops of water are added to a lanolin ointment, iodin will be found in the urine within a few hours. The absorption is then very rapid. The lanolin cannot be well absorbed in the dry state in which we generally get it at the druggists. Whenever an ointment of that kind is handed to a patient I always direct him to use a little water with it. I do the same thing, for instance, with the Credé ointment, which has been discredited lately more than it deserves; and thereby, the Moro method is good enough.

Recently, in using the von Pirquet test, instead of using the diluted tuberculin, I have been advised by the author of the method to use it in its original condition. I have to see the first case in which it has failed. I use only a very minute quantity in all sorts of cases. I see a great many advanced cases.

As to Dr. Pottenger's paper, I believe that we find increased resistance to the finger while we are percussing in every case where there is some resistance inside, every case of acute or chronic inflammation which has any thickening of the pleura, with or without solidification of the lung tissue. I have always believed that the area of thickening can be made out. If I have understood him correctly, that has been Dr. Pottenger's finding.

In regard to the changed condition of the muscles: He spoke of appendicitis and the muscular spasm. There is one condition in which we see that muscular spasm very frequently, and that is hip-joint disease. The first symptom in hip-joint disease is a spasm of the femoral muscles. The first pain is noticed in the knee, and that will continue until the hip is healed, and it may take years. It will not continue if you have abscess, and it will not continue after the hip gets well, after an operation or after the illness is cured. That is one condition in which spasm of the muscles is observed. I do not think it is necessary to believe that in every case there is an anatomical or histological change, for instance, of hyaline degeneration. Muscles, even when they have been emaciated to a considerable extent, may fully recover.

In regard to the treatment of tuberculosis, I have always been of the opinion, as some of you may know, that we have been too negligent in using what we had, that is, in using our medicines. I have now for eighteen years used guaiacol in every case, and I know that I have been quite successful with it. I have seen a great many poor patients, and have had to give them guaiacol because guaiacol carbonate, which agrees better with the stomach, is so excessively dear. High tariffs and patent rights are the destruction of our population and our patients. I have had to give guaiacol because most patients could not pay for the guaiacol preparations. An ounce of guaiacol carbonate until a little while ago cost wholesale three or four dollars. Since the first of April it costs twenty-two cents an ounce. That shows what a degree of extortion has been perpetrated on the public by the importers and by the men who have the patent rights. So it is possible nowaways to give even a poor patient a guaiacol preparation that is palatable and at the same time better borne by the stomach. As some of you may know, I have used a good deal of arsenic. I believe we shall have to come to something in the way of masks. But even respirators, which are uniformly used in some European countries for the dust-inhaling workmen in factories, have found no favor with our careless and negligent employers and employees. There is a great deal of dust. In Europe, factory men and women wear masks to keep the dust out. There they are not afraid at all to be out and about with their respirators over their nose and mouth, and it does them good. Still, there is a difference between the masks and the respirators. The latter merely protect; the former we expect to cause venous hyperemia of the lungs.

Dr. Edward R. Baldwin, of Saranac Lake, read a paper on the

PROGRESS AND CHANGES IN THE TREATMENT OF TUBERCULOSIS IN THE PAST TWENTY YEARS.

During the later years, among the '80s, the trend of treatment was toward germicides aimed against the bacillus. Creosote was conspicuous. Hydrogen sulphid, hydrochloric acid, oxygen and antiseptic oils were in vogue. The fatuous belief in germicides has never died out. Belief in the specific virtues of climate was well nigh universal.

Meanwhile animal experimentation went on, and after a period of depression, unwarranted resentment and carping which followed Koch's reluctant announcement of tuberculin in 1890, a few, including Dr. Trudeau, continued to work along the line of tuberculin therapy.

It was a barren year that has not produced at least two sensational " cures " during the past twenty years. Cinnamic acid, nuclein, chlorid of gold and sodium, iodide of manganese were noticed. Fresh air, food and rest, the substitution of external measures for cough sedatives and antipyretics marks a step in advance. The varying treatment of hemoptysis by vasoconstrictors and vasodilators was reviewed, and it was remarked that the use of opiates still holds the chief place.

Dr. Baldwin reviewed the management by exercise; by artificial nitrogen injections into the pleural cavity; mechanotherapy and the pneumatic cabinet. The simple truth is, that styles in the treatment of tuberculosis have changed like hats, with the season, and, for fear of being regarded antique, undoubtedly useful measures are dropped by the majority of us after a most superficial trial.

Dr. Baldwin spoke of the progress made in the treatment of surgical tuberculosis by Bier's method. He spoke of the abandonment of much polypharmacy, and the education of the laity against it, and he commended the work of the Council of Pharmacy of the American Medical Association. He noticed the preachment against the usefulness of climate *per se*, and held that such a doctrine was erroneous and would probably be shortlived. The truth in such matters becomes redistilled and purified by experience and opposition, leaving behind clearly established what is most valuable for retention.

Dr. Delancey Rochester, of Buffalo: I just want to say one word in regard to Dr. Baldwin's paper, which is exceedingly interesting to me, and to state that I hope that in the return to rational treatment we will continue to use tuberculin hypodermically in the treatment of tuberculosis. I obtained the tuberculin from Dr. Trudeau, using it according to his directions in small doses, and in suitable cases I did have a good many good results, and even lately I have had cases come under observation treated by that plan some ten or fifteen years ago and they are perfectly healthy now, although at that time they were evidently seriously sick. The same thing may be said in regard to the nuclein treatment. I think the real reason that the nuclein has fallen into disrepute is that it is painful and has to be given for a long time, it being necessary to give daily injections. Only last week I was talking with a physician who said he had used it continuously in a case, with daily injections, for eighteen months, and the patient had recovered completely and was perfectly well at that time and had been well for six months. I think those two methods of treatment are useful, and I hope they will continue to be used.

In regard to cough, if we could devise some means for constant inhalation without wearing too objectionable a mask, I think we could relieve a great many more coughs than we do, by the inhalation of menthol or thymol or something of that sort, or a combination of drugs. I have used that in our hospital at home by a mask over the mouth and nose, particularly over the nose, with apparently excellent results in relieving cough, where we do not have to use morphine or any opium preparation.

(To be continued.)

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Book Reviews.

The Principles of Pathology. By J. George Adami, M.A., M.D., LL.D., F.R.S., Professor of Pathology in McGill University, and Pathologist to the Royal Victoria Hospital. Vol. I, General Pathology. With 322 engravings and 16 plates. Philadelphia and New York: Lea & Febiger. 1908.

In pathology, as in allied branches of science, the method of experiment has, within the past decade, revealed a multitude of new facts. Improved technic combined with careful observation has led to great advance in pathological histology. Adami's general pathology presents the new knowledge and the old that endures in a work that is a credit to English and American medicine. We predict that it will be speedily recognized as the most authoritative textbook on pathology in our language. As the author states in his preface, a textbook on this subject should be a training in medical thought and not the mere record and description of phenomena. It should deal with causes or the general principles that underlie changes in the function of structure of organs. Most of the English textbooks and the most popular German works contain little more than a classification of pathological conditions with definitions of the terms employed.

The scope of Adami's general pathology is broader than that of the classical works of Ziegler and Thoma, as it includes more chemical and pathological physiology. The second and concluding volume will be devoted to systemic pathology.

No one can examine the book without realizing that an enormous amount of time and study has been spent in its preparation. Yet different sections of the volume are of unequal value. Inflammation and many other subjects belonging strictly to pathology are presented in a masterly manner, while the consideration of some of the chemical and physiological aspects of pathology is not entirely satisfactory. The section on fever may be cited as an instance of the inadequate presentation of an important topic.

The author has a style characterized by clearness and polish. He writes interestingly, and his success in presenting a reasoned treatment of the subject will win for the book the favor both of beginners and advanced students.

Pure Milk and the Public Health. A Manual of Milk and Dairy Inspection. By ARCHIBALD R. WARD, B.S.A., D.V.M., Assistant Professor of Bacteriology, and Director of the State Hygienic Laboratory, University of California, Berkeley, Cal. Seventeen illustrations. Pp. 218. Ithaca, N. Y.: Taylor and Carpenter. 1909.

The author has successfully summarized the essential information on the subject for the practical use of health officers, bacteriologists, chemists, progressive dairymen and others interested in and active in obtaining a safe milk supply.

The list of references which accompanies each chapter gives added value to the book.

The pages are attractively printed, the reader's attention being called to the principal subjects by heavy-faced type, and to important phases of a subject by italics.

The book contains information concerning the contamination of milk, bacteriological changes in milk, diseases transmitted by milk, bovine tuberculosis and other cattle diseases, municipal sanitary control of milk, pasteurization of milk, microscopic tests of milk, bacteriological examination of milk, certified milk, in addition to chapters on the analysis and adulteration of milk written by Prof. Myer E. Jaffa, Director of the State Food and Drug Laboratory, University of California.

The book is illustrated. It deserves a place in the library of every state and city health department and would be of inestimable value to towns which are endeavoring to put a stop to conditions favoring milk contamination and are about to establish laboratories for bacteriological and chemical tests of milk.

Pathogenic Micro-Organisms, Including Bacteria and Protozoa. By WILLIAM HALLOCK PARK, M.D., assisted by ANNA W. WILLIAMS, M.D. Third edition, enlarged and thoroughly revised. New York and Philadelphia: Lea & Febiger. 1908.

The second edition of this work was reviewed in the JOURNAL in 1906. Important additions have been made in the present revision, and most of the leading advances in bacteriology have been recorded. It is a textbook that deserves high commendation. It is specially suited to the needs of students of public health.

Knowledge of the pathogenic protozoa is increasing rapidly, and their study is now recognized as one of great importance. The portion of the book dealing with protozoa has been in part rewritten by Dr. Williams, and her presentation of the subject forms one of the best and most trustworthy guides for the elementary student. In some parts of the book revision has been less thorough. This is true of the chapter on the typhoid bacillus. There is no description of Endo's typhoid medium, although much space is devoted to two inferior methods. The malachite-green media are not mentioned, and the importance of bile media in isolating typhoid bacilli from the blood is not emphasized.

THE BOSTON

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THE PROBLEMS OF THE NURSES' TRAINING SCHOOL.

IN a brief but admirable paper read last year before the Colorado State Trained Nurses' Association, and recently reprinted from the Denver *Medical Times* and the Utah *Medical Journal*, Dr. H. G. Wetherill presents some pertinent criticism, from the standpoint of a surgeon, of the methods of modern training schools for nurses. He calls attention to the fact that such schools had their origin in the necessity of hospitals to get their patients cared for, and only gradually developed independent educational aims. The resultant disregard of the nurse's interests he believes has often worked hardship, and still shows itself in the requirement of a twelve-hour day and in the stringency of the terms by which a nurse is bound to her training school and hospital for a definite period of years. Doubtless the routine of ward work is highly fatiguing and leaves a conscientious nurse little energy for other things. Doubtless an eight-hour day would give her more opportunity for study and healthful recreation. Tireless fidelity and devotion to duty, however, are fundamental requisites of the nurse's calling, as of the doctor's, and it remains an open question whether the exacting requirements and persistent discipline of hospital and training school life as they are be not more valuable training for a nurse's subsequent work than the additional information which she might acquire under less stringent conditions, but which she is less likely to need than qualities she cannot learn from books. The higher the grade of occupation, the more zealous should its practitioner be to sacrifice self for the good of the service.

The second point upon which Dr. Wetherill comments is the selection and personality of pupils in the training schools. The same practical consideration of hospital necessity comes into question here also, for a school must often accept not wholly desirable candidates because it is under obligation to supply the wards with nurses and must at least have some one to do the day's work. In this respect it is at great disadvantage as compared with a medical school, which, if reasonably well endowed, is to some extent free to select its candidates and to develop standards and ideals of education. So far as individual fitness to study and practice nursing is concerned, Dr. Wetherill believes it consists in three things: physical efficiency, a good education and personal dignity. The importance of these qualifications cannot be overestimated, particularly the last. Health and knowledge are much, but they are not all; "many of the best nurses I have known," says Dr. Wetherill, "have not had a high school diploma." But the significance of personality is paramount, and the problems of the training school will be far towards solution when it is recognized that the nurse's work is not inferior, but complementary, to that of the physician; that the same qualities of character are demanded of her of as him; above all, that as the good physician must be a true gentleman, so no training school probationer can expect to be a really good nurse unless she is at heart a lady.

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PHYSICAL EDUCATION BY THE STATE.

A contemporary daily paper reports that the Australian government has recently appropriated $120,000 for the purpose of establishing a system by which every child in the commonwealth shall receive at the public expense a thorough physical training under careful medical supervision. This training is to be given in state schools by instructors specially qualified at a central institution. Exactly what it will consist in is not stated, but its purpose is to prepare the boys to become able-bodied citizens and workers, and to fit the girls for motherhood and domestic administration. Later the system may be extended by a scheme of suitable technical and utilitarian education during adolescence. It will be interesting and valuable to have such a plan tested under such favorable conditions as exist in Australia, for it represents a phase of the growing modern concept of the individual as a communal unit for whose efficiency the state is responsible, as in the *Republic.* If successful, it will be not only a contribution to educative medicine, but an advance in civilization and true socialism, and will be another instance in which a platonic ideal has, after centuries, been realized in modified form.

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PREVALENCE OF TUBERCULOSIS AMONG SCHOOL CHILDREN.

The Association for Investigating the Condition of Children of the Poor in New York City has maintained this summer at West Coney Island the Sea Breeze Home, a charitable vacation institution, to which are sent from the tenement districts of the city school children supposed to be free from disease, but needing recreation and fresh air. According to a statement issued by the Association on Aug. 22, thorough physical examination and application of the tuberculin test to 728 of these children (381 boys and 347 girls) revealed the fact that 28.1% were infected with tuberculosis. The percentage among the girls was 35.1; among the boys, 27.7. This alarmingly high prevalence of tuberculosis among children supposedly well emphasizes the insidious nature of the infection and the importance of checking its spread among slum children. The Association states that its investigation is intended as a preliminary step towards determining the need and securing the establishment of open-air schools in the poor districts of New York City.

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MEDICAL NOTES.

International Medical Congress. — The International Medical Congress opened at Budapest, Aug. 28, with a reported attendance of four thousand, representing many countries.

Hay Fever Association. — The annual meeting of the United States "Hay Fever Association" was opened Aug. 27, at Bethlehem, N. H., with a large attendance.

Cholera. — Cholera has appeared in Russia, in a town situated on the Duna, and is said to exceed in intensity the outbreak which occurred recently at St. Petersburg. On Aug. 26, twenty-six cases and six deaths were reported, and upwards of a hundred cases and nearly fifty deaths during the preceding week. A number of cases have also been discovered in Rotterdam, presumably from a vessel coming from St. Petersburg. Precautions are being taken.

Anthrax and the Tariff. — Dr. James Law, formerly dean of the State College of Veterinary Medicine at Cornell, has called attention to the fact that the free hide clause of the new tariff bill opens a dangerous possibility for the introduction of anthrax and other cattle diseases into this country. The duty hitherto in force, by practically prohibiting the importation of hides, has afforded protection from such liability. If this is to be removed, laws providing for the proper disinfection of imported hides should guard the safety of men and cattle in the United States. It would be an economic crime as well as a scientific disgrace to permit the repetition here of the lesson so richly taught by the anthrax scourge in France.

Instruction in First Aid to the Injured. — The National Red Cross is planning to give instruction on a large scale in first aid to the injured, and has selected as its earliest pupils the workmen of large manufacturing corporations, such as the United States Steel Corporation and the Pennsylvania Steel Company. With the coöperation of these organizations, the instruction will be given, largely by local physicians, to classes formed in every large city of the union. It is particularly appropriate that such a movement should begin among those whose occupation specially exposes them to serious traumatic emergencies.

Pellagra. — Dr. J. F. Siler, Medical Corps United States Army, and chief of Department of Tropical Medicine in the New York Post-Graduate Medical School, has been sent to Peoria, Ill., to investigate the recent outbreak of pellagra.

Plague and Squirrels. — It is announced that the researches of Dr. W. C. Rucker and Dr. Rupert Blue, working under the auspices of the Public Health and Marine-Hospital Service, have shown that one of the hosts of the plague bacillus is the ground squirrel. Certain cases in man have been traced to this source and the infection has been demonstrated in a large number of squirrels found in one county in California. An attempt will be made to exterminate the squirrels.

Difficulty in Securing Army Surgeons. — Recent examinations for the position of surgeon in the United States Army have resulted in the selection of forty-two men, two of whom are from New England. There are still many vacancies in the service, and properly equipped men, physically and mentally, are in much demand.

Publication of Opium Report. — After a certain amount of friction, the International Opium Conference, which met early in the year at Shanghai, has published its report in two volumes. Delegates from America and China made more radical recommendations than those from other nations, which led to considerable discussion. The differences of opinion lay especially in the question of the freedom of the importation of opium.

BOSTON AND NEW ENGLAND.

Acute Infectious Diseases in Boston. — For the week ending at noon, Aug. 24, 1909, there were reported to the Board of Health of Boston the following cases of acute infectious diseases: Diphtheria 28, scarlatina 15, typhoid fever 15, measles 14, smallpox 0, tuberculosis 53.

The death-rate of the reported deaths for the week ending Aug. 24, 1909, was 18.08.

Boston Mortality Statistics. — The total number of deaths reported to the Board of Health for the week ending Saturday, noon, Aug. 28, 1909, was 201, against 228 the corresponding week of last year, showing a decrease of 27 deaths and making the death-rate for the week 16.82. Of this number 108 were males and 93 were females; 195 were white and 6 colored; 152 were born in the United States, 46 in foreign countries and 3 unknown; 48 were of American parentage, 121 of foreign parentage and 32 unknown. The number of cases and deaths from infectious diseases reported this week is as follows: Diphtheria, 35 cases and 2 deaths; scarlatina, 20 cases and 0 deaths; typhoid fever, 22 cases and 1 death; measles, 13 cases and 0 deaths; tuberculosis, 59 cases and 21 deaths; smallpox, 0 cases and 0 deaths. The deaths from pneumonia were 9, whooping cough 1, heart disease 16, bronchitis 1 and marasmus 4. There were 9 deaths from violent causes. The number of children who died under one year was 81; the number under five years 95. The number of persons who died over sixty years of age was 43. The deaths in public institutions were 86.

Cerebrospinal meningitis, 3 cases and 1 death.

Of the above the following were non-residents: Consumption: 1 case and 2 deaths.

Deducting deaths of non-residents, the total is 168. The corrected death-rate is then 14.06.

Bequest. — By the will of Mrs. Nancy Willing Wharton, $1,000 is bequeathed to the House of the Good Samaritan.

Suppression of the Cocaine Habit. — In accordance with the ordinances recently enacted by the Boston Board of Health, several persons were last week arraigned before the district courts on charges of illegally selling, distributing or having in their possession cocaine or narcotic mixtures containing this drug. Nearly all the prisoners were found guilty and fined. A number of other arrests have been made, and there appears to be a laudably vigorous effort on the part of the police to aid the health officials in suppressing the growth of the cocaine habit in Boston.

Session of the National Medical Association. — During last week took place in Boston the annual session of the National Medical Association, composed of colored physicians from all parts of the country. In the forenoons many of the members attended clinics at the various hospitals in the city. At the afternoon and evening meetings, held in Parker Memorial Hall, papers were read on numerous medical and surgical topics, notably on the diagnosis, relief, control and prevention of tuberculosis, a subject of special interest on account of the peculiar liability of negroes to this disease, especially in the environment of cities. The congress was closed by a dinner at Paul Revere Hall.

Milk and Baby Hygiene. — A meeting of physicians was held Aug. 26, at the Boston City Club, under the auspices of the committee on milk and baby hygiene. Dr. Walton B. Cannon, of the Harvard Medical School, secretary of the committee, presided, and the general question of infant hygiene was discussed by Mr. John Ritchie, of the Boston Board of Health; Dr. Ralph Larrabee, Dr. J. L. Morse and others. Officers were elected as follows: Dr. C. W. Townsend, president; Dr. John L. Morse, first vice-president; Dr. Ralph Larrabee, second vice-president; Dr. R. Brindisi, third vice-president; Dr. John M. Connolly, secretary; Walter E. Kruesi, treasurer and director.

NEW YORK.

Advertising for Human Blood. — In the case of a young woman, twenty-one years old, a private patient at St. Luke's Hospital suffering from aggravated anemia, the unusual course was adopted of advertising for vigorous young men who were willing to sell some of their blood for the performance of transfusion, and there were some eighteen applicants in response to the advertisement. Transfusion has already been resorted to once in this case, when the patient's brother supplied the blood, but it was not deemed advisable that he should be subjected to a further loss.

Bequests to Hospitals. — By the will of the late Michael Horn, of New York, over $40,000 is left to charitable institutions and societies in Manhattan, to the number of forty-three. The list includes most of the hospitals of the borough, and the largest single bequest is to the Mount Sinai Hospital, $5,000 to establish the "Bertha Horn Memorial Bed." The Montefiore Home and Hospital for Chronic Invalids receives $2,500 for an "Isaac Horn Memorial Bed," and the other beneficiaries, sums varying from $250 to $500.

Visiting Nurses for Homes and Out-Patient Departments. — The plan of sending out trained nurses to the homes of patients discharged as convalescent, which was first introduced in Boston, has recently been adopted by Bellevue and its allied hospitals, and also by the Post-Graduate Hospital. In addition, visiting nurses are now employed in connection with the out-patient departments of these hospitals, and in both instances the nurses are supplied by the New York Association for Improving the Condition of the Poor as the funds at the disposal of the hospital do not admit of this outside work.

Antituberculosis Campaign. — In its summer antituberculosis campaign, which is to be brought to a close at the end of the first week in October, the State Charities Aid Association, acting in concert with the State Department of Health, now has six exhibits following outlined circuits in rural districts. The last two of these were started only recently, one at Ellenville, Ulster County, and the other at Sandy Hill, Washington County. In the summer only the smaller exhibits are sent out, and special attention is given to the county fairs. In the winter the larger and more complete exhibits are shown in the cities, and this year the campaign will open on Oct. 24, when the large exhibit of the State Health Department will be sent to Syracuse. During both seasons a large amount of educational literature is issued and distributed.

Board of Health Building. — The Board of Health will shortly be obliged to relinquish the building at Sixth Avenue and 55th Street which it at present leases, and at a recent meeting the board gave its approval of the plan, recommended by Sanitary Superintendent Bensel, to ask the city to purchase for it a twelve-story office building now in course of construction at the corner of Irving Place and 16th Street. The company erecting this building has already made a tender to the city of the premises for $850,000. There is some doubt whether consent can be obtained for such a plan, as the city is now engaged in erecting an enormous building, costing $7,000,000, near the Manhattan terminal of the Brooklyn Bridge, with a view to providing accommodations for its various administrative departments. The Board of Health has always understood, however, that its department, with its offices and laboratories, should have a separate building of its own, even after the completion of the new municipal office building.

Epidemic Infantile Paralysis. — An outbreak of epidemic infantile paralysis (anterior poliomyelitis) is reported from the Brownsville district of Brooklyn, where, it is stated, more than two hundred young children have been attacked with the disease. It is also reported that within the last two weeks twenty cases of the disease have been brought to the Hospital for Ruptured and Crippled in Manhattan, whereas at times when it is not epidemic only about four cases are treated there in the course of a year. At the time of the outbreak in New York two years ago, a committee of investigation was organized, the members of which represented the Health Department, the New York Neurological Society, the Rockefeller Institute and the Pediatric Section of the New York Academy of Medicine. The committee, which has not yet published the results of its researches, collected records of some nine hundred cases, although it is believed that the number of cases actually amounted to more than twice this. Dr. J. F. Terriberry, neurologist to the out-patient department of the Hospital for Ruptured and Crippled, who is a member of this committee, in view of the probable recurrence of an epidemic, is endeavoring to arrange a plan by which special wards in some of the hospitals may be reserved for cases of the disease.

Congestion of Population. — In a bulletin just issued by the Committee on Congestion of Population in New York, American cities are pronounced to be twenty-five years behind progressive Germany. The worst evils of unsanitary, immoral and crowded housing, it is stated, are to be found in New York, with Chicago a close and gaining second, and Philadelphia, St. Louis and Cleveland following in the order given. The pressure of the population in cities, it was found, could best be studied in specific instances, block by block, not ward by ward or from tables of average density for the whole city, since such include the area of streets and open spaces in the figures on which the averages are based. Many instances of overcrowding are given in the bulletin, taken from the different cities named. While Philadelphia has less congestion to the acre than the others, because there are fewer five and six-story tenement-houses, in one block there were no less than 104 single-room "housekeeping apartments." In five of these, seven persons of all ages and both sexes slept and cooked; six had six occupants each; thirteen, five each and twenty-seven, four each.

Current Literature.

Medical Record.

July 24, 1909.

1. *Guntzer, J. H. *Scleroma of the Upper Respiratory Tract. (Vaccine Treatment.)*
2. Wood, W. *Brain Arches. Four Grand Arches of the Cerebrum.*
3. *Clarke, T. W. *The Rare Forms of Cyanosis: Polycythemia, Methemoglobinemia and Sulph-Hemoglobinemia.*
4. Warfield, L. M. *Secondary Carcinoma of the Lung.*
5. Hughes, D. *Percussion of the Lungs.*

1. The author gives a full account of scleroma of the upper air passages, including a report of 2 cases under treatment with vaccines of the Frisch bacillus.

3. The author discusses polycythemia, methemoglobinemia and sulph-hemoglobinemia. He lays especial stress on the relation of chronic bismuth subnitrate poisoning to methemoglobinemia. The cases of sulph-hemoglobinemia he believes may be due to an over-absorption of hydrogen disulphide in the presence of some abnormal reducing agent. He describes the test for sulph-hemoglobin, which is differentiated by spectroscopic analysis. The black band which is seen in the red in the spectrum of both methemoglobin and sulph-hemoglobin will disappear if a few drops of ammonium sulphide are added to the blood, if methemoglobin is present, and will remain if the substance is sulph-hemoglobin. The cases of sulph-hemoglobinemia are associated with chronic constipation. [W. B. R.]

July 31, 1909.

1. Eccles, R. G. *Parasitism and Natural Selection. A Medical Supplement to Darwin's "Origin of Species."*
2. *Cumston, C. G. *Renal Tuberculosis and Its Surgical Treatment.*
3. *Miles, G. M. *Some Comments on the Etiology and Treatment of Intestinal Hemorrhage.*
4. Brewer, I. W. *An American School of Tropical Medicine.*
5. Chance, B. *A Case of Parenchymatous Keratitis in Acquired Syphilis.*
6. Ochs, B. F. *The General Practitioner as a Dermatologist.*

2. The article contains a good discussion of the diagnosis of renal tuberculosis, with suggestions as to treatment.

3. The author discusses the etiology and treatment of intestinal hemorrhage. He gives a general review and discussion of the remedies most suitable for controlling hemorrhage from different parts of the intestinal tract. [W. B. R.]

New York Medical Journal.

Aug. 21, 1909.

1. Penrose, C. A. *Leprosy.*
2. Ashmead, A. S. *Epidemiology of Leprosy.*

3. Hays, H. *The Pharyngoscope; A New Method of Examination of the Nasopharynx and Larynx.*
4. Pfahler, G. E. *The Röntgen Rays in the Diagnosis of Carcinoma of the Stomach.*
5. Coughlin, R. E. *Report of a Case of Hysteria in an Adult Male.*
6. *Nascher, I. L. *Geriatrics.*
7. Ott, I., and Scott, J. C. *The Action of Glandular Extracts upon Tetany after Parathyreoidectomy.*
8. Gills, W. A. *Acute Uremic Poisoning from Turpentine.*

6. Nascher coins the term "geriatrics" for designating the diseases of old age, and holds that there is justification for making of this a special field of medicine. The treatment of fractures, for example, and of severe infections in the aged is very different from that of the same conditions at other times of life. It seems improbable that the writer's idea will meet with favor among internists, who have seen their field of usefulness limited sufficiently without the assistance of geriatrists. [L. D. C.]

The Journal of the American Medical Association.

Aug. 21, 1909.

1. Gorgas, W. C. *The Part Sanitation is Playing in the Construction of the Panama Canal.*
2. *Dunn, C. H. *The Treatment of Infantile Diarrheas Due to Intestinal Fermentation with Lactic Acid Bacilli.*
3. *Freeman, R. G. *Adenoid Hypertrophy During the First Year of Life and its Treatment.*
4. *La Fetra, L. E. *Suppurative Conditions in the Joint Regions in Infants and Young Children.*
5. Frank, M. *Primary Hemorrhagic Glaucoma with Probable Sympathetic Inflammation. A Clinical and Microscopic Study of a Case.*
6. *Butterworth, W. W. *Hair Ball or Hair Cast of the Stomach and its Occurrence in Children. Report of Two Instances, with Bibliography and Synopsis of Cases Reported to Date.*
7. Sholer, J. D. *Emanation of Radium Absorbed and Retained by Cocoanut Charcoal. An Advance in Radium Therapy.*

2. Dunn believes that the diarrheal diseases of infants fall into four divisions, having as their fundamental etiologic factors, (1) Nervous influences, (2) indigestion, (3) bacterial fermentation and (4) bacterial infection. He also believes in connection with this classification that there is a marked difference between conditions caused by true bacterial infection with parasites which live in and on the tissues of the body and those caused by bacterial fermentation with saprophytes which live in and on the intestinal contents only. Dunn quotes Tissier, who gave his patients pure cultures of lactic acid bacilli and under this treatment noted rapid transformation of the stools, subsidence of the symptoms and gain in weight. Dunn, recognizing that buttermilk made with lactic acid bacilli, if unpasteurized, should contain large numbers of this organism, has employed this material in his clinical experiments. The buttermilk used was first pasteurized to kill all other organisms then inocculated with a pure culture of lactic acid bacilli and ripened until the proper acidity was acquired and precipitation of the casein. Dunn describes the clinical difference between intestinal fermentation and intestinal infection. Out of 28 cases of the typical fermental type, 23 were successful, 3 partly successful and only 2 were failures. In the successful cases treatment was followed promptly by cessation of the diarrhea and by rapid gain in weight. In some obstinate cases which failed to gain in weight, alternate feedings with modified milk were successful. These cases suggest that although the lactic acid bacilli had stopped the fermentation, the buttermilk was not adapted to the caloric needs of the child. This ripened milk was used only as a medicine against fermentation, to be omitted as soon as it had accomplished its work. In cases in which the ripened milk could not be digested, a pure culture of the lactic acid bacilli was given. The attempt to use the pure culture in combination with various formulæ of modified milk is not generally a success unless one uses a fat-free milk.

3. Freeman, in writing on adenoid enlargement during the first year of life emphasizes the following points: Prominent symptoms are (1) snuffles; (2) mouth breathing; (3) recurrent colds; (4) cough; (5) otitis media. Operation in infancy can be done quickly without an anesthetic and with very little shock to the child, and if adenoids do cause symptoms, they should be operated on even as early as the fourth or fifth month of life. If an anesthetic must be used, it should be nitrous oxid.

4. La Fetra reiterates that tuberculous and rheumatic joint infections in early life are often confused. Rheumatism, however, seldom occurs under two years. The number of joints involved is greater the younger the child, due undoubtedly to the rapid growth of bone at the joint ends. The tissues around the joint as well as the joint itself are usually involved. These conditions yield surprisingly well to alcohol compresses as a dressing or to simple incision and drainage without loss of function in the joint.

5. Butterworth has collected 42 cases of hair cast or hair ball of the stomach and cites a case of his own. The ball is acquired from the habit of children, particularly of girls with long loose locks, of chewing stray hairs or getting them into their mouths. The long-continued action of the digestive juices has but little influence on the color or consistency of the hair. Dyspepsia and abdominal tumor are the first symptoms. The breath becomes offensive, anemia progresses, indigestion becomes worse, emaciation and weakness progressive and unless surgically relieved death results from inanition or perforation. [E. H. R.]

The American Journal of the Medical Sciences.

July, 1909.

1. *Kinnicutt, F. P. *A Clinical Study of the Therapeutic Value of the Calcium Salts in Gastric Tetany, with an Anatomical Report on the Parathyroid Bodies.*
2. *Sewall, H. *A Common Modification of the First Sound of the Normal Heart Simulating that Heard with Mitral Stenosis.*
3. *Kaufman, J. *Gastro-Intestinal Auto-Intoxication.*
4. Weber, F. P. *Acquired Chronic Acholuric Jaundice, with a Blood Picture at One Time Resembling that of Pernicious Anemia.*
5. *Doty, A. H *The Means by which Infectious Diseases are Transmitted.*
6. *Whipple, G. H. *Uncinariasis in Panama.*
7. *Edwards, W. A. *Malignant New Growth in Childhood. (1) Malignant Disease of the Uterus, Ovary and Vagina in Children.*
8. Arnold, W. F. *A Case of Viperine Snake Bite (of Undetermined Kind) Treated with Calmette's Sérum Antivénemeux (or Antivenin).*
9. *von Eberts, E. M. *Solitary Tuberculosis of the Breast.*
10. *White, C. Y., and Carpenter, H. C. *Tuberculous Pulmonary Cavities in Infants.*
11. Pitfield, R. L. *Two Cases of Myxedema.*
12. Barker, W. W. *A Fatal Anemia of Unknown Cause in a Child of Five Years, with Unusual Cells in the Blood.*
13. *Knapp, A. *The Ocular Complications of Nasal Sinus Disease.*
14. Speese, J., and Goodman, E. H. *The Cammidge Reaction in Experimental Disease of the Pancreas.*
15. Ashhurst, W. H. *The Tonsils as Eliminative Organs.*

1. Kinnicutt reports a case of tetany due probably to stricture of the duodenum in which the intravenous injection of calcium lactate (2 gm. in 1,200 ccm. of salt solution) seemed to have a distinct controlling effect upon the tetanic symptoms. Parathyroid preparations given both by mouth and subcutaneously were without demonstrable effect. At autopsy no abnormality of the parathyroid bodies was found.

2. Sewall describes a crescendo quality in the first sound of the heart in cases which at autopsy have shown no abnormality of the mitral valves. He suggests that in rapid filling of the ventricles the mitral and tricuspid valves are floated up to a position of partial closure before the contraction of the auricles takes place and that in this position of partial closure they may simulate in sound production an organic stenosis.

3. Kaufmann analyzes the grounds upon which the theory of gastro-intestinal auto-intoxication is based, but can conclude only that the theory is without support from objective facts.

5. Doty shows that the old theory of the transmission of contagious diseases by fomites, as in rags, clothing, cargoes of ships, paper money, can hold true only in rare cases of infection. Attractive as this theory is to the popular mind, almost no reliable evidence can be obtained in its support. The spread of disease is due almost entirely to more intimate contact with diseased persons. Thus attention is to be devoted rather to the identification and isolation of diseased persons and of persons who even without symptoms carry the infection and to efficient sterilization of known contagious material than to the futile attempts at general fumigation of the past.

6. Whipple has examined the intestines for parasites in 232 consecutive autopsies performed at the Ancon Hospital, Panama. He found hook-worms to be present in 31%, the ankylostoma duodenale in 17% and the Necator americanus in 21%, the Trichuris trichiura in 17% and the ascaris lumbricoides in 8%. The anemia associated with hook-worm disease is discussed; it is thought that it is due not entirely to direct loss of blood, but also to damage to the intestinal mucosa. It is not thought, however, that the hook-worm contains any hemolytic substance.

7. Edwards emphasizes the not infrequent occurrence of malignant new growths in children, particularly those of the female pelvis. He shows that all forms of diseases of the adult female pelvis have been recorded in childhood, and urges a more frequent resort to rectal pelvic examination. Tables of collected cases are given. A great majority of the tumors were sarcomata, but a considerable number were carcinomata.

9. Von Eberts summarizes what is known of the subject of tuberculosis of the breast without tuberculosis elsewhere in the body. The rarity of the condition is shown by the fact that but 40 reported cases are found which are based upon satisfactory evidence. The condition is met chiefly at the age of reproductive activity, and is described as occurring in two types, the discrete nodular form and the confluent form. Von Eberts reports a case which simulated sarcoma, but on microscopic examination seemed probably tuberculosis. Bacilli, however, were not demonstrated.

10. White and Carpenter call attention to the difference of opinion among different authorities as to the frequence of tuberculous pulmonary cavities in infants, some authors, including Osler, Rotch and Jacoby, speaking of them as rare, while Holt and others state that they are present in 20% to 50% of tuberculous patients under two years. In 75 autopsies on tuberculous patients under two years of age the authors found cavities present in 12 cases, or 16%. The cavities were situated most often at the root of the lung in the middle and lower lobes.

13. Knapp describes encroachment upon the orbit by the bulging walls of frontal and ethmoidal sinuses distended by non-inflammatory contents in mucocele and also inflammatory changes which attack the orbit secondary to inflammation or empyema of these sinuses. He quotes the conclusion of Birch-Hirschfeld that nearly all orbital inflammations are caused by nasal sinus empyema. The optic nerve may be damaged in sphenoidal sinusitis. Ocular paralyses, neuralgia and asthenopia may occur. A relation between sinus disease and iridochoroiditis and glaucoma cannot be accepted as proved. [F. W. P.]

JOURNAL OF MEDICAL RESEARCH.

JULY, 1909.

1. *ANDERSON, J. P., AND ROSENAU, M. J. *Further Studies upon the Phenomenon of Anaphylaxis.*
2. *GAY, F. P., SOUTHARD, E. E., AND FITZGERALD, J. G. *Neurophysiological Effects of Anaphylactic Intoxication.*
3. *FITZGERALD, J. G. *An Attempt to Show Specific Racial Differences in Human Blood by Means of the Reaction of Fixation.*
4. *CALMETTE, A. *Upon the Mechanism of the Neutralization of Cobra Venom by its Antitoxin.*
5. MCFARLAND, J., AND WESTON, P. G. *The Agglutination of Human and Rabbit Corpuscles by Crotalus Venom.*
6. KEYES, F. G. *The Gas Production of Bacillus Coli.*
7. *COLEMAN, W., AND BUXTON, B. H. *The Bacteriology of the Blood in Convalescence from Typhoid Fever. With a Theory of the Pathogenesis of the Disease.*
8. *DOLLEY, D. H. *The Morphological Changes in Nerve Cells Resulting from Over-Work in Relation with Experimental Anemia and Shock.*
9. RETIGER, L. F. *Further Studies on Fatal Septicemia in Young Chickens or " White Diarrhea."*
10. *THOMPSON, R. L., LEIGHTON, W. E., AND SWARTS, J. L. *Ligation of the Parathyroid Artery in the Dog.*
11. *THOMPSON, R. L., LEIGHTON, W. E., AND SWARTS, J. L. *Transplantation of the Parathyroid Glandules, with Special Reference to the Result of Bone Operation on Tetany Parathyreopriva.*

1. The authors take up in their article a number of points concerning the phenomenon of anaphylaxis. They find that hypnotics have practically no effect upon the fatal outcome. They give experiments to show the specificity of the phenomenon. They show that the effect of heat in modifying or destroying the sensitizing or poisonous properties of proteins probably depends entirely upon its effect in rendering the proteids insoluble rather than by the production of chemical changes in the protein. They show the difficulties of attempting to separate the toxic and sensitizing factors in serum, and the possibilities of error in drawing conclusions from the results. They believe that it makes no difference in the subsequent immunity whether the intoxicating injection be given subcutaneously, intraperitoneally or intracranially. They present evidence suggesting that antibodies are concerned in the phenomenon of anaphylaxis, and they show that guinea pigs may remain sensitive for over three years.

2. The authors report a number of experiments which bring out the points that the respiratory center is not the only part of the nervous system to be affected by anaphylaxis, and that by small localized injections at different parts of the nervous system, differential, irritative and paralytic reactions can be secured.

3. The article contains an account of experiments which show that it is practically impossible to separate the blood of different races by means of the reaction of fixation.

4. Calmette's article cites a few experiments to show that the mixtures of venom and antitoxin form merely an unstable chemical combination.

7. As a result of their work on blood cultures from typhoid fever patients, the authors suggest the following theory that the organisms grow chiefly in the general lymphatic system and spleen, where relatively few of the bacteria are destroyed. When the development of the bacilli has reached a certain stage, they overflow in quantity into the blood, where they are destroyed and their endotoxins set free and the symptoms represent the reaction on the part of the host. As the disease advances, if the patient is making a successful fight, the growth of the bacilli in the organs is gradually brought under control by the immunity processes, fewer bacilli are discharged into the blood and the symptoms lessen in severity. In fatal cases, when death is not due to an accident as hemorrhage, the growth of bacilli in the organs proceeds unchecked and the symptoms remain of the same or take on increased intensity. The authors explain the relapse by a rapid multiplication of organisms in the lymph nodes or spleen, where they had been temporarily held in check, and a discharge of these into the circulation. They explain the late development of local suppurative processes by the fact that an attack of typhoid fever does not confer local immunity to the bacillus.

8. The author reports his observations on the Purkinje cells in dogs, noting the results of anemia of different grades. He finds the following changes in these cells: First, an overproduction of chromatic material; then a gradual diminution down to complete disappearance of all this material from both body and nucleus. After the extra-nuclear chromatic material or Nissl substance has been used up, the nucleus gradually discharges its contents of chromatic material. The relations of this chromatic material to the function of the cell is evident from the au-

thor's work and also the close relation of the extra- and intra-nuclear substance. The article is a continuation of the author's work on these cells in shock in the last number of this journal.

10. The results of the experiments reported show that in the dog ligation of the parathyroid artery gives rise to neither morphological nor functional changes of any importance in the glandule supplied by that vessel, and suggest the fact that if the parathyroid vessels are injured in the course of operation, it is better to leave the glandule supplied by the injured artery where it is than to attempt to transplant it.

11. The authors report their work in transplanting parathyroids in dogs. They used different positions in which to transplant the glands; among others, the bone transplantation recommended by Kocher. They emphasize the difficulty of the operation, even in the most favorable circumstances, where there is parathyroid deficiency and autotransplantation is practised. They point out the apparent beneficial effect of an operation on the tibia, on tetany, where there has been no transplantation of parathyroid tissue. They do not attempt to explain this phenomenon. [W. B. R.]

THE LANCET.

July 31, 1909.

1. Whitla, W. *A Survey of the State of Medical Education: Necessary Reforms and the Queen's University of Belfast.*
2. *Philip, R. W. *Progressive Medicine and the Outlook on Tuberculosis.*
3. Barker, A. E. *Progress in Intestinal Surgery.*
4. *Yawger, N. S. *Chronic "Rheumatic" Myositis (Muskelschwielen) with Cases Showing Some Common Errors in Diagnosis.*
5. Purslow, C. E. *Case of Missed Labor Treated by Abdominal Section.*
6. Kellock, T. H. *A Case of Incarceration of the Vermiform Appendix Containing a Foreign Body (Pin) in the Sac of an Inguinal Hernia in a Child.*
7. Corner, S. G. *A Case of Angio-Neurotic Edema Associated with Cirrhosis of the Liver.*
8. Webb, S. *The Place of the Poor Law Medical Officer in a Unified County Medical Service.*

2. Philip, in an address in medicine at the annual meeting of the British Medical Society, reviews the present status of tuberculosis. In particular he discusses diagnosis and prognosis, the value of tuberculin, the etiological relationship of childhood and tuberculin and vaccine therapy in the treatment of tuberculosis.

4. Yawger believes that "chonic rheumatic myositis" is a far more frequent condition than is generally supposed. This condition, in his opinion, accounts for many of the vague aches and pains in muscles which come on suddenly and which go under the name of lumbago and pleurodynia. [J. B. H.]

Aug. 7, 1909.

1. Byers, J. W. *The Present Position and the Future Developments of Obstetric Medicine.*
2. Keith, A. *Hunterian Lectures on Malformations of the Heart.*
3. Page, H. M. *A Method of Giving Ether by Means of Nasal Tubes.*
4. Bain, W. (1) *Pressor Bases in Normal Urine and their Diminished Excretion in Gouty Urine.* (2) *The Excretion of Chlorides in Gout.*
5. Waller, A. D. *The Relative Toxicity of Chloroform ($CHCl^3$) and of Carbon Tetrachloride (CCl^4).*
6. Loch, C. S. *Medical Relief and Public Assistance.*
7. Kaye, J. R. *Ameliorative Measures Indicated by School Medical Inspection.*

BRITISH MEDICAL JOURNAL.

July 31, 1909.

1. Whitla, W. *A Survey of the State of Medical Education: Necessary Reforms and the Queen's University of Belfast.*
2. Philip, R. W. *Progressive Medicine and the Outlook on Tuberculosis.*
3. Barker, A. E. *Progress in Intestinal Surgery.*

Aug. 7, 1909.

1. Byers, J. W. *The Present Position and the Future Developments of Obstetric Medicine.*
2. Haultain, F. W. N. *A Plea for a Rational Puerperium, with a Record of 100 Cases.*
3. Keith, A. *Three Demonstrations on Congenital Malformations of the Palate, Face and Neck.*
4. Gibson, C. *Two Cases of Head-Nodding in Infants.*
5. Hunt, G. B. *Clonic Spasm of the Diaphragm Associated with a Cervical Rib.*

DEUTSCHE MEDIZINISCHE WOCHENSCHRIFT. No. 29.

July 22, 1909.

1. *Kleine. *Further Investigations on the Etiology of Sleeping Sickness.*
2. Schereschewsky, J. *Further Communication on the Cultivation of the Spirochete Pallida.*
3. Mühlens. *Pure Culture of a Spirochete (Spirochete Pallida?) from a Syphilitic Gland.* (Preliminary communication.)
4. Meyer, W. *Complete Sensory Aphasia with a Lesion of the First Right Temporal Convolution.*
5. Frotscher, R. *The Occurrence of Myoma of the Intestine.*
6. Busch, M. *Sudden Cases of Death, with Especial Regard to the Indication for the Trendelenburg Operation in Pulmonary Embolism.*
7. Dege. *Contribution to the Knowledge of Subcutaneous Perforations of the Gastro-Intestinal Tract.*
8. Selberg, F. *Plastic of the Quadriceps Extensor*
9. Samuel, M. *Mastodynia.*
10. *Engel. *The Gastric Juice in the Pathogenesis and Course of Pyloric Stenosis in Sucklings.*
11. Homuth, O. *A Case of Noma of the Ear which Resulted in Recovery.*
12. Littaur, E. *Experiences with Ensemin.*

1. Kleine's article consists in the records of some experimental work in regard to the etiology of sleeping sickness which confirms the view that this disease is transmitted by means of infected flies. The article is especially interesting on account of the large number of illustrations of different forms of the trypanosomes. There are some 42 different types represented.

10. Engel concludes from his observations on sucking infants that for a few weeks before the appearance of the pyloric stenosis there is a marked increase in the gastric secretion. At the same time with this excess of secretion a spastic closure of the pylorus occurs. Whether the spasm of the pylorus is part of the same process or the result of the excess of gastric juice is not definitely proven. After the acute stage of excessive secretion, there remains a chronic non-spastic narrowing of the pylorus and in this stage the signs of gastric stasis occur. The stasis of fat established by Tobler is an especially characteristic sign of retention. This author thinks the anomaly of secretion is the root of the trouble. [C. F., Jr.]

MÜNCHENER MEDIZINISCHE WOCHENSCHRIFT. No. 31.

Aug. 3, 1909.

1. Meyer, H. H. *The Relation between the Lipoids and Pharmacologic Action.*
2. Schmidt-Rimpler, H. *Has the Cause of Trachoma been Discovered?*
3. Coenen, H. *Cholesteatoma of the Navel.*
4. Thiemann, H. *V-Shaped Coils of the Flexure of the Colon.*
5. *Heckmann, J. *The Etiology of Arthritis Deformans.* (Preliminary communication.)
6. Geissler, W. *The Cobra-Reaction.*
7. Treupel, G. *Is the "Phrenocardia" Described by Max Herz a Sharply Differentiated Form of "Cardiac Neurosis?"*
8. *Eckert. *The Treatment of Convulsions in Whooping Cough by Lumbar Puncture and Douche Baths.*
9. Ramsauer, C. *A Kreuznach Drinking Water Activator.*
10. Schreiber, E. *Intravenous Injection of Diphtheria Antitoxin.*
11. Kielleuthner. *Rare Foreign Bodies of the Bladder.*
12. Althoff, H. *Rectal and Vaginal Use of Fibrolysin.*
13. Strauss, A. *Observations on my Dosimeter.*

5. Heckmann reports a series of cases of arthritis deformans in which he investigated the etiology with care. The monarticular cases were traceable to trauma and the polyarticular cases to rheumatism. In many of both groups there was proof of syphilis; in others there was reason to suspect it. That the traumatic synovitis and that the rheumatism did not heal in the usual way may be explained by attributing the chronic deforming processes to syphilis.

8. Good results are reported by Eckert in the treatment of convulsions in whooping cough by lumbar pucture and douching. He explains the improvement following puncture by supposing that it has relieved a congested edematous brain. [G. C. S.]

Berliner Klinische Wochenschrift. No. 32.

Aug. 9, 1909.

1. Mitulescu, J. *Specific Substances in the Diagnosis and Treatment of Tuberculosis.* (To be concluded.)
2. Falkenstein. *The Solution of the Question of Gout.*
3. v. Marenholtz. *Polyserositis.*
4. *Böhm, M. *Contribution to the Etiology of Congenital Wry-Neck.*
5. *Strubell, A., and Felber, W. *The Sources of Error in the Determination of the Opsonic Index.*
6. Eckstein, H. *With the German Relief Expedition in the South Italian Earthquake Region.*
7. Körbitz, A. *New Methods for Orthopedic Treatment of the Jaw.*
8. Küttner, H. *Johannes v. Mikulicz.*

4. Böhm suggests, as an occasional cause of congenital wry-neck, assimilation, more or less complete, of the atlas with the occiput or fusion of atlas and axis, conditions which he illustrates by anatomic specimens from the Berlin Pathologic Museum.

5. From a careful investigation of the possible sources of error in determining the opsonic index, the authors conclude that they are to a great extent unavoidable, but believe that in 94% of cases the limit of error can be reduced within 10%. They find that the limits within which the tuberculo-opsonic index of normal individuals varies are in 75% of cases 0.95 to 1.5, and in almost 95% of cases 0.90 to 1.10. One of the most important sources of error is the appearance of iso-agglutination of the washed blood corpuscles, which occasionally occurs in certain individuals. [R. M. G.]

Revue de Chirurgie.

July, 1909.

1. Judet, K. *The Grafting of Joints.*
2. Guisez and Abrand. *Esophagoscopic and Clinical Study of Tuberculosis of the Esophagus.*
3. *Guillain, G., and Houzel, G. *Clinical and Experimental Study of a Peduncular Lesion from a Revolver Bullet.*
4. *Solieri, S. *Omental Enterocleisis in Acute Ulcerative Processes of the Last Loop of the Ileum.*
5. *Gangolphe, M., and Thévenet, C. *Sprain of the Knee by Abduction and External Rotation.*
6. Quénu, E., and Küss, G. *Study of Dislocations of the Metatarsus.* (Conclusion.)
7. Valence, A. *Abscess of the Liver and Biliary Expectoration.* (Conclusion.)
8. Patel, M., and Chalier, A. *The Tumors of the Spermatic Cord.* (Continuation.)

3. The authors discuss the clinical and diagnostic aspects of an apparently unique case of a suicide in whom a revolver shot in the right carotid region at the level of the great horn of the hyoid missed the great vessels and penetrated the base of the skull, causing left spasmodic hemiplegia, tactile hypo-esthesia and thermo-anesthesia with right trigeminal anesthesia, Argyll-Robertson pupil and left hemianopsia. The bullet was shown by x-ray to have lodged in the region of the cerebral peduncles, whence it was successfully removed five months later through a temporo-parietal incision, with considerable relief of symptoms. Penetrating gunshot wounds in this region as a rule are rapidly fatal.

4. Under the name of omental enterocleisis, Solieri describes a new operation, whose performance he recommends, as a prophylactic against perforative peritonitis, in all cases of ulcerative disease of the lower portion of the ileum, whether typhoidal, paratyphoidal or due to the colon bacillus, in which the general clinical picture suggests that perforation is imminent. Through a right lower rectus incision, the last loop of the ileum is identified, the omentum drawn down and wrapped around it as a sleeve and secured in place by sutures to the intestine and to both aspects of the mesentery. In this way the protective power of the omentum is used to insure walling off and localization of the peritonitis from a subsequent perforation, should such occur. The difficulty of determining the indications for such procedure is obvious and the wisdom of its routine employment can be established only by experience. Solieri reports a case of "impending paratyphoid perforation" in which omental enterocleisis was done, with immediate and ultimate recovery of the patient.

5. The authors present an anatomic, experimental and clinical study of that form of sprain of the knee resulting from simultaneous abduction and external rotation, with avulsion, partial or complete, of the superior insertion of the internal lateral ligament, and report 11 cases. The principal diagnostic signs are lateral mobility of the leg, crepitus of the articular surface of the tibia against the internal femoral condyle, articular diastasis, relaxation of the internal lateral ligament, local ecchymosis and pain on contraction of the adductors. The prognosis is good; the treatment, by immobilization and massage. [R. M. G.]

Correspondence.

GIACOMO DA CARPI.

Boston, Aug. 18, 1909.

Mr. Editor: Gossip about medical men, when authentic, is always amusing to me, and while reading the memoirs of Benvenuto Cellini not long since, I came upon the following bit relative to the famous surgeon and anatomist, Giacomo Berengario da Carpi, who was professor at Bologna and died at Ferrara in 1530. I will quote the Florentine goldsmith in full.

"As I before said, the plague had prevailed for some time in Rome (for though I must go back a little way, I shall still pursue my subject), when there arrived in that city an eminent surgeon named Signor Giacomo da Carpi. This extraordinary man, among other cures for which he was famous, undertook the most desperate cures in a certain disease, and as this was extremely prevalent at Rome among the priests, especially ecclesiastics, on being informed of the fact he maintained that by means of certain perfumes he could effectually eradicate this pest. But he wished to bargain for his fees before he made his cures, and that not by tens, but by hundreds. He also understood the art of design extremely well. Happening one day to pass by my shop, he cast his eye upon some drawings, amongst which were several sketches of little fanciful vases which I had drawn by way of amusement. These vases being in form very different from any that had ever been seen before, Signor Giacomo desired me to make him some of silver according to the same model; this I readily agreed to do, because they were of my own invention. Though he paid me generously for my trouble, the reputation which I acquired by them was of a hundred times more value to me than the profit, for all the goldsmiths declared they had never seen anything more complete or better executed.

"I had no sooner finished these pieces than my new employer showed them to the pope, and the day following quitted Rome. He was a man of great learning, and talked admirably upon medical subjects. The pope was desirous of having him in his service, but he declared he did not care to confine himself to any service whatever, and that whoever had occasion for his assistance should send for him. He was a person of great sagacity, and did very wisely to leave Rome; for, not many months after, all his patients relapsed, so that he would have been murdered if he had stayed. He showed my little vases to the Duke of Ferrara, and to several other princes; and told them that they were presents from a great nobleman at Rome, of whom he had demanded them, upon undertaking to cure him of a disorder; that the nobleman had told him they were antiques, and begged he would rather ask anything else, which he would freely part with, and leave him those; but he refused to cure him on any other terms, and thus got them into his possession."

Very truly yours,
Charles G. Cumston.

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PLACENTA PREVIA AND CESAREAN SECTION.

Boston, Aug. 20, 1909.

Mr. Editor: In the report on "Progress in Obstetrics," published in the Journal of Aug. 19, the reviewer makes the following statement in reference to an article written by us on "Placenta Previa" which appeared in the issue of June 3: "Mason and Williams . . . say that, in primiparæ, Cesarean section should be the operation of choice. It is rather hard to see why they should take that radical stand because in their analysis there are no cases where a Cesarean section has been done for this condition." The reviewer then goes on to discuss Cesarean section in the treatment of placenta previa in general.

As he has evidently misunderstood our attitude toward this problem, we trust that you will allow us space in order that we may make ourselves clear both to the reviewer and others who may also have received a false impression. In the first place, we wish to repeat our conclusion as it appeared, "In primiparæ, at the beginning of hemorrhage, while still in good condition, Cesarean section should be the operation of choice." This is not to be construed as an advocation for Cesarean section on an exsanguinated patient. This conclusion was based on three facts.

First: The high mortality among primiparæ from placenta previa in our series.

Second: Upon the well-known difficulty of dilating a primiparous cervix before the onset of labor and upon the rigidity of primiparous soft parts before the softening which takes place during labor. The former factor means that a long time must be consumed in dilatation, and the loss of blood will be directly proportionate to this time. The latter means marked resistance to the delivery of the child and decreases the chances for its life.

Third: Upon the low mortality of the primary Cesarean section for any indication.

In other words, the problem is not that of Cesarean section versus *accouchement forcé* for *placenta previa*, but it is that of a primary Cesarean section, with a mortality practically *nil*, versus a long, hard, operative delivery, with the loss of a large quantity of blood, plus the great amount of shock which accompanies such an operation, plus the increased danger to the child. We do not advocate Cesarean section except in primiparæ, and unless the patient is in good condition. Under such circumstances the prognosis of Cesarean section in placenta previa must be the same as that of primary section for any other indication, and of the two methods of procedure under discussion any one who has had much obstetrical experience can readily decide which is the easier and which should give the better result for both mother and child.

Yours truly,
Nathaniel R. Mason, M.D
John T. Williams, M.D.

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POLIOMYELITIS AND THE TONSILS.

Boston, Aug. 30, 1909.

Mr. Editor: When the lay press, as in a recent instance, becomes solicitous of medical welfare and tries, as in these words, to make it appear that "ignorance is the handmaiden of vice," it becomes the duty of the medical press to reassure its brother lest he become blind, a leader of the blind. A prominent daily in a leading article asserts, regarding "anterior poliomyelitis," as follows: "No one knows anything about it; the micro-organism that is probably its cause has not been isolated. No one has indicated its method of entry into the system, nor has any prophylactic or any remedy been discovered."

It is now six years since I discovered the site of infection in rheumatism. I now have "many infallible proofs" that I was correct. In 1908 Dr. William S. Bryant confirmed my observations and recently asserted that *this ordinary site of infection for all air-borne diseases* is probably also the "nidus" for those organisms which produce senility rather than the large intestine!

It is evident that the lay writer has neglected to read the proper kind of literature and that he lacks the intuitive faculty which might enable one to infer that if "infantile paralysis" is infectious, that it becomes epidemic, that it attacks young children and that it is an air-borne infection, it must be a disease which is breathed into the economy and must have its *nidus* in Luschka's tonsil. The reason why this first tonsil is "selected" by organisms is because it lies directly in the path of the inspired air and dust particles and germs rest upon it because it is unprovided with cilia, with which the nasal mucous membranes are completely covered.

The real proof of these facts is made convincing by observing the results obtained by direct treatment, locally, of the naso-pharynx and especially of the first tonsil. Note this order in naming the tonsils, for the faucial tonsils are secondary organs and are never infected primarily! (Wright shows how dust sinks into the substance of faucial tonsils, entering their crypts, while bacteria remain upon their surfaces.) Sterilization of the naso-pharynx, as practiced by Seibert, with silver nitrate solution in alcohol, for cerebrospinal meningitis, is a proper, though harsh, method, which shows no advance beyond the use of the sponge probang of our forefathers. Like many of their methods it is, however, very effective. Hydrogen peroxide in ten-volume solution is preferable and may be used frequently if close attention is paid to the condition of the kidneys, for even this apparently simple treatment may be attended with an eliminative nephritis which should not be increased. In such serious affections as anterior poliomyelitis and cerebrospinal meningitis one should not be too conservative.

Edmund D. Spear, M.D.

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THE IDEAL PHYSICIAN.

Westport, N. Y., Aug. 29, 1909.

Mr. Editor: In your editorial [1] on this subject you give food for thought. To my mind, the ideal physician of the future must of necessity be a return, somewhat modified in non-essentials, to the ideal physician of the past. Times change, and with them men change also. At the same time fundamentals *do not*, and especially are we thankful when we consider kindly, disinterested thought and action — self-effacement for a high purpose. All this is developed in highest degree neither in laboratory, hospital work nor any specialty. To learn and follow it at best is done mainly by the all-around practitioner with the knowledge that work, training, experience can give him when he attains success..

Such a man will know enough, indeed as much as may be, of hospital and laboratory doing to avail himself in every way possible of this knowledge, but in addition he will have that keen appreciation of the personal equation and the wise empirical knowledge of disease and its management which are of primary importance. In many particulars, and these usually the most essential, really valuable guidance proceeds solely, or in large amount, from the man who has the daily care of patients, outside hospital wards, who are frequently also dear, cherished friends, and genuine love and sympathy are wonderful aids to clearness of mental vision.

Many a good physician of the past and present has watched through day and night the ebb and flow of disease and its symptoms in its protean shapes, and thus has come to him, and only in that way possible, the conception of how best to do, how most wisely combat, the various indications as they arise.

Such a man should be the consultant honored and followed above others in time of greatest need.

The sooner this view prevails generally, the better it will be for the right appreciation once again of the family physician of the best type, and as a direct result for suffering humanity everywhere it calls for help or solace.

Beverley Robinson, M. D.

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[1] Aug. 26, 1909, p. 299.

RECORD OF MORTALITY

For the Week ending Saturday, Aug. 21, 1909.

Cities.	Reported deaths in each.	Deaths under five years.	Cities.	Reported deaths in each.	Deaths under five years.
New York	—	—	Waltham	9	2
Chicago	649	298	Pittsfield	6	2
Philadelphia	401	134	Brookline	6	0
St. Louis	—	—	Gloucester	4	1
Baltimore	183	71	North Adams	13	5
Cleveland	—	—	Northampton	7	2
Buffalo	—	—	Chicopee	15	5
Pittsburg	—	—	Medford	5	—
Cincinnati	—	—	Beverly	11	8
Milwaukee	—	—	Leominster	7	2
Washington	—	—	Hyde Park	4	2
Providence	—	—	Melrose	3	1
Boston	223	102	Newburyport	4	2
Worcester	34	18	Revere	1	1
Fall River	44	2	Westfield	5	4
Cambridge	28	15	Woburn	4	0
Lowell	44	17	Peabody	—	—
New Bedford	34	1	Marlboro	—	—
Lynn	26	13	Attleboro	2	—
Springfield	17	10	Adams	8	8
Lawrence	31	13	Clinton	5	1
Somerville	22	9	Gardner	2	1
Brockton	13	7	Milford	1	0
Holyoke	—	—	Watertown	4	0
Malden	11	4	Plymouth	—	—
Chelsea	15	2	Southbridge	4	1
Newton	9	3	Weymouth	2	0
Salem	15	10	Framingham	—	—
Haverhill	15	4	Wakefield	—	—
Fitchburg	8	4	Webster	—	—
Everett	10	2	Arlington	—	—
Quincy	—	—	Greenfield	3	—
Taunton	12	4			

CHANGES IN THE MEDICAL CORPS U. S. NAVY FOR THE WEEK ENDING AUG. 28, 1909.

Peck, A. E., surgeon. Detached from the Marine Recruiting Station, New York, N. Y., and ordered to the Marine Recruiting Station, San Francisco, Cal. Aug. 20.

Murphy, J. A., surgeon. Detached from the "Olympia," Aug. 27, and ordered to the Marine Recruiting Station, New York, N. Y. Aug. 20.

Rennie, W. H., passed assistant surgeon. Detached from the "Rhode Island" and ordered to the Naval Recruiting Station, St. Louis, Mo. Aug. 20.

Grieve, C. C., passed assistant surgeon. Detached from duty at the Naval Hospital, Sitka, Alaska, and ordered to the "Independence." Aug. 20.

Brister, J. M., passed assistant surgeon. Detached from the "Independence" and ordered home to wait orders. Aug. 20.

Sinclair, J. A. B., assistant surgeon. Ordered to command the Naval Hospital, Sitka, Alaska. Aug. 20.

Brooks, F. H., assistant surgeon. Ordered to the Naval Recruiting Station, Omaha, Neb. Aug. 20.

Sterne, C. F., assistant surgeon. Detached from the Naval Recruiting Station, St. Louis, Mo., and ordered to duty at the Naval Hospital, Puget Sound, Wash. Aug. 20.

Thomas, G. C., assistant surgeon. Detached from the Naval Recruiting Station, Omaha, Neb., and ordered to the "Rhode Island." Aug. 20.

Steadman, W. C., assistant surgeon. Discharged from treatment from the Naval Hospital, Norfolk, Va., and granted sick leave for six weeks. Aug. 20.

Reed, T. W., assistant surgeon. Detached from the Marine Recruiting Station, San Francisco, Cal., and ordered to examination for promotion and then to wait orders. Aug. 20.

Bloedom, W. A., acting assistant surgeon. Ordered to duty at the Naval Medical School Hospital, Washington, D. C. Aug. 20.

Ousler, J. T., pharmacist. Detached from the Naval Academy and ordered to the Army and Navy General Hospital, Hot Springs, Ark., for treatment. Aug. 20.

Fauntleroy, A. N., passed assistant surgeon. Detached from the "Hartford," Aug. 29, and granted leave for one month. Aug. 23.

Johnson, J. T., acting assistant surgeon. Ordered to duty at the Naval Hospital, Naval Home, Philadelphia, Pa. Aug. 24.

Reeves, I. S. K., passed assistant surgeon. Discharged from treatment at the Naval Medical School Hospital, Washington, D. C., and granted sick leave for one month. Aug. 25.

Reeves, I. S. K., passed assistant surgeon. Unexpired sick leave revoked; ordered to the Navy Yard, Philadelphia, Pa., Sept. 3. Aug. 25.

Kuder, W. S., assistant surgeon. Detached from the Navy Yard, Philadelphia, Pa., Sept. 3, and ordered to Washington, D. C., for examination for promotion and then to wait orders. Aug. 25.

Sutton, D. G., assistant surgeon. Detached from the Naval Academy and from the "Tonopah" and ordered to duty in connection with the "Vestal" and to duty on board that vessel when commissioned. Aug. 25.

RECENT DEATHS.

Bushnell, Homer, M.D., M.M.S.S., died in North Adams, Aug. 23, 1909, aged sixty-six years.

Clement, George Colburn, M.D., M.M.S.S., died in Haverhill, Aug. 27, 1909, aged fifty-four years.

Knight, Henry Sargent, M.D., M.M.S.S., died in Worcester, Aug. 22, 1909, aged fifty-five years.

Gross, Herman Williams, M.D., M.M.S.S., died in Quincy, Aug. 24, 1909, aged fifty-five years.

BOOKS AND PAMPHLETS RECEIVED.

A Text-Book of the Diseases of the Ear. By Prof. Dr. Adam Politzer. Translated at the personal request of the author, and edited by Milton J. Ballin, Ph.B., M.D., and Clarence L. Heller, M.D. Fifth edition, revised and enlarged. Illustrated. Philadelphia and New York: Lea & Febiger. 1909.

Manual of Chemistry. By W. Simon, Ph.D., M.D., and Daniel Base, Ph.D. Ninth edition, thoroughly revised. Illustrated. Philadelphia and New York: Lea & Febiger. 1909.

Protozoölogy. By Gary N. Calkins, Ph.D. Illustrated. New York and Philadelphia: Lea & Febiger. 1909.

Immunity and Specific Therapy. By W. D'Este Emery, M.D., B. Sc. Lond. Illustrated. New York: Paul B. Hoeber. 1909.

Modern Problems in Psychiatry. By Ernesto Lugaro. Translated by David Orr, M.D., and R. G. Rows, M.D. With a foreword by T. S. Clouston, M.D., LL.D. Manchester: University Press. 1909.

A Manual of Operative Surgery. By Sir Frederick Treves, Bart., G.C.V.O., C.B., LL.D., F.R.C.S., and Jonathan Hutchinson, F.R.C.S. Third edition. Illustrated. Vol. I. Philadelphia and New York: Lea & Febiger. 1909.

Obstetrics. By David James Evans, M.D. Second edition, revised and enlarged. Illustrated. Philadelphia and New York: Lea & Febiger. 1909.

Original Articles.

SIMPLE INSPECTION OF THE EYES AS AN AID IN GENERAL DIAGNOSIS.*

BY HENRY B. STEVENS, M.D., BOSTON.

WITH the advent and growth of the laboratory as an adjunct to the practicing physician, there has sprung up a refinement of diagnosis which was beyond the imagination of our fathers. The trained man of science, from a morsel of tissue, from an invisible film of secretion, from a single drop of blood, is able to give positive and valuable information concerning the malady of a patient whose history he does not know and whose face he has never seen. This knowledge comes as an infinite boon to the overworked and anxious practitioner. To neglect such aid is to throw aside a measure which not only benefits his patients, but also tends greatly to his own peace of mind.

The opportunities for diagnosis afforded by the laboratory can hardly be overestimated and present a great contrast to the methods and possibilities of the physician of a generation or two ago, who, having no outside help, was forced to use to the fullest extent those means and faculties which he could command. This necessitated a most careful scrutiny of his patient, the sick man before him. The odor, the tongue, the pulse, the skin, the eyes, the excreta, the manner, must all be closely observed. This careful personal inspection was the nearest approach possible to our laboratory tests; then, adding to the knowledge he had the wisdom of his experience, the diagnosis was made, the treatment was instituted, the scrutiny was continued and the patients sometimes recovered, — just as they do now.

In the scientific triumph of our laboratory diagnoses, have we forgotten, in any measure, to apply the simple principles which did such valuable service for our fathers? Do the ease and accuracy of our extra-clinical methods tend to a withdrawal of a little of our sense of personal responsibility, insensibly allowing to lapse that man-to-man and mind-to-mind intimacy which was a chief asset of the old family doctor?

Without relinquishing for a moment any of our modern aids, may we not with benefit emulate the old-time practitioner and make a better use of the simple bedside methods of diagnosis?

Supplementing the old family physician's careful observation by the application of the knowledge of physiology and pathology which he lacked and time has given us, let us this evening scrutinize the eyes for those objective signs of extra-ocular diseases which may be revealed by simple inspection without special illumination or apparatus. At first glance the list of signs which may be observed seems so long that a recital of them bids fair to resemble the cast-off skin which the snake is glad to leave behind him, long, dry and empty.

We will, therefore, omit much, touch other points but lightly, and, disclaiming any idea of originality, consider some of the chief signs, with the hope of arousing interest rather than of treating the subject exhaustively.

SECTION I.

Anatomy and physiology. — A glance at the anatomy and physiology of the parts to be considered will not be amiss. With the eyes proper will be included the surrounding structures.

The skin in the region of the eyes is, for the most part, very thin and but lightly attached to the underlying structures, from which it is separated by loose areolar tissue. This construction gives great mobility to the skin and lends itself readily to the expression of the individual's mental emotions. For the same reason palsy or spasm of the muscles may be easily detected. Again, the conditions are favorable for the production of edema and ecchymosis.

The eyebrows, also entering largely into the facial expression, are raised by the frontalis and depressed by the orbicularis, both muscles being supplied by the facial nerve.

The eye is opened by the levator palpebrarum superioris (third nerve) and closed by the orbicularis. These motions are generally involuntary, but may be voluntary.

The lachrymal secretion flows across the eye from ducts which empty under the temporal end of the upper lid and is taken up by the punctata at the inner angle, carried through the lachrymal sac and canal, and emptied into the inferior meatus.

The conjunctiva of the lids is firmly adherent, while that of the globe is loosely attached, up to very near the corneal border. Under the loose conjunctiva, especially in the fornices, is areolar tissue. When congested, many otherwise invisible vessels spring into prominence. Like the loose skin about the eye, the conjunctiva is especially prone to edema and ecchymosis.

The cornea is very firm and perfectly transparent in health. Not having any blood vessels, it is nourished by lymph, which flows in a network of channels woven through its substance. This bloodless, sensitive, exposed tissue is quick to show morbid nutritional or diseased states of the system.

The sclera, shining through the transparent conjunctiva, is conspicuous because of its normal whiteness, and general pigment changes may be seen here before being noticeable elsewhere.

The iris is a delicate, sensitive, vascular curtain suspended in the aqueous humor, perforated by a circular central opening, the pupil. Two opposing sets of muscles, circular fibers, controlled by the third nerve and acting as a sphincter, and radial or dilating fibers supplied by the sympathetic, hold the iris in a state of poise or balance which in the normal waking state is never complete, one nerve being always stimulated in excess of the other, with alternating contractions and dilatations of the pupil following each other in quick succession. Contraction of the pupil or myosis is normally brought about by light falling on the retina. The path of the afferent impulse is: retina, optic nerve, chiasm (where decussation takes place), optic tract, basal ganglia, sphincter nucleus (anterior portion of the floor of aqueduct of Sylvius).

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*Read before the Norfolk District Medical Society, March 30, 1909.

The impulse now follows the efferent path from the sphincter nucleus through the third nerve to the ciliary ganglion, thence to the iris, with contraction as a result.

Mydriasis or dilatation is brought about by stimulation of the retina, the trifacial or sympathetic nerves throughout the body. These afferent impulses are conducted to the center for dilatation; from thence as efferent impulses the path is medulla, inferior cilio-spinal center in cord, inferior middle and superior sympathetic ganglia, thence by way of sympathetic nerve to ciliary ganglion, thence to iris, with dilatation as a result.

Interference by disease or traumatism with these widely extending fibers will produce myosis by irritation of contraction fibers, or paralysis of dilatation fibers; while mydriasis will result from irritation of dilatation fibers or paralysis of contraction fibers.

Communicating fibers cause all normal stimuli to provoke equal action of the two pupils.

The physiological reactions are myosis — from light, accommodation and convergence — and mydriasis, resulting from the opposite conditions as well as sensory stimuli, like pain, and mental emotion, as fear. Sensitive as is the iris to external stimuli, it is perhaps equally so to internal stimuli, so that in the behavior of the pupils we have a most sensitive, accurate and, withal, easily observed index of many general conditions.

The lens, against which the free border of the iris rests, is not generally visible to the unaided eye, though occasionally cataracts may be seen, as well as the small patches left by former adhesions of the iris.

Out of sight, but important in order to understand the visible motions of the eyes, are the six muscles which act upon the globe. The third nerve supplies all these muscles except the external rectus, supplied by the sixth, and the superior oblique, supplied by the fourth.

The blood supply of this whole region is rich; anastomoses are frequent.

With the exception of the surface structures, most of the parts we have considered lie grouped about the eyeball in that little bony cavern, the orbit. Here is the eye itself; really an extracranial extension of the brain, an organ of special sense perhaps more highly developed than any other in the body, surrounded by muscles which give it free motion in all directions; here in close proximity to the eyeball and the optic nerve are found the third, the fourth, the sixth cranial nerves, supplying action, as well as the first division of the fifth, distributing sensation; here again is the little ciliary or lenticular ganglion, the switchboard which puts this area into connection with the cervical sympathetic. Through the orbit also runs the ophthalmic artery, connecting the internal carotid with the facial and temporal arteries, while the ophthalmic vein affords free anastomoses between the cavernous sinus and the veins of the face.

Where, indeed, in the body, may we find another group of such highly specialized organs, so easy of observation and so intimately connected with the rest of the body? The orbit, too, is surrounded by important structures, and, separated in great part by bone of almost paper thinness, it is in relation posteriorly, through its foramina, with the brain, externally with the temporal fossa, superiorly with the frontal lobe of the brain and the frontal sinus, internally with the nasal cavity, the ethmoid and sphenoid sinuses, inferiorly with the antrum of Highmore, and anteriorly with the whole world in general, and mankind in particular.

SECTION II.

Signs which may be observed. — Let us consider some of the signs which may be observed, remembering always that few signs are of value except when viewed in connection with other signs or symptoms.

Asymmetry of the bony framework should be noted, being often compensatory to structural defects elsewhere, as scoliosis, paralysis, etc. Some idea of the age of the individual may be gained. Prominent overhanging brows, with long and coarse hairs, suggest maturity or later life, while in youth the reverse is found. Very scanty or absent hairs are sometimes seen in the second stage of syphilis. Coarse dry and scanty hair growth occurs in myxedema.

Edema of the skin in this region is suggestive of renal or cardiac disease. Puffiness of the lower lid may be the only signs of Bright's. In elderly persons, a marked bagging of the lower lid may be a constant feature without kidney trouble, being due rather to lax and heavy tissues.

Adjacent sinus disease is apt to produce edema.

The puffy, solid, non-pitting swelling of myxedema shows early about the eyes.

Ecchymosis, when not due to direct traumatism, may follow fracture of the base or may be evidence of a systemic disturbance, as scurvy, purpura, etc.

Emphysema following fracture into the nose produces a pseudo-edema.

Zanthoma: Raised, velvety, yellow patches on the lids resembling chamois leather have been noted in diabetes.

Pigmentation about the eyes is not uncommon in Addison's disease and pregnancy.

Blepharospasm is sometimes an hysterical manifestation, but if persistent is more frequently due to irritation of the seventh nerve within the cranium. Carious teeth should be looked for.

Lagophthalmos, a condition in which the eyeball is never completely covered by the lids, is commonly due to Bell's palsy, but is also caused by anesthetic cornea or protrusion of the eyeball.

Paralysis of the orbicularis is generally accompanied by paralysis of other muscles supplied by the seventh nerve. If the cause of a facial palsy be cerebral, however, the orbicularis may escape, whereas, if nuclear, basilar or peripheral, this muscle shares the fate of the others. Strong efforts to contract a paralyzed orbicularis cause the cornea to turn upward.

Ptosis denotes disease or injury of the third nerve, but may be due to local inflammation or senile atrophy of the levator palpebrarum. Ptosis is of no value in locating cortical lesions but may distinguish between cortical and other brain lesions; e. g., if monolateral and without other focal symptoms, it denotes injury or disease of cortex alone. In diseases of the pons, ptosis may occur on the same side independent of the involvement of other points of distribution of the third nerve. In crossed paralysis, ptosis is important, as the localization of a brain lesion may be aided by its presence and character. In diseases of the crus the entire third nerve may be paralyzed, but if the levator alone is paralyzed, lesion of the cerebral peduncle is indicated.

Ptosis of central origin suggests syphilis, tumor or hemorrhage; if peripheral, exposure, rheumatism or syphilis of the third nerve.

Pseudoptosis is rare and not due to paralysis of the third nerve, but to vasomotor paresis from disease of corpus striatum.

Epiphora, when not due to emotional disturbances, will suggest inflammatory or other obstruction in the nose. It is often the only prominent symptom of orbicularis paralysis.

The occurrence of successive crops of sties suggests a poor general condition.

An ancient monarch, renowned for his wisdom, whose opportunities for observing men (and women) were exceptional, is credited with the following observation: " Who hath woe? . . . Who hath redness of eyes? They that tarry long at wine; they that go to seek mixed wine." That this opinion of three or four thousand years ago is true to-day is attested by the fact that alcohol is still given a prominent place in the causation of congestion of the conjunctiva. The sodden, bleary eyes of the steady tippler are too well known to need description. Gouty conditions and faults of chronic indigestion play a part in the production of red eyes also. Intracranial pressure tends to congestion.

Conjunctival or subconjunctival edema, when not due to local causes, may be the result of rheumatism and is not infrequently an early and important sign of chronic nephritis. As in congestion, so in edema of the conjunctiva, intracranial pressure plays a part.

Free blood under the conjunctiva retains its bright red color, gathering its oxygen from the air. Its appearance is more startling than serious in the young, being a not uncommon accompaniment of whooping cough and other strains, but in persons of middle life De Schweinitz states that it may be the first sign of serious disturbance of the vascular system or of kidney disease. Following probable fracture of the base often many hours, subconjunctival hemorrhage is an important confirmatory sign.

Arcus senilis (rarely appearing before fifty) is a sign of fatty infiltration and is associated with a like condition of the heart and other muscles. It is, therefore, a fairly reliable guide as to the individual's age and general resistance. This is a debatable question, however.

Phlyctenular ulcer of conjunctiva or cornea suggests at once that familiar but vague, recognized but unknown, condition, " a strumous diathesis." Eczema is a common accompaniment. Ulcers of the cornea generally argue an impoverished or overburdened general system. In children, carious teeth and naso-pharyngeal disorders should be looked for. When herpes zoster follows the superior branch of the trigeminal look out for ulcers on the cornea, especially when the nasal branch is affected and the eruption appears on the ala of the nose. This form of ulcer is apt to be long and tedious.

Interstitial keratitis is almost a ready-made diagnosis of congenital syphilis (60%). Here again the ever-ready " strumous diathesis " meekly stands sponsor for the odd 40%.

The sclera is an early telltale in all forms of anemia. When we see a yellow color in the whites of the eyes we suspect that bile pigment is circulating outside of its usual channels. Jaundice shows here first, and if our patient is a negro, we may not see it elsewhere. Argyrosis, an indelible bluish discoloration of the sclera, results from long use of silver salts either internally or locally, while a distinct blue color has been noted from overindulgence in coal-tar headache remedies. The presence of scleritis or episcleritis presupposes a constitutional cause such as rheumatism or menstrual irregularities.

Iritis also denotes a pre-existing syphilis or rheumatism. The examination of the iris and pupil is most important. Present adhesions of the iris to the lens produce a small fixed pupil, or more commonly a multi-lobed or so-called " clover-leaf " pupil. Old adhesions which have broken away leave minute spots on the lens which under favorable circumstances may be seen without artificial aid. Adhesions, present or past, are evidences of iritis and, therefore, of the constitutional forerunners thereof.

The color of the irides is generally the same in both eyes. This is not always the case, but is without particular significance, especially if congenital.

Anisocoria, or inequality of the pupils, if not due to uncorrected refractive error, is almost invariably pathological and leads one to think of insanity, paresis, locomotor ataxia or some condition acting reflexly, like dental disease or aneurism.

As a consideration of all the causes of contraction and dilation of the pupils would consume the whole evening, these subjects will be viewed only in a general way.

Myosis is normal during sleep. If dilatation does not occur on awakening, some drug influence or intracranial mischief may be suspected.

Myosis from irritation is caused by (1) all inflammations of brain and meninges, whether simple, epidemic, tubercular, syphilitic or traumatic. When, in these conditions, myosis passes over to mydriasis, the case assumes a grave aspect (stage of depression with paralysis of the third nerve). (2) Apoplexy. (3) Early stage of tumors in course of third nerve or involving its nucleus. (4) Onset of hysteric or epileptic convulsions. (5) Tobacco toxemia (early). (6) Beginning hydrocephalus.

In irritation myosis the pupil is but little affected by reflex stimuli, but is susceptible to drugs, whereas the opposite is true in paralytic myosis.

Paralytic myosis is liable to occur in lesions of the spinal cord above the dorsal region, especially tabes (spinal myosis). It is also seen in hemorrhage into the upper part of the pons, in general paralysis, paralysis of cervical sympathetic from pressure, anterior poliomyelitis and some forms of multiple sclerosis.

Mydriasis from irritation is generally only moderate and the pupil still reacts sluggishly to light and convergence but not to sensory or psychic stimuli. If of cerebral origin, it indicates grave mischief in the central nervous system; if of spinal origin, congestion of the cervical cord is probably the cause. It is to be expected in spinal meningitis, tumors of cord, in ptomaine poisoning and possibly in acute mania and intestinal worms.

In paralytic mydriasis the pupil reacts to sensory stimuli. It is not uncommon in late tabes, and may follow myosis in general paresis. It is usual in focal or disseminate disease at the base; also in pressure on ciliary nerves. It is found with cerebral processes in which there is marked increase of pressure, as tumor, abscess, and in the advanced stage of thrombus of the cavernous sinus, the last stages of meningitis and encephalitis, and acute dementia.

Transient mydriasis occurring first in one eye then the other is a prodromal sign of insanity.

Hippus is a chronic spasm of the iris seen in neurasthenia, hysteria, epilepsy, meningitis, psychical disturbances and various spinal diseases.

The Argyll-Robertson pupil contracts to accommodation and convergence, but not to light. This is common in locomotor ataxia and paresis.

Exophthalmos is a cardinal symptom of Graves' disease, but may be also caused from inflammation of the neighboring sinuses or from thrombosis of the cavernous sinus.

Pulsating exophthalmos occurs in arterio-venous aneurism of the cavernous sinus. The pupil is dull and sluggish and compression of the common carotid stops the pulsation.

The occurrence of palsy of one or more of the orbital muscles during the course of disease or after traumatism may be a sign of no little diagnostic importance. That such paralyses are common is not to be wondered at when one considers the long course of the nerves and their varied relations.

The causes of paralysis of the orbital muscles (not considering causes which are primarily intra-orbital) are (1) traumatism, (2) disease (of the nerves themselves which is rare) or of parts affecting the nerves by (*a*) pressure, such as tumor, hemorrhage, exudation; (*b*) communication of inflammation from other structures, as in meningitis, thrombus of cavernous sinus, etc.

In respect to location the cause may be (1) intracerebral, (2) nuclear, or (3) along the course of the nerves.

Constitutional conditions bringing about local causes of paralysis are (1) syphilis, (2) tuberculosis, (3) rheumatism, (4) poisoning from the toxins of diphtheria, influenza, ptomaines, also tobacco and alcohol. (5) Ocular palsies are also often associated with general paralysis, tabes, brain tumor, blood clot, abscess, thrombosis of the cavernous sinus, degenerative processes, basilar meningitis, hysteria, nephritis, arteriosclerosis, diabetes, disseminated sclerosis and a variety of causes acting both centrally and peripherally.

The muscle most frequently affected is the external rectus; next the superior oblique; the remaining muscles are all supplied by one nerve and are, therefore, rarely affected singly. All the muscles may be paralyzed (ophthalmoplegia totalis), in which form the ciliary and iris muscles suffer also, or the latter may escape, or there may be conjugate paralyses, in which the individual muscles are free to act but associated movements are impossible.

The site of the lesion. (Fuchs.) (1) Intracerebral mischief never causes isolated paralysis (except rarely ptosis, in some cortical affections).

(2) Lesions of association centers cause conjugate paralysis and may be accompanied by conjugate deviation; i. e., the eyes will turn to the opposite side. These paralyses may occur in disease of the pons, crura, corpora quadrigemina and the great ganglia of the brain, particularly the optic thalamus.

(3) Lesions of the nuclei cause paralysis of several muscles, generally attacking one muscle first and extending to others. If the internal (ciliary and iris) muscles escape, we have a nuclear and not a nerve trunk lesion. Individual paralysis may be nuclear, as in beginning tabes.

(4) Fascicular paralysis, due to a lesion of the fibers between the nerve nuclei and point of emergence, may be presumed, if there is third nerve paralysis on one side and simultaneous paralysis of extremities on the other side. (Lesion of lowest part of peduncle.)

(5) Lesions of the base may affect one or more nerves and both sides at once (*a*) when a series of cerebral nerves are affected one after another. (*b*) Recurring oculomotor paralyses are probably basilar.

Nystagmus, local and occupation causes being excluded, is a sign of cerebral disease, often disseminated sclerosis.

Although it would be interesting to study one by one those diseases having important eye signs, time will not permit and we will consider but two, exophthalmic goitre and hysteria, and these but briefly.

Exophthalmic goitre: Exophthalmos is due primarily to excitation of the sympathetic acting upon the muscular bands surrounding the globe, thus tending to draw it forward. Hypertrophy follows and the orbital space behind the eye fills in with fat and connective tissue.

Von Graefe's sign: When the eyeball is turned downward, the lid follows tardily or not at all.

Stellwag's sign: Diminished power and frequency of winking.

Dalrymple's sign: Retraction of upper lid causing the peculiar stare. If pronounced, the white sclera may be seen above the cornea.

Lagophthalmos follows in aggravated cases.

These four symptoms are thought by some to be due entirely to the anesthesia of the cornea which is usually present. It is possible to reproduce them experimentally where no proptosis exists by making the cornea anesthetic by cocaine. A deficient action of the frontalis often accompanies the other signs, giving rise to a peculiar smooth, expressionless appearance which has been called "marble forehead." Marked epiphora is sometimes an early symptom.

Muscular pareses (sign of Möbius) are common.

Hysteria: Casey A. Wood says, "Most spasms of the orbicularis or bilateralis are probably hysterical. If other excitants can be excluded and other hysterical stigmata are present, the probability becomes a certainty."

Pseudo-paralytic ptosis is often associated with stigmata. The lid closes quickly after being forcibly raised, whereas, in true paralysis, it closes slowly.

In hysterical spasm of the orbicularis, the brow on the affected side is lower than the other brow, whereas in true paralysis the brow on the affected side is higher and the forehead is wrinkled, owing to compensatory action of the frontalis.

In double ptosis in hysteria, if the patient looks intently at an object, the head is thrown back; now if the head be gradually moved forward and downward, the lids will be raised and the ptosis disappears.

Although the subject is not yet exhausted, the hearers doubtless are, and already occasional spasmodic attacks of temporary bilateral ptosis among the listeners warn us that the stage of cerebral saturation is nigh. Before the dose becomes lethal let us, from all this disjointed mass of information, appropriate and carry away with us the following deductions:

(1) That the eyes from the vantage ground of their wonderfully perfect anatomical and physiological position are especially adapted to reflect many of the most important changes of the system.

(2) That a large majority of those signs may be revealed by simple inspection merely.

(3) That the eyes, more than other organs, are at all times most easily and conveniently inspected.

(4) And, finally, that by simple but intelligent inspection we may gain important information concerning various physical and functional body processes.

Indeed, we may read, if we will, much of profit in regard to that all-important mental or psychical side of our patients which we are perhaps too apt to overlook in our eager hunt for the pathological.

ON THE IMPORTANCE OF DISTINGUISHING SIMPLE ROUND ULCERS OF THE DUODENUM FROM THOSE ULCERS WHICH INVOLVE THE PYLORUS OR ARE ABOVE IT.

BY E. A. CODMAN, M.D., BOSTON,

Assistant Visiting Surgeon, Massachusetts General Hospital.

(Continued from No. 10, p 318.)

Moynihan says that, in his experience, cases which show hemorrhage at all show it grossly in the stools. Certainly hemorrhage which has any importance from the actual loss of blood would be easy to detect.

Besides this, the analysis of stools for blood is a disagreeable duty which a physician rarely does unless it is positively indicated, and in "nervous dyspepsia" and "hyperacidity" it is probably not often carefully and repeatedly done. It should be, however, in all cases which suggest the possibility of ulcer, although it is by no means an absolute negative test. We much need a series of observations on its value in known cases. Those which have been operated on for acute perforation would offer a good test because the ulcer is still there although infolded. In my most recent one it was negative a few days after the operation.

Thus, although cases of hemorrhage from duodenal ulcer are rare, it by no means proves that the disease is.

At any rate, we may add the hemorrhage cases to the perforations in diminishing the 1 to 40 ratio still farther.

The fourth division, those that are recognized by characteristic chronic symptoms without hemorrhage. I am sorry to say that these cases are few in number in this community but are forming a rapidly increasing number in those communities where the teachings of the Mayos and Moynihan have been more appreciated. As will be seen later, Moynihan makes a diagnosis on the character of the pain, while with us the diagnosis is usually established by accident when an exploratory operation is done, usually for supposed gallstones. I have myself operated on 3 such cases, in 2 of which I made the diagnosis and in the third only considered it as secondary to gallstones. This class, though small, still further diminishes the ratio of 1 to 40 and will soon greatly diminish it.

The fifth division, cases which are confused with gastric ulcer. To show that this is a large division, the statements of Mayo and Moynihan may again be quoted. Both these operators confess the mistake in their earlier cases and state now that their duodenal cases outnumber their gastric cases. These statements are apparently hard to reconcile with the tremendous numbers of autopsy statistics, which give a great numerical preponderance to gastric ulcers. The solution is found in the fact that where the pylorus is involved, the primary disease has been supposed to be on the gastric side because the ulcerations on that side are larger.

It is quite likely that many duodenal ulcers spread and involve the pylorus. It seems to me probable that such advanced cases as shown in this specimen, which I removed by pylorectomy, were originally round ulcers which extended upwards and, having once strictured the pylorus, caused secondarily these scalloped widespread ulcerations on the stomach side. These seem to me "static ulcers" due to retention. At the duodenal end the ulcer looks like the side of a perforating ulcer. (Figs. 11, 12, 13.)

This patient, a man of thirty-four years, one and a half years ago, began to have cramplike pains in the epigastrium lasting a few minutes and relieved by belching. No particular relation to food. (Was a waiter and took his food at any old time; drank a good deal, too.) Vomited a few times. He lost much weight. This continued for six to eight months, then he began to improve and continued free from pain and gained weight up to six to eight months ago, when pain returned and began to lose weight again. About the last of August, four months ago, vomiting began. At first every few days up to two months ago, since then practically every day. Pylorectomy was performed in January and has thus far been most successful.

May not the earlier part of this history have been duodenal? (Fig. 13 is a diagrammatic drawing from this case.)

Cases of gastric ulcer at the pylorus frequently have this same appearance at autopsy or when excised by pylorectomy, while an earlier operation would have found a duodenal ulcer.

To return to the fissure-in-ano theory for a moment, let us suppose that the original round ulcer spreads laterally either by the coalescence of a neighboring ulcer or by direct extension, perhaps in adjacent scar tissue made by old ulcers. As it goes it cuts the muscle fibers on either side and the intervening muscle retracts so that a circular ulcer forms. The formation of an encircling ulcer by the coalescence of round ulcers or by their lateral extension into old scars of previous round ulcers, I believe to be the essential process in the formation of pyloric stricture and "gastric ulcer at the pylorus." (The reader is referred to the explanation of Figs. 11, 12, 13.)

The specimen from which Figs. 4 and 11 were taken was an encircling ulcer of this kind.

The patient was a young man who for seven years had had "stomach trouble"; he had been treated in our Out-Patient Department for gastric dilatation and hypo-acidity (this may have been meant for hyper). At length, on May 10, 1904, there was perforation and he came into the hospital as an emergency. The record of the operation states that a "mass was palpated near pylorus about size of hen's egg and thought to be cancer." The perforation was found and drained, but not sutured, and a jejunostomy done. He lived some four weeks and died of subphrenic abscess. The following is a description of the lesion at autopsy.

"The duodenum, on section, presents at its upper portion, immediately below the pyloric ridge, which is well marked, two parallel thickened lip-like folds of mucosa which extend around the wall, and situated between which there is a smooth grayish fibrous band-like depressed area about 1 cm. in greatest width. This area narrows to a point in the wall of the duodenum just below the pylorus, at which point there is a small scar-like depression in the outer surface of the duodenal wall with faint radiating scar-like lines extending through the fibrous-like wall. This scar-like area is situated anteriorly and laterally to the right in the wall of the duodenum."

In other words, this case was in process of forming a stricture of the pylorus which would soon have ulcerated stomachward, as in the previous case. At the duodenal end one of the lip-like folds would have remained and all that was above it would have been "gastric ulcer." In the specimen of "gastric ulcer" you may see this lip-like fold of the duodenum, but the pylorus is lost in the inflammatory tissue. The "lip-like fold" is usually erroneously supposed to be the pylorus. (See Figs. 5, 6, 7.)

If this theory can be only half true it will still further lower our 1 to 40 ratio. At least duodenal ulcer may claim its share of simple annular stenosis of the pylorus.

The sixth division, periduodenal adhesions.

It not infrequently happens that in cases of persistent gastric symptoms adhesions about the pylorus and duodenum are the only signs which the surgeon finds of some pre-existing trouble. Such adhesions are usually accredited to the gall bladder, but the duodenum may justly claim its share.

The seventh division, cases which pass for "gastric neuroses."

It is curious that the stomach has always been held responsible for all the pain in the epigastrium. Why should not the duodenum have a pain of its own? It is my belief that the duodenum may give pain when the stomach is at rest and in peace. The ability which nature has given us to recognize the situation of abdominal pain is by no means accurate. Pain caused by the gall bladder, pancreas, duodenum and pyloric region are all indistinguishably mingled in the epigastrium, and always by the patient, and too frequently by the physician, considered in the stomach. The stomach is tested by the usual methods and found normal or hyper-acid, and the diagnosis of "nervous dyspepsia" or "gastric neurosis" is made. Duodenal pain is frequently supposed by the patient to be in the lower bowel, and he may attribute his trouble to "wind" or diarrhea or constipation.

In Osler's "Modern Medicine" this wicked statement is made: "Of 2,000 patients suffering with the various forms of gastric disease, 1,592 (79.6%) represented one or more forms of nervous disorder."

When I go fishing in a pond I always yearn for an all-seeing eye which would give me the ability to see every fish on the bottom. How many duodenal ulcers would that all-seeing eye disclose in those 1,592 cases of gastric neuroses?

A case of duodenal ulcer which does not bleed, and which has not yet attacked the pylorus, gives no symptoms except pain. Yet I believe that the character of this pain is definite enough to admit of a provisional diagnosis of duodenal ulcer. I want to read you what Moynihan says about this pain. The dim lights which we barely see in a fog are made clear to him by his surgical experience. A few years ago I should have thought his statement far too dogmatic, but now I believe that he can and I can and you can make many diagnoses of duodenal ulcer on the character of the pain alone without hemorrhage, perforation or stenosis of the pylorus.

"The diagnosis of duodenal ulcer rests not so much upon the alterations in the size or action of the stomach, not upon the chemical changes in the stomach contents, but rather upon the anamnesis. The history of cases of duodenal ulcer is generally as follows:

"After food is taken the patient is free from pain; the period of an hour or two which follows a meal is the best time in the day. At a time varying from one and a half to four hours after the meal a sense of uneasiness is noted in the upper part of the abdomen. A burning, gnawing sensation develops, and there is a bitter taste in the mouth, with, it may be, erucations of food or gas, bitter and acid in taste. The pain, which gradually increases, may be relieved, often considerably, by belching or by pressure. As it increases in severity it strikes through to the back, to the right of the middle line, and it may radiate round to the right side of the chest. As all patients discover for themselves, the taking of food relieves the pain, so that many carry a biscuit in their pockets or take milk, a dose of an alkaline medicine or some form of food, as soon as the uneasiness develops. In several cases upon which I have operated the pain has been more severe than this, has been, in fact, indistinguishable from a mild form of hepatic colic; the patient describes the pain, which comes constantly two or three hours after food, as a ' colic ' or a ' spasm.' It is possible that spasm of the pylorus is actually present, for such a condition may subsequently be seen during the course of an operation. The pain, it will be noticed, comes on at a time when the patient should be beginning to feel hungry for his next meal; for this reason the term ' hunger-pain ' which I suggested in a former paper seems quite appropriate. The interval of relief after a meal varies, chiefly according to the character of the food taken. The more substantial the food, the greater the interval of relief. The appetite is generally good, often better than normal, if stenosis has not developed. It is not unusual for a patient to say, ' I've a good appetite, I can take anything, and I never vomit.' If he has given a history of pain, as I have described it, one may be confident that he has duodenal ulcer, without stenosis. Investigation by test meals will show no stasis and perhaps, but by no means always, some hyperacidity.

"After a time, a few weeks, a month or two, the symptoms may gradually improve, and even disappear, to reassert themselves after a longer or shorter interval. The patient will then speak of having ' attacks ' of a certain duration, coming capriciously, leaving spontaneously. In the intervals of these attacks he may be perfectly well, suffer absolutely no discomfort, enjoy food and gain weight. The attacks are more frequent and more severe in cold weather than in warm. A ' chill ' is often assigned as a cause of a certain attack, and attacks seem especially apt to come in times of stress and worry. The recognition of duodenal ulcer is most necessary, for it is, I feel sure, a far more serious disease than gastric ulcer and it is, moreover, one which, in my judgment, should aways be treated by operation. I often see and operate upon cases of duodenal ulcer which have been variously diagnosed as ' chronic gastritis,' ' acid dyspepsia,' ' hyperchlorhydria,' etc. But a slender acquaintance with the pathology of the living is all that is needed to connect the clinical history outlined above with a condition of chronic ulceration in the duodenum."

[While I consider this an excellent description of the symptoms of duodenal ulcer I do not think it is logical to always operate.]

Duodenal ulcer is a disease of active, energetic men. I doubt if it occurs in lazy people. I believe that there are many cases of duodenal ulcer which are endured by strong, hard-working men without even medical treatment, certainly without effective medical treatment. Enough relief is obtained from bicarbonate of soda and frequent feeding to allow them to keep up their work. Their general health may not be seriously interfered with and the disease merely makes them too readily tired and turns their natural enjoyment of work into drudgery. The following case seems to me very typical and a good example of cases which every general practitioner sees.

A doctor now somewhat over fifty, who is a determined, active, energetic, uncomplaining individual, successful in his profession and in whatever else he undertakes, has been kind enough to write out, at my request, a brief statement of certain symptoms, which he always supposed to be nervous dyspepsia. "My stomach difficulty lasted some eight or ten years off and on, at times better and then again worse, but gradually getting more severe until 1902 when, in consequence of having rheumatism, I dieted to the extent of cutting off meat and sweets for six months. The trouble disappeared and has never returned.

"These attacks consisted of a feeling of distress beginning in the pit of the stomach and extending up to the middle of the breast bone, and varied in intensity, sometimes being so severe as to oblige me to give up doing anything and sit or lie down. At times it was a sort of sharp burning pain. There was often an effort made to limit respiration by confining the act to short superficial breathing. When the pain was severe, it usually came in paroxysms, perhaps every few minutes and would begin as a distress, gradually increasing to a sharp boring and then decline, the duration perhaps being a minute or two. When severe there was often a raising of acid bitter stuff which would well up into my mouth, and if this occurred the pain was always more intense. When the pain started I got in the habit of making repeated efforts to swallow, for if the regurgitation could be prevented, it seemed as though some pain was eliminated. These attacks came on usually from one to two hours after eating, and if started would usually last until the next meal unless modified by the use of soda. I got so that I carried soda with me constantly and took it dry in repeated doses until I felt that the trouble was relieved. Exercise of any kind seemed to increase the frequency and severity of the attacks. I don't remember about worry, but loss of sleep aggravated them. I used to think that sweet foods, especially pastry, made the trouble worse. At the last I grew to believe that meat also aggravated it.

"I am afraid you won't get much out of this, for I didn't pay very close attention to the trouble at the time and felt so sure that if I took enough soda I could control it that I didn't study it much."

This case might be called "nervous dyspepsia" or "hyperacidity." It ran its natural course, was never operated on or treated by the usual treatment of gastric ulcer. Bicarbonate of soda gave sufficient relief to enable an exceptionally plucky, strong-willed man to do his daily work. I have previously pointed out that the relief which follows bicarbonate of soda in such cases is by no means a proof that the trouble was due to acidity, for the alkaline soda closes the pylorus and may thus relieve the pain. These cases are usually washed out for the acid test after a test meal and even then sometimes show little acidity. A more crucial time would be at the hour of the pain. One such case recently showed a very low acidity. A series examined at this hour would be interesting.

The eighth division, those which present no symptoms.

I may dismiss this class briefly by saying that many writers state that in a good proportion of those that perforate or bleed there are no other symptoms. I have seen this in a good proportion of my own cases. The perforated cases, when giving their history just before operation, usually are so occupied with their agonizing pain that they forget little dyspeptic symptoms. Duodenal ulcers are occasionally found at autopsy in patients who give no history of gastric disturbance.

Thus we find these eight divisions representing some of the protean forms which duodenal ulcer assumes. In the perforated group the rapid increase in the number of cases which are to-day operated upon as compared to ten years ago shows that we are dealing with a fairly common disease. The comparison of perforated cases alone to acute appendicitis as 1 is to 40 is conservative, and yet it is also conservative to say that the other different forms must include 4 cases which do not perforate to 1 that does. This reduces the ratio to 1 to 10 and I believe this is the most conservative estimate logically possible. As a matter simply of opinion I believe *chronic* duodenal ulcer is more common than *acute* appendicitis.

Thus far I have purposely said as little as possible about gastric ulcer. For instance, in speaking of the scars of gastric ulcer I have said nothing of the recorded cases of autopsy findings in this respect. These statistics can be found in most textbooks and in various monographs, but nowhere have I been able to find duodenal ulcer separated from gastric ulcer. In the past, writers of textbooks and of medical and surgical papers have, as a rule, considered gastric and duodenal ulcers together under one heading, both for purposes of clinical diagnosis and in directing treatment. If the clinical symptoms are frequently indistinguishable, or if gastro-enterostomy is a cure-all for both, there seems little need of nice diagnosis. I am inclined to think that the function of the pylorus has not been sufficiently appreciated and that it makes a considerable difference both in the symptomatology and the result on which side of this sphincter muscle the ulcer happens to be.

To make this subject better understood:

Pathologists should (1) look for signs of healed duodenal ulcer in all post-mortems. (2) Examine specimens removed post-mortem or by pylorectomy to see, if possible, whether the ulcer started above or below the pylorus.

Surgeons should (1) record accurately the position of ulcers in relation to the pylorus. (2) Classify the results of gastro-enterostomy according to the position of ulcers in relation to the pylorus.

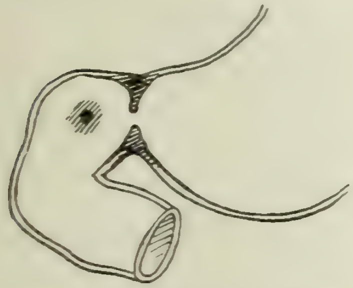
Clinicians should (1) make provisional diagnoses of duodenal ulcer when "hunger pain" is practically the only persistent symptom. (2) Remember the function of the pylorus in interpreting the histories of gastric ulcer patients.

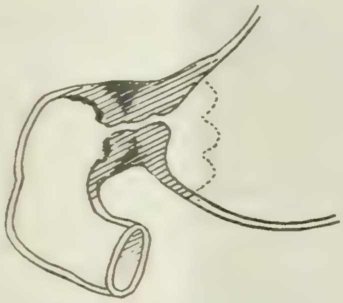
I have arranged in this table various items about ulcers of the stomach and duodenum. These items you will notice are in part practical facts and in part, perhaps, unproved hypotheses. The reason is that I have arranged this table according to the logical deductions which one might expect in considering the function of the pylorus in its relation to these ulcers. The table is an *a priori* argument and it merely happens that most of the statements fit the clinical facts. For instance, take the second item (2). If the duodenal ulcer is below the pylorus and not interfering with its function, we should expect the hemorrhage by stool. If it involves the pylorus the hemorrhage may go either way. If the ulcer is above the pylorus, we should be more apt to expect the hemorrhage in the vomitus. These are logical deductions and they happen to be also clinical facts, as far as we know. In some of the other statements there will be some chance for a difference of opinion. In reference to bicarbonate of soda, for instance, we may logically deduce that since a fissure in the anus is comfortable only while the sphincter is gently closed, and since bicarbonate of soda closes the pylorus, that patients with duodenal ulcer may get relief from the bicarbonate of soda habit. In the cases where there is stricture of the pylorus we may logically assume that the distention with gas stimulating peristalsis would increase the pain, which is usually caused by the excessive peristalsis, and again, if the ulcer is in the stomach itself, the gas distention caused by the bicarbonate of soda should logically cause severe pain or vomiting. Now these are not clinical observations which I have made, because my experience with these cases has been too small to justify such a statement. I merely offer them as mental training in concentrating our attention on the unappreciated function of the pylorus.

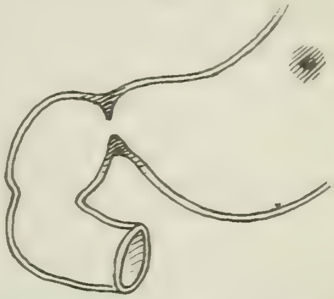
I will run over the table with you and apologize for some of the most brazen statements, but, on the whole, I believe that you will find that these logical deductions will help you more in determining duodenal cases than all the test meals and chemical analysis you have ever made. The stomach tube and the information it gives us has been much overrated; as is usual with any instrumental method of diagnosis, it has been overdone and the general grouping of symptoms and their logical interpretation is, after all, the most reliable method of diagnosis that we have.

3. In duodenal ulcer the pain, whether it is caused by the contact of acid or food or by bile or by the opening of the sphincter, should be late after meals because, until the stomach digestion is complete, the pylorus remains closed. Where the pylorus is strictured, pain, being caused by the peristaltic efforts of the stomach to pass the obstruction, should be present most of the time because the food does not have a chance to get out before the next meal is eaten. When the ulcer is in the stomach, the pain should be directly after the meals because the contact of food on the ulcer would produce pain.

4. In duodenal ulcer pain should be relieved by a large meal more than by a small meal because the pylorus would be kept closed longer. When the pylorus is strictured the patient should be most comfortable with the stomach washed out or starved or with rectal feeding, and this should be found more the case when the ulcer is in the stomach itself, because the actual contact with the food is avoided. During the exacerbations of duodenal ulcer due to inflammation of the adjacent mucous membrane the symptoms are more apt to take on a pyloric character, so that we get a temporary change from the pure duodenal symptoms to those symptoms which indicate disturbance of the function of the pylorus: thus the interpretation of the symptoms during the acute attack suggest true stomach lesions.







1. Ulcer below pylorus and not interfering with its function.	Ulcer arising above below, or on pylorus and interfering with its function.	Ulcer above pylorus and not interfering with its function.
2. Hemorrhage by stool.	Hemorrhage either way.	Hemorrhage by vomitus.
3. Pain late after meals.	Pain peristaltic.	Pain directly after meals.
4. Pain relieved by large meal. (Except during exacerbations.)	Increased with food.	Least with starvation.
5. Stomach tests may be normal.	Tests show stasis of stomach contents.	Blood more likely than stasis.
6. Tenderness slightly to right.	Tenderness varies in position.	Tenderness to left.
7. Very chronic except for exacerbations.	Progressive.	Acute, sometimes very chronic.
8. General health good unless hemorrhage or perforation.	Cachectic from starvation.	Lack of nutrition on account of vomiting and pain.
9. Pain often only symptom, vomiting only during exacerbations.	Always vomiting. Often long after meals.	Vomiting from pain soon after meals.
10. Bicarbonate soda habit.	No relief from soda.	Gas from soda causes pain or vomiting.
11. Vomitus only mucus.	Vomitus rotting food.	Vomitus fresh food.
	PERFORATED CASES.	
12. In perforated cases spreads to right and resembles appendix without previous history.	Perforated cases have previous gastric history.	In perforated cases apt to be more general and more severe than appendix. Previous gastric history.
13. In perforated cases fluid and bile in abdomen. Often no gas.		In perforated cases food and gas in abdomen.
	TREATMENT OF CHRONIC CASES.	
14. No statistics as to results, with or without gastro-enterostomy.	Result proved good with gastro-enterostomy.	Result probably good, with gastro-enterostomy.
15. Usual medical treatment not wholly rational.	Medical treatment abandoned by all.	Medical treatment rational.
16. Gastro-enterostomy irrational.	Gastro-enterostomy rational.	Gastro-enterostomy rational.
17. Excision ideal operation.	Pylorectomy ideal operation.	Excision ideal operation.
18. Exploratory operation justifiable.	Exploratory operation advisable.	Exploratory operation not advisable in acute cases; advisable in chronic.

(To be continued.)

STUDIES IN PSYCHOPATHOLOGY.

THE PSYCHOTHERAPEUTIC VALUE OF THE HYPNOIDAL STATE.

BY BORIS SIDIS, M.A., PH.D., M.D., BROOKLINE, MASS.

(Concluded from No. 10, p. 327.)

As an example of interference and inhibition of two sensory stimulations, or of one affective, such as expectation, and one sensory stimulation, we can take the following series of experiments:

The more numerous the components become, the more the given group of systems grows in complexity, the longer becomes its latent period of stimulation, the higher rises its threshold, the greater, we may say, is the inhibition of its activity. Figuratively, we may say that the inertia of a group increases with its mass. To set into activity a complex system, a greater stimulus is requisite than the one necessary to set into function any of the individual components. The *minimum* threshold of the system must at least be the *maximum* threshold of one of its constituents. As Sherrington puts it: "Yet it is also clear that the threshold for any whole arc cannot be lower than the highest individual threshold in it. Similarly, an additive influence of the threshold will make the reflex chain, consisting of several neurons, offer *caeteris paribus* higher resistance than a chain of fewer neurons. It is in accord with the rule that the reflex-chain which conducts to parts segmentally distant requires generally intenser stimulation to excite them than do merely local arcs." [14]

Galvanometric reading	1.2
	1.2
	.
Pinch ——→	.
(Short latent period)	.
	.
	1.3
	1.4
	1.5
	1.6
	1.7
	1.8
	1.9
	2.0
	2.1
	2.2
Deflection rose to .	2.3
	.
	.
	.
Returned to	1.5

Galvanometric reading	1.5
	1.5
	.
	.
Prick ——→	.
(Short latent period)	.
	.
	2.0
	2.1
	2.2
	2.3
	2.4
	2.5
	.
	.
	.
	3.0
Deflection rose to ...	3.1
	3.0
	.
	.
	.
	.
Returned to	2.0

Galvanometric reading	2.2
	2.2
	.
	.
Pinch and sound ——→	.
(Long latent period)	.
	2.3
	2.4
	2.5
Deflection rose to ...	2.6
	2.5
	2.4
	.
	.
	.
Returned to	2.2

Galvanometric reading	2.3
	2.3
	.
	.
Prick and intense sound ——→	.
	.
(Long latent period)	2.4
	2.5
	.
	.
Deflection rose to ...	2.9
	2.8
	2.7
	.
	.
	.
Returned to	2.3

Galvanometric reading	2.5
	2.5
	.
Slight snap ——→	.
(Short latent period)	.
Deflection rose to ...	2.9
	.
	.
	.
Returned to	2.5

Galvanometric reading	0.6
	0.6
	.
Severe snap ——→	.
(Short latent period)	.
	.
	.
	3.9
Deflection rose to ...	4.0
	3.9
	.
	.
	.
Returned to	1.5
	.
	.

Galvanometric reading	3.4
	3.4
Expectation ot	.
snap ——→	.
(Short latent period)	.
	3.5
	3.6
	.
	.
	.
Deflection rose to ...	4.0
	3.9
	3.8
	.
	.
	.
Returned to	3.5
	.
	.

Galvanometric reading	3.0
	3.0
	.
	.
	.
Snap and sound ——→	.
(Long latent period)	.
Deflection rose to ...	4.1
	4.0
Kept on falling,	.
	.
	.

Galvanometric reading,	4.0
	4.0
	.
	.
Expectation of snap and intense sound ——→	.
	.
	.
	4.0
	4.0
	4.0
(No change)	

All other conditions remaining the same the arousal of a complex system requires also an increase of time. The higher and more complex the nervous and mental processes are, the greater are their reaction times. With the complexity of the group of associated systems belonging physiologically to different and distant parts of the cerebral system, the initial stimulation or stimulus-threshold becomes greater and the time of stimulation or latent period becomes longer. In other words, the threshold of the group rises with the increase of associative components belonging to different spheres of sensory regions with their concomitant presentative and representative elements forming the synthesis of the organized group.

Now a great number of associations are formed in the course of life-adjustments, with the result that the thresholds of some or even of many systems may become inaccessible to the ordinary stimuli of the customary environment. The life reactions of the individual may thus become limited and narrowed down to a contracted sphere of activity in response to a limited number of stimulations. Consciousness and life interests become narrowed, contracted, giving rise to various forms of psychopathic affections with their anesthesias, motor paralyses and abulias, with their inhibitions of function of various systems in the domain of sensation, emotion, intellect and will.

This rise of threshold, and the concomitant systemic mental paralysis with its consequent limitation of response and reaction to the external environment, should, however, be regarded as forming but one side of the psychopathic affections. The inaccessible regions lie fallow and await the favorable moment to manifest their riches and fertility. The inactive systems, being in their resting, anabolic stage, become surcharged with latent energy awaiting the appropriate stimulus effectual in the liberation of the dormant energy. This subconscious, dormant, reserve energy is of the utmost consequence to the individual in the critical moments of his struggle for life. In the struggle for life such a surplus of energy is a great advantage to the organism. Those organisms have a better chance for survival that have laid by for a rainy day; the chance of survival becomes greater as the stored-up energy is greater. This principle of reserve energy was set forth by Professor James[15] and also by me in this Journal.[16] At the same time Dr. Meltzer[17] developed the same principle from a somewhat different standpoint. Meltzer points out the significant fact that most of our active organs possess a great surplus of functioning cells. This surplus is requisite for the safety of the individual.

The theory of reserve energy is of the utmost importance to abnormal psychology. The theory was advanced independently by Professor James and myself and seems to me to form the very foundation of psychopathology and psychotherapeutics. It is by no means easy to present adequately the principle of reserve energy in this brief paper. The principle is based on a broad generalization of facts, — psychological, physiological and biological, — namely, that far less energy is utilized by the individual than there is actually at his disposal. In fact, but a very small fraction of the total amount of energy possessed by the organism is used in its relation with the ordinary stimuli of its environment. The energy in use may be regarded as the *kinetic or circulating energy*, while the energy stored away is the *reserve energy*. There must always be a reserve supply of energy requisite for unusual reaction in emergency cases. Those organisms survive which have the greatest amount of reserve energy, just as those countries are strong and victorious in the world-market which possess the largest amount of reserve capital to draw upon in critical periods.

Now as life becomes more complex, inhibitions increase; the thresholds of stimulations of a complex system rise in proportion to its complexity. With the rise of evolution there is a tendency to increase of inhibitions, with a consequent lock up of energy which becomes reserve. Now there are occasions in the life of the individual, under the influence of training and emotional trauma, when the inhibitions become unusually intense and tend to smother the personality, which becomes weakened, impoverished in its free reactions and is unable to respond freely to the stimuli of its environment. The inhibited system becomes inactive and may be regarded as dissociated from the cycle of life. In case of an emotional trauma there is often a breach in the continuity of association, and the affected system becomes dissociated from the rest of the personality and is like a splinter in the flesh of the individuality. Its own threshold, when tapped, may be very low, but it is not directly accesssible through the mediacy of other systems; hence its threshold appears unusually or pathologically high. When the inhibitions are very high they must be removed. This removal of inhibitions brings about an access to the accumulated energy of the inhibited systems. In case of disjunction or break of continuity we must stimulate the reserve dormant energy of the systems and thus assist the process of repair and bridge the breach of associative continuity. A new, fresh, active life opens to the patient. He becomes a "reformed" personality, free and cheerful, with an overflow of energy.

To quote from a former work of mine:[18]

"The thresholds of our psychological systems are usually raised, mental activity working in the course of its development and growth of associative processes under ever-increasing inhibitions with ever higher thresholds. . . . On account of the high thresholds and inhibitions, not the whole amount of the psychophysiological energy possessed by the system is manifested; in fact, but a very small portion is displayed in response to stimuli coming from the habitual environment. What becomes of the rest of the unused energy? *It is stored, reserve energy.*

"Biologically regarded, we can well see the importance of such stored or reserve energy. In the struggle for existence the organism whose energies are economically used and well guarded against waste will meet with better success in the process of survival of the fitter or will have better chances in the process of natural selection. The high thresholds and inhibitions will prevent hasty and harmful reactions, useless waste of energy, unnecessary fatigue and states of helpless exhaustion. Moreover, natural selection will favor organisms with greater stores of reserve energy which could be put forth under critical conditions of life. In fact, the higher the organization of the individual, the more varied and complex the external environment, the more valuable and even indispensable will such a store of reserve energy prove to be.

"The course of civilization and education, by continually raising the thresholds and inhibitions, follows the line of natural selection, increasing the disposable store of potential, subconscious* or reserve energy, both in the individual and the race. It is in this formation of an ever greater and richer store of disposable but well-guarded reserve energy that lies the superiority of the educated over the uneducated, and the supremacy of the higher over the lower races.

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* The subconscious forms the very foundation of psychopathology, just as ether forms the basis of modern physics. It is on ill-based and metaphysical grounds that some psychologists declare that there is no subconscious, admitting, however, the same subconscious under different names. I shall take up this subject in its proper place.

"*Civilization and education are processes of economy of psychoneural force, saving of mental energy.* But what society is doing in a feeble way, natural selection has done far more effectively. What education and civilization are accomplishing on a small scale, and for a brief period of time, the process of survival of the fitter in the ever-raging struggle for existence has carried on for ages on a large scale. We should, therefore, expect that the natural reserve energy would far exceed that of the cultivated one. . . . The brain and mind of the savage do not differ from those of their civilized descendants, and still, what an ocean of mental life separates the civilized man from his savage progenitor!"

The savage possesses a brain far surpassing the needs of his environment just as the organism possesses a vast amount of liver, kidney, lung, gland and muscle cells far surpassing the requirements of its ordinary life activity. The savage and barbarian harbor the powers of a Socrates, Plato, Aristotle, Shakespeare, Goethe, Tolstoi, Darwin and Newton. The ancient Germanic tribes did not differ in their mental capacities from their contemporaries, the civilized Egyptian, Babylonian, Phœnician, Hebrew, Hellen and Roman. What, then, did those Germanic savages do with their richly endowed mental energies? Nothing. The mental energy was lying fallow; it was dormant reserve energy, — energy stored up for future use, for the use of future ages of coming civilization.

In the treatment of psychopathic diseases we should not forget this fundamental biological principle of dormant reserve energy. In many cases the inhibitions become too heavy and the threshold too high. We must loosen the grip of the inhibitions and lower the thresholds, utilizing a fresh supply of dormant reserve energy.

A similar train of thought was developed by Dr. S. J. Meltzer, in his excellent paper on "The Factors of Safety in Animal Structure and Animal Economy."[21] By a striking series of instructive facts, Dr. Meltzer points out that "all organs of the body are built on the plan of superabundance of structure and energy." I cannot resist the temptation of quoting Dr. Meltzer's conclusions at some length, because they so clearly elucidate our principle of reserve energy, which is all the more valuable, as Dr. Meltzer has formulated it independently on widely different grounds. "Of the supplies of energy to the animal, we see that oxygen is luxuriously supplied. The supply of carbohydrates and fats is apparently large enough to keep up a steady luxurious surplus. . . . The liberal ingestion of proteid might be another instance of the principle of abundance ruling the structure and energies of the animal body. There is, however, a theory that in just this single instance the minimum is meant by nature to be also the optimum. But it is a theory for the support of which there is not a single fact. On the contrary, some facts seem to indicate that Nature meant differently. Such facts are, for instance, the abundance of proteolytic enzymes in the digestive canal and the great capacity of the canal for absorption of proteids. Then there is the fact that proteid material is stored away for use in emergencies just as carbohydrates and fats are stored away. In starvation, nitrogenous products continue to be eliminated in the urine, which, according to Folin, are derived from exogenous sources, that is, from ingested proteid and not from broken-down organ tissues. An interesting example of storing away of proteid for future use is seen in the muscles of the salmon before they leave the sea for the river to spawn. According to Mescher the muscles are then large and the reproductive organs are small. In the river where the animals have to starve, the reproductive organs become large, while the muscles waste away. Here, in time of affluence, the muscles store up nutritive material for the purpose of maintaining the life of the animal during starvation and of assisting in the function of reproduction. This instance seems to be quite a good illustration of the rôle which the factor of safety plays also in the function of the supply of the body with proteid food. The storing away of proteid, like the storing away of glycogen and fat, for the use in expected and unexpected exceptional conditions, is exactly like the superabundance of tissue in an organ of animal or like an extra beam in the support of a building or a bridge — a factor of safety.

"It seems to me that the factors of safety have an important place in the process of natural selection. Those species which are provided with an abundance of useful structure and energy, and are prepared to meet many emergencies, are best fitted to survive in the struggle for existence."

The hypnoidal state is essentially a rest-state characterized by anabolic activity. There is a restitution of spent energy; inhibitions become removed, and access is gained to what Dr. Prince so aptly describes as "dormant" systems or complexes. The awakened "dormant" complex systems bring with them a new feeling-tone, a fresh emotional energy resulting in an almost complete transformation of personality.

As an illustration of the transformation effected, I take at random the following extracts from some of the letters written to me by patients who have experienced this welling up of reserve energy: "Indeed, were I to fill this entire sheet with expressions of the gratitude which wells up from my inmost heart it would be only a beginning of what I feel. Surely the darkness of the world has been dispelled since this *new light* has illuminated my soul, and I *feel that this wondrous light will never fail me.* It were vain to attempt to thank you for this wonderful transformation."

Another letter from a patient reads: "You will be glad to know that all is well with me. Life is one happy day. I am a marvel to my friends in the way of happiness and cheer. I have to confess that I feel almost wicked to be so happy."

Another letter runs as follows: "Next to the gladness in my own restoration, I am rejoiced at the wonderful transformation that has come to my dear friend T. from your treatment. She writes me most enthusiastically of her steady and sure progress toward the goal of perfect health, of her strength to take up the home duties which had been so burdensome and which she now finds a delight in the doing of them; and of her husband's and friends' joy in the transformation that has been wrought in her."

Dr. Prince, in his "Unconscious,"[22] gives an extract of a patient's letter which tells of similar transformation and awakening of dormant reserve energy. "Something has happened to me — I have a new point of view. I don't know what has changed me all at once; it is as if scales had fallen from my eyes; I see things differently. . . . You have given me life and you have given me something to fill it with. I owe you what is worth far more than life itself, namely, *the desire* to live."

These extracts are typical of many others, and clearly show the enjoyment of new strength and powers until now unknown to the patient. Fresh levels of reserve energy have been tapped and have become available in an hour of dire need. The patient has light and strength where there were darkness and depression. We are confronted here with the *important phenomenon of liberation of dormant reserve energy.* The patient feels the flood of fresh energies as a "marvelous transformation," as a "new light," as a "new life," as a something "worth far more than life itself."

The hypnoidal state helps us to reach the inaccessible regions of dormant reserve energy, break down inhibitions, liberate reserve energies and repair the breaches of mental life. The painful systems become dissociated, disintegrated and again transformed, reformed and redintegrated into new systems full of energy and joy of life. The *whole process is one of disintegration and redintegration with the awakening of dormant reserve energy.*

Now the essential condition of the hysterical, of the neurasthenic, or the psycho-asthenic, of all the various forms of recurrent mental states, is just that need of putting forth energy in response to claims of life, in response to stimuli from the external environment. The creditors' claims cannot be satisfied and the individual goes into insolvency, in spite of the riches of which he is the owner, but not the master. He starves in the midst of locked-up plenty of which he is the rightful possessor. In other words, psychopathic patients cannot use their reserve energy at the critical moments of life. Closed against the voluntary control of the psychopathic individual, the systems dissociated by the great rise of thresholds, the inaccessible reserve energy can be awakened to spontaneous activity by some accidentally occurring, appropriate stimulation. We find, therefore, in psychoneurosis, a diminution, a loss, an inhibition of voluntary activity and a concomitant intensification of automatic reactions. *Psycho-neurosis is characterized by paresis or paralysis of will and by predominance of automatism.*

Our view gives an insight into the nature and causation of psychopathic states; it is in full accord with Janet's recent position as to the character of psychoneurosis: "Les névroses sont des maladies portant sur les diverses fonctions de l'organisme, caractérisées par une altération des parties supérieures de ces fonctions, arrêtées dans leur évolution, dans leur adaptation au moment présent, à l'état présent du monde extérieur et de l'individu et par l'absence de détérioration des partes anciennes des ces mêmes fonctions qui pourraient encore tres bien s'exercer d'une manière abstraite, indepéndamment des circonstances présentes. En résumé, les névroses sont des troubles des diverses fonctions de l'organisme, caractérisés par l'arrêt du développement sans détérioration de la fonction elle-même. . . . A la place de ces opérations supérieures, se développent de l'agitation physique et mentale, et surtout de l'emotivité. Celle-ci n'est comme j'ai essayé de le démontrer, que la tendence a remplacer les opérations supérieures par l'exagération de certaines opérations inférieures et surtout par de grossières agitations viscérales."[19] We can also, from our standpoint, realize the position taken by Kraepelin when he says: "Als wirklich einigermassen kennzeichnend für alle hysterischen Erkrankungen dürfen wir vielleicht die ausserordentliche Leichtigkeit und Schnelligkeit ansehen mit welcher sich psychische Zustände in mannigfaltigen körperlichen Störungen wirksam zeigen seien es Anesthesien oder Paraesthesien, seien es Ausdrucksbewegungen, Lähmungen, Krämpfe oder Secretionsanomalien."[20] In short, in psychoneurosis or in psychopathic states we find a weakening or even paralysis of the higher voluntary functions and an overaction of the lower automatic functions. The nature of psychopathic states can be summarized in one phrase, — *dissociation due to rise of thresholds.* The weakening or even paralysis of the higher psychic functions in psychoneurosis is not due to their deterioration, but to their dissociation due to the rise of thresholds and to the lock-up of reserve surplus energy.

The value of the hypnoidal state for the treatment of psychopathic affections is in the lowering of the high thresholds and formation of association with utilization of accumulated stored-up energy requisite for the restoration of the higher psychic functions, for the exercise of the voluntary and personal control over the dissociated, automatically or subconsciously functioning groups of systems. The hypnoidal state is essentially a primitive rest-state and has been utilized almost from the very origin of animal life for the repair and restoration of worn-out organs and impaired functions. Unlike the waking state, the hypnoidal state does not present any special adaptations to the external environment. The only use of the hypnoidal state is repair of impaired functions and utilization of fresh energies. We can still use the hypnoidal state for the same purpose. The rigidity of group-associations requisite in the struggle for existence gives way in the hypnoidal state. In the subwaking state there is a reduction, a redistribution and fall of thresholds, with a consequent potential reformation and recombination of systems into new groups and aggregates. The hypnoidal state may be taken to represent an indifferent or rather neutral mental or psychophysiological equilibrium. We can utilize this primitive state to bring about a more favorable change in the disturbed equilibrium of the narrowed, dissociated, impoverished, enfeebled and full of automatism degraded waking life. The overacting dissociated systems with their automatic reflex reactions may form associations with other systems and thus become inhibited as well as controlled in their function by the voluntary activity of personal consciousness, while the inhibited systems with their raised thresholds and accumulated reserve energy are set into function. It is, therefore, possible to bring about a greater vigor of personal activity, a more efficient control of reactions to stimulations, a better adjustment of the organism to the conditions of its environment. It is by means of such readjustment of disturbed psychophysiological reactions that psychopathic affections are restored to normal functioning and thus get cured in the subconscious, subwaking, hypnoidal state

[illegible]

[1] [illegible]
[2] [illegible]
[3] [illegible]
[4] [illegible]
[5] [illegible] practical therapeutic side of the hypnoidal state.
[6] [illegible]
[7] *Ibid.*, [illegible]
[8] *Ibid.*, 1908.
[9] [illegible]
[10] [illegible]
[11] [illegible]
[12] *Ibid.*
[13] [illegible]
[14] [illegible]
[15] [illegible]
[16] [illegible] BOSTON MED. AND SURG. JOUR., [illegible]
[17] [illegible]
[18] [illegible] BOSTON MED. AND SURG. JOUR., [illegible]
[19] [illegible]
[20] [illegible]
[21] [illegible]
[22] [illegible]

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SUDDEN DEATHS IN A SYNOPSIS OF TWENTY YEARS' MEDICO-LEGAL WORK.*

BY [illegible], M.D., SHELBURNE FALLS, MASS.

IN twenty years, 1885 to 1905, there came into my hands, as medical examiner, 202 cases in the Western Franklin district.

This district, in area, comprises the western half of Franklin County, with Shelburne Falls, a manufacturing village and railroad center of 3,000 inhabitants, as its chief business point. It is divided into twelve towns, with the Deerfield River cutting it nearly midway, along the banks of which pass the double-tracked Fitchburg division of the Boston & Maine Railroad to the Hoosac Tunnel and West.

The inhabitants, some 15,000 in number, chiefly scattered on farms throughout this region, are still largely descendants of the old New England colonial stock of English and Scotch-Irish.

Of the 202 cases investigated during this score of years, the largest number, 54, were killed by cars.

The next largest number, 48, were from sudden and unforeseen death from natural causes, divided in the records into heart disease, 33; apoplexy, 10; measles, 1; alcoholism, 2; hemorrhage from the lungs, 2.

Third in the list is suicide, to which are charged 36 deaths: 11 by hanging, 4 by drowning, 8 by shooting, 5 by laudanum, 1 each by corrosive sublimate and chloral, and 1 by throwing himself in front of a railroad engine.

Eleven were killed in accidents in the iron pyrites mine at Rowe; 15 deaths are charged to accidental drowning, 5 to accidental shooting, and 2 were burned.

There were 8 infantile cases, one half of them strangled at birth and thrown where their bodies were afterward found, but not their murderers, the other half from accidental causes, as overlying, inanition from lack of care, etc.

The remainder of the cases I label from "miscellaneous causes." Of these, street accidents claim 5; homicides, 2; suffocation in an epileptic fit, 2; freezing, 1; hydrophobia, 1; broken neck in old people from falling down stairs, 2; lightning, 1, etc.

I made 9 autopsies: 2 in homicides, 3 in what was accepted by the court as accidental shooting, 2 in infants and 2 in sudden death.

In this tabulation of 200 cases, the feature of greatest interest to me, from a medico-legal standpoint, is the relatively large number (about 25%) of sudden and unforeseen deaths from natural causes, cases of chronic disease of longer or shorter duration, which, having been under the care of no physician, and dying suddenly without apparent symptoms of illness, are placed in the hands of the medical examiner for investigation and certificate of death.

I realize that the percentage of these cases may well vary in different localities, depending in part, at any rate, upon the habit of people in the employment of physicians for minor symptoms, and whether there is employed a town or city physician who, no doubt, certifies to a certain number of these deaths.

As in my list of 48 cases of sudden death 35 are put down in my records, after as careful an investigation as I was able to make without an autopsy, to heart disease, I propose to consider briefly in this paper some of the lesions of the heart and circulatory organs liable to produce this result.

A few years since, in looking about for literature upon this subject of sudden death so important to the medical examiner, there came to my hand the English translation of a work entitled "Death and Sudden Death," by P. Brouardel, Director of the Morgue and Professor of Medical Jurisprudence at Paris, which I have found very useful to me in coming to my conclusions in this class of cases, many of which are clearly outside the province of the medical examiner.

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* Read at a meeting of the Massachusetts Medico-Legal Society, [illegible]

Among my 35 cases supposed to be due to lesions of the circulatory organs, 25 were in males and 10 in females.

Of this whole number, 4, not including 2 cases from non closure of the foramen ovale, one at ten days and the other at sixteen years, were under fifty years of age, 2 males at thirty-eight and forty-five and 2 females at twenty-one and twenty-seven, 6 between fifty and sixty, 11 between sixty and seventy, 11 between seventy and eighty; above eighty, 3.

This summary gives us seven ninths of the cases occurring after fifty years of age, the degenerative and declining period of life, and clearly points as the cause of life's sudden ending either to lesions directly traceable to degenerative processes, as arterio and renal sclerosis and angina pectoris, or to lesions formed earlier in life, as the rheumatic endocarditis and resulting valvular disease in young subjects, generally compensated for many years by cardiac hypertrophy, which gives way after the degenerative period to cardiac dilatation and may result in sudden death.

Lesions causing sudden death may be found in any of the great vital systems of the body, digestive, respiratory, nervous, generative and excretory, more especially in its renal function, but more frequently than in any, perhaps, than in all combined, in the circulatory system.

This most wonderful mechanism known to the human mind consists essentially of a pump, — a hollow muscular organ suspended in the left chest, lined and covered with a serous membrane and inclosed in a sac of the same tissue, connecting itself by four orifices closed by valves formed of reduplications of its lining membrane, with its system of arterial, capillary and venous tubing, carrying several quarts of blood twice around its circuit of the body every minute of our lives.

Any arrest or radical disturbance in this movement of the vital fluid, or any sudden or radical change in its pressure, may result in sudden death.

The lesions and accidents liable to lead to this tragic result are so numerous and complicated that in a paper of this scope I can hardly be expected to more than mention them.

An important factor, to which I can only refer in passing, is changes in the blood itself as found in certain conditions and diseases such as pregnancy and disease of the kidneys, — diabetes, etc.

The essential dynamic force of the circulation is found in the cardiac muscle, and its functional arrest from whatever cause constitutes death.

Among causes affecting this muscle directly are fatty overgrowth or an excessive and morbid deposit of a dispose tissue in and upon the heart.

Fatty or fibroid degeneration of the muscle fibers, as seen in a variety of diseases, as arteriosclerosis, renal sclerosis, syphilis, etc., will not infrequently be found to have been the cause of sudden death.

Endocarditis, with its resulting valvular changes, and pericarditis, with effusion or adhesions, are among the important lesions which may produce few or no symptoms and end in sudden death.

Of the lesions of the blood vessels, arteriosclerosis probably causes sudden death more often than any other. This degenerative condition of the coats of the arteries, sufficiently suggested by its name, generally begins at the arch of the aorta and may then spread so as to involve the whole arterial system and is especially significant and dangerous to life in the arteries of the brain and kidneys.

The fragility of the arterial walls resulting from this condition may result in aneurism or rupture of the aorta, or in a thrombosis or rupture of the basilar artery of the brain, in either case causing sudden death. But it is probably in this condition of arteriosclerosis of the coronary arteries of the heart, resulting in angina pectoris, that we get a larger number of sudden deaths than in any other single lesion of the whole body.

I think that not less than 7 out of my 35 cases of death ascribed to the heart were from this cause, and this statement is substantiated by the large proportion of males, 25 to 10, for out of my experience with true angina in practice not medico-legal, I can recall but one female which is in accordance with the literature upon this most distressing and fatal ailment, Heberden, out of 100 cases, reporting but 2 cases in females, all the others being men above fifty, of which 70 died suddenly.

In estimating causes of sudden death, thrombosis and embolism of the pulmonary artery are not to be overlooked, and the causes liable to produce this accident, as the pregnant or puerperal state, varicose vein, etc.

In the two autopsies made by me in cases of sudden death, the first illustrates well conditions not infrequently found in persons presenting no positive symptoms of illness and yet dying suddenly.

L. B., aged sixty, doing business in a town some 50 miles from his family living at Shelburne Falls, came home to spend Thanksgiving Day with them. He ate a hearty dinner, after which he attended a ball game, and went from the field, climbing something of a hill, to the station, where he took the train. Within five minutes after leaving the station the conductor came through collecting tickets and found Mr. B. lying back in the seat dead, nothing having occurred to attract the attention of his fellow passengers.

At the autopsy, the cardiac valves were found competent, but the walls of the left ventricle thin and dilated, with the muscular fibers so degenerated that they could be easily torn through. The coronary arteries were thick and hard, with some branches occluded. The aorta was hard and rigid. The kidneys together weighing about 7 oz. were hard, with adherent capsules and a few small cysts. The stomach contained a large quantity of undigested food.

The second case, a young woman of twenty-one years, of not good reputation, came home to her rooms in company with a young man from an adjoining town on a late evening train. A few hours later, in the early morning, the young man summoned a physician living near by to attend the girl who, he said, was in great distress. On reaching the house he found her in collapse, and she expired within an hour.

Finding blood stains about her clothing and bed, the doctor rightly viewed the case a medico-legal one, and it was placed in my hands for investigation.

At the autopsy, no important pelvic lesions were found. The dilated vagina contained considerable fresh blood, uterus perfectly normal, with a recently ruptured graffian follicle in one ovary, indicating normal menstruation. The mitral and tricuspid valves were thickened, rigid and incompetent. The right side of the heart was distended with a soft blood clot and the pulmonary artery filled with a clot of somewhat firmer consistency. The lungs were perfectly engorged with blood, indicating that death had resulted from cardiac and respiratory failure. The physician called, who assisted me at the autopsy, stated that her symptoms were indicative of severe pulmonary congestion with cardiac failure. In this case, also, the stomach was found distended with undigested food, taken some time during the night.

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"THE QUEEN'S CLOSET OPENED." *

BY GRACE WHITING MYERS,
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THE title of this volume easily lends itself to fancy, and brings up a vision of a half-open door through which come glimpses of gorgeous robes, and flitting in and out are dainty ladies-in-waiting, fetching silks and satins, velvets and laces, jewels and ermine, with which to deck a daintier queen.

Truth confirms fancy in one point, for this "Queen" was dainty. She was petite, and she was beautiful, fair of face and with curling hair, graceful and with charming manner, and she possessed a wonderful voice and sang most admirably. She was Henrietta Maria, daughter of Henry IV of France, and sister of Louis XIII, who, at the age of eighteen, became the queen of Charles I. Her royal husband loved her devotedly, and among her household were some who remained strongly attached to her even after her youth and inexperience had led her into errors disastrous to the king, and compelled her to flee to her own country. The compiler of the little book before me was probably one of these.

The first edition appeared in 1656, and its preface states that these receipts were originally collected for her "distressed Soveraigne Majesty the Queen"; that they had been "laid at her feet by Persons of Honour and Quality"; and that the compiler, who "fell with the Court" when the queen fled to France, gave these receipts in print to her friends as a reminder of their absent queen, and as a satisfaction to himself since he could no longer render her any other service. He signs himself "W. M.," but his identity remains a mystery. The preface of the second edition, addressed "To the Ingenious and Courteous Reader," calls attention to the benefit received by many from these receipts, and to the esteem in which the book has been held by all who bought it, and that they cannot "chuse but . . . give it a new Birth." The compiler here mentions that the book is "not without its Variety; here preserving the Fruits of the Earth with such a curious neatness, as if it would show that though Summer gave those pleasant Fruits, yet that Art is able to make Winter richer than herself."

The book is in three parts, the first called "The Queen's Closet Opened"; the second, "The Queen's Delight"; and the third, "The Compleat Cook." Mrs. Alice Morse Earle, in her book called "Customs and Fashions," makes copious mention of "The Queen's Closet" in a chapter called "Doctors and Patients," and I am greatly in debt to this chapter for much information and suggestion. I know of but one other mention of it: Agnes Strickland, the historian, states that copies of the volume are exceedingly rare in England, but a few are to be found here and there through New England. The one belonging to the Treadwell Library came with the collection of books given by Dr. Treadwell, of Salem, Mass., which collection formed the nucleus of the Library. On the last page, written at the bottom, and upside down, is the name of Sarah Bruce, probably once its owner. It is the second edition, "corrected and revised, with many new and large Additions," and was printed in 1671. It must have done faithful duty in its day, for one cover is gone, the other much worn, and its back is broken. Looked at from without, it has rather a dejected air, but one glance within will court another, and prove that its contents are well worth a brief consideration.

This combination of leechcraft and cooking was not at all uncommon in early days; a large number of cook-books of the seventeenth and eighteenth centuries were written by physicians. In fact, it was necessary for a physician to be a good cook, for did he not have to brew his own concoctions?

The first part, called "The Queen's Closet," contains many strange and curious remedies, largely for the diseases of the day, and they were contributed by kings and queens, lords, ladies and bishops, the Lord Mayor, and the Lord Treasurer, to say nothing of noted physicians and chirurgeons. There are many cures for the plague, which several times during this particular century raged in London. Here is one, called "A Drink to drive the Plague from the Heart."

"Take a great Onion, cut off the top of it, and take out so much of the core as the bigness of a walnut, which hole fill up with Treacle, put on the top again and wrap the Onion in a piece of brown or gray paper, rost it throughly, and peel it, and trim it finely, and put it in a clean linnen cloth, and strain it hard into three porringers, and drink the juyce so strained out: For it hath been found most excellent by often proof, not only for the expulsion of the Plague, but also the eradicating of all poison and Venome."

There is "Dr. Read's Perfume to smell against the Plague", and there is another "Perfume against the Plague" which is "to burn Tar every morning in a chafing-dish of coals." Numerous remedies for smallpox appear, and for the "collick"; there are directions how "to chear the heart," "melancholly to suppress," and the "heart's passion to take away." The cures for consumption, in the light of twentieth century treatment, are most interesting. There is "a special Water for a Consumption," the groundwork of which consists of "a peck of Garden shell snails washed in small Beer, put into a great Iron dripping pan, and set on the hot fire of Charcoals, and kept constantly stirred till they make no noise at all"; then other equally interesting ingredients are added, and finally, three gallons of strong ale are poured on, and the result is distilled and put away in "close Glasses." The patient must take six spoonfuls of this every morning fasting, and not sleep after it, and must continue to fast for two hours subsequent to the dose. It must have been a difficult matter to keep awake after this, even though taken early in the morning. Another more precious remedy is called "Dr. Gifford's Amber Pills for a Consumption," for into this are mixed "powders of Pearl, White Amber, and Coral, of each a quantity." It is noticeable that measures are not always made with exceeding accuracy, nor administered with exactness; as, for instance, "a good draught", "a pretty draught", "as much as will lie upon the point of a knife", "one little handful", "as much as a walnut", "as much as half a nut at once, at your pleasure", "the weight of three barley corns", "the weight of sixpence", "as much as will lie upon a shilling". Time will not permit the quotation of many of these receipts, but one or two of the shorter ones will be interesting. Here is something "For one that hath no Speech in Sickness.

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*Read at the twelfth annual meeting of the Medical Library Association, held in Washington, D. C., on May 12, 1909.

"Take the juyce of Sage, or Pimpernel, and put it in the Patient's mouth, and by the grace of God it shall make him speak."

And here is "An Electuary for the Passion of the Heart.

"Take Damask Roses half blown, cut off their whites, and stamp them very fine, and strain out the juyce very strong; moisten it in the stamping with a little Damask Rosewater, then put thereto fine powder Sugar, and boyl it gently to a thin Syrup; then take the powders of Amber, Pearl, and Rubies, of each half a dram, Ambergreece one scruple, and mingle them with the said Syrup till it be somewhat thick, and take a little thereof on a knives point morning and evening."

This is another instance of the use of jewels as a compound. Frequent mention of them is found, and gold was also used. It is likely that the poor had to be supplied with less expensive cures for their ailments.

You may learn here "To make Golden letters without gold", and "To make Silver letters without silver". If you are suffering from insomnia,

"Bruise a handful of Anniseeds, and steep them in red Rose-water, and make it up in little bags, and bind one of them to each nostril, and it will cause sleep."

If you would "make your Face fair",

"Take fresh Bean-blossoms, and distil them in a Limbeck, and with the water wash your face."

The second part of this book is called "A Queen's Delight, or, the Art of Preserving, Conserving and Candying. As also a right Knowledge of making Perfumes, and Distilling the most Excellent Waters." It is divided into eight parts: the first, called Preserving, is devoted, as stated in the preface, to shewing that "Art is able to make Winter richer than herself," for the housewife may learn such secrets as will enable her to keep fresh all sorts of fruits, from green walnuts and apricoks to plums, grapes and quinces; she may make syrups both bitter and sweet; and perfumes to put among her linen; and wines to put away "close stopped in glass pottles." Here is a rule for a "Conserve of Rosemary flowers after the Italian manner.

"Take new Rosemary Flowers one pound, of white sugar one pound; so beat them together in a Marble Mortar with a wooden Pestle, keep it in a galli-pot, or vessel of earth well glassed, or in one of hard stone. It may be preserved for one year or two.

"The Vertues: It comforteth the heart, the brain, and all the nervous part of the Body."

In view of said "vertues," let all librarians give this a trial.

The second division is sweet with Candies, candies made for the most part of all kinds of flowers, from violets to peonies. These are dried in the oven, then pounded to a powder, and mixed into a clear syrup, which is allowed to cool and harden. The third division is Marmalets and Quiddony; the fourth, Pastry and Pasties; the fifth, Pomanders; the sixth, Wine; and the seventh, "Choice Secrets made known." Here you may discover the mysteries of Queen Elizabeth's perfume, and the compounding of a famous dentifrice popular with the royal household, which, if it be desired red, has mixed with it a pound of powdered brick, but if white, then a pound of powdered alabaster. We find here "A water for a consumption, or for a Brain that is weak." The cure for one apparently served equally well for the other. Then there is "Water of Time for the Passion of the Heart." This seems to have been a condition sufficiently serious to require special prescription. Let us hope that the white wine and sack, the cloves, mace, ginger, and grains of Paradise served to quell the wild beatings and heart tumults of the day. Black hair must have been a fashion of the time, for here is a compound "to make hair grow black, though any color." If you would write letters of secret

"Take fine Allum, beat it small, and put a reasonable quantity of it into water, then write with said water.

"The work cannot be read, but by steeping your paper in fair running water.

"You may likewise write with Vinegar, or the juyce of Lemon or Onion; if you would read the same, you must hold it before the fire."

The eighth division is called Distillings, from which I quote one rule for "Pain in the Head."

"Take Marigold flowers, and distill them, then take a fine cloth and wet in the aforesaid water, and so lay it to the forehead of the Patient, and being so applied let him sleep if he can; this with God's help will cease the pain."

The last part of this little old book is called "The Compleat Cook," and here are indeed dishes "fit to set before the King." I find no pies made of blackbirds, but a receipt containing twelve larks and four young chickens, not to mention many other tempting ingredients, sounds quite equal to it, and surely would grace a royal banquet.

Let your eye run down the columns of the index, and you will find dishes suitable for all times of the year. In January, learn to make Creame with Snow; in February, perhaps you might try a Steak-pye with a French pudding in the pye; in March, you must have a Marchpane, iced and gilded, and garnished according to Art. In April, make a Gooseberry Fool, and make scalding Cheese towards the latter end of May; in June, you would relish Lozenges of Red Roses; and in July, a Cherry Cordial. In August, you may like to boyl a Pike and an Eele together; and in September, the first month with an "r," you will rejoice to roast oysters. In October, make a Partridge Tart; and in November, for your Thanksgiving dinner, have a dressed Pike, a roast Fillet of Beef, a fat Lamb made of a Pig, a Pidgeon pye, a Sallet of a cold Hen or a Capon, and all washed down with the Ale of Health and Strength, or a Cordial Water of Sir Walter Raleigh; and then a Pumpion pye for dessert. And last of all, in December, you must make your minced pyes for Christmas.

And now, at the end, I can do no better than quote the motto which is found at the bottom of the title-page of this little volume: *"Vivit post funera virtus."* It may have been intended for the gracious queen herself, but at least some of the "vertues" contained in these pages live to-day.

Clinical Department.

A GUNSHOT WOUND OF THE HEAD AND A STUDY OF THE BULLET.*

BY CHARLES W BARTLETT, M.D.,
Associate Medical Examiner, Marshfield, Mass.

ON the 11th of December, 1905, about 5 o'clock in the morning, I received a telephone message saying that a prisoner had been shot and had died at the Hingham Police Station, and, as Medical Examiner Spooner was away on his vacation, my services as associate were needed at once.

I took the first train and arrived at the police station at 7.30 A.M.

I found the body of a man about 5 feet 7 inches in height lying on a cot in one of the cells, and was given the following history by the police officer who met me at the station: The prisoner had been drinking heavily all the previous day and, having threatened his wife, she had sworn out a warrant for his arrest.

When the officer arrived at the police station with the prisoner he found the door locked and while he was unlocking the door the prisoner turned and ran. The officer commanded him to stop and, as he did not do so, fired off his pistol in the air. The prisoner continuing to run, he commanded him a second time to stop, and as he did not, the officer fired his pistol a second time, as he supposed at the ground. At the second shot the prisoner fell forward on his face. When the officer overtook the prisoner he found him bleeding from a wound in the head, from which he died at the police station, where he was taken, five hours afterwards. On my first examination I found multiple wounds of the face, evidently punctured wounds made by falling on the ice. I found also a ragged bullet wound through the skull into the brain. I ordered the body removed to an undertaker's room, where I performed an autopsy at 4.30 that afternoon, assisted by Dr. Gilman Osgood, of Rockland, and Dr. Samuel Spaulding, of Hingham.

Besides the usual appearances after death, there were various abrasions of the skin, showing that this was not his first debauch.

On examination of the wounds of the face we found an irregular and ragged wound of the nose corresponding in length to the nasal bones, and the nasal bones were fractured. There was another wound over the left side of the lower maxillary bone extending to the bone, and still another over the right eye about 1 inch long, also ragged, and several other smaller about the face.

On examining the scalp we found a penetrating wound 5/16 inch long a little to the right of the median line and 1½ inches posterior to a line drawn over the scalp from ear to ear; also a penetrating wound ¼ inch in diameter situated 1½ inches posterior to the wound just described. A probe passed through one wound emerged from the other. The posterior wound was found to have been made by a bullet, and the anterior was supposed to have been made by a splinter of bone. On removing the scalp a blood clot 3 by 4 inches was found underlying the last two described wounds.

The posterior wound was found to be continuous with an opening in the skull 5/16 inch wide by ½ inch in length. This opening was found to be in the right parietal bone 1½ inches superior to the squamous portion of the temporal bone and 3½ inches posterior to the frontal bone. On removing the calvarium the inner table of the bone showed greater injury than the outer, the area of its destruction being ⅞ inch wide by 1 inch long. The dura mater presented a wound 1½ inches long corresponding with the hole in the skull. An examination of the brain showed that the bullet had passed forward and slightly downward through the entire length of the right hemisphere. The wound through the brain easily admitted the index finger and was filled with small pieces of bones. The wound extended to the anterior portion of the right hemisphere, where the bullet made its exit through the first and second frontal convolutions in close proximity to the right orbital plate of the frontal bone, where the bullet was found resting on the orbital plate, which was slightly fractured by a triangular fracture, the base of the triangle being ½ inch in length.

The bullet which passed through the skull and the entire length of the brain was supposed by the police officer to have been fired in the direction of the ground. An examination of the ground where the accident happened was made at my first visit in the morning. I found the ground covered with from 2 to 3 inches of snow and ice, as it had snowed and rained the previous day and then frozen that night. The snow was cut with wheel tracks and frozen into a very rough surface. The distance from the door of the police station to the spot where the prisoner fell, as shown by blood on the ice and snow, was about 240 feet, and the grade about 3 feet rise in 100.

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*Read before the Massachusetts Medico-Legal Society, Oct. 7, 1908.

In studying the bullet, there are several things to be considered: The forward motion or velocity of the bullet, the rotation, the heat and impact against the bones of the skull. The initial velocity of a bullet fired from a small revolver is about seven hundred feet per second, the bullet making a complete rotation in every 10 or 12 inches in an axis parallel to the line of motion. The heating of the bullet is caused by the ignition of the powder, resistence of the barrel, and the impact of the bullet against the skull, etc. As a result of these several forces we find a certain amount of deformity of the bullet, either breaking it up into an irregular mass or smashing the conical end into more or less of a mushroom appearance. The bullet which I found in the prisoner's head, and which I have presented you for examination, we find broken partly into an irregular mass and partly of a mushroom appearance due to impact against the bones of the skull. We find also on one side a flattened surface crossed longitudinally by six or eight nearly parallel lines, and to the right a similar but smaller surface with a ragged notch in between. Were these surfaces caused by grazing the bones of the skull or from the bullet glancing from the icy roadway as the officer claimed?

Would any marks upon the bullet or any bullet justify a medical examiner in declaring that the bullet had been deflected from some object before reaching the victim?

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A POLISH MURDER.*

BY CHARLES A. ATWOOD, M.D.,
Associate Medical Examiner, Taunton, Mass.

Sept. 22, 1907, the dead body of J. C. was viewed by me at 3.20 A.M. in the rear of 32 Jackson Street. The body, clothed, was lying on back about 12 feet from corner of a bake-shop, in a cow shed. There was a pool of blood at the corner of the bake-shop. An autopsy was performed at 10 A.M. There is a large effusion of blood in the skin the size of the palm of the hand over the left clavicle, slight bruise over the sixth and seventh left ribs, small wound ½ inch in length over right side lower jaw, three wounds below the outer angle of the right eye. There is profuse bleeding from the right ear. There are three cuts or wounds on the back of the head respectively 1, 2 and 3 inches in length. There is extravasated blood beneath the right temporal fascia, dura, arachnoid and pia, and between the convolutions of the brain. There is a compound fracture of the petrous portion of the temporal bone extending into the occipital fossa through posterior fossa into the foramen magnum. The fracture is rendered compound by one of the cuts on the back of the head and right ear. The fourth, fifth and sixth ribs in left axillary line are broken. There is extravasated blood in the anterior mediastinum. Stomach empty; other organs normal. The man died from cerebral injury following fracture of the skull. Around the neck is a strip of cloth with the remains of what may have been a bag. Nothing was found in this piece of cloth.

J. C., a baker, is said to have been a law-abiding citizen, and an honest man. During the day he had attended to his business as usual and nothing was known of the murder until a Pole, who owned the property, 32 Jackson Street, notified the police. This man said he went out to see how his cow was and found the body of J. C. This evening there was a Polish wedding, and a number of people were at 32 Jackson Street, where they were to stop for the night. The police suspected the man, and he, with fourteen other Poles, were carted to the police station. J. C. was known to have a sum of money which he carried in a bag around his neck and which was missing at the time of his death. No weapon was found which could have caused the fatality until a police officer, after several days' hunt, unearthed a small cleaver in the cellar, and the town dog officer, who often finds things, a knife in a neighbor's garden.

My opinion was that death ensued as the result of an attack by a person or persons upon the body of J. C. with a blunt ponderous instrument. The chief of police, after several days, notified me that he had a "find," and submitted a shirt and knife found by dog catcher in neighboring garden, and cleaver. He also stated through his glass he could see blood on the cleaver. I informed him that I would gladly have Dr. Whitney examine specimens, he demurred, but after some time requested that I do so. Dr. Whitney reported that there was not the slightest evidence of any blood upon any articles submitted for examination. The case came to trial and the assistant district attorney told the police properly that he had no evidence to hold the man.

This case, a Polish murder, does not probably differ much from many other murders among our foreign citizens (in fact, nearly like the classical Chinese murder). The people are clannish and it is very hard to get any evidence.

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THE MURDER OF LUDWYK KUBEAK.*

BY HORACE K. FOSTER, M.D.,
Medical Examiner, Peabody, Mass.

The subject of this report, Ludwyk Kubeak, was a Russian Pole, nineteen years of age, who had lived, as it was reported to me, about one year in the United States, most of that time in Peabody, where he was employed as a laborer in the bleachery.

His employer classed him as a very thrifty, industrious, quiet and frugal young man, always temperate, willing, and ready to do his work well, and often working overtime in order to earn more money — and for that reason was sometimes taunted by his fellow-workmen, and accused of sitting up late at night to count his money.

The first that I had ever seen or heard of the man was on the forenoon of Jan. 11, 1908.

As I was riding along the street on that forenoon, at about ten o'clock, I was hailed by a police officer and asked to go to a field about half a mile away, where some boys had found the dead body of a man, supposed to have been murdered. I drove at once to the designated spot and found an officer in charge of the body and a collection of men, women and children who had gathered from the neighborhood, anxious and eager to see all that could be seen and to hear all that any one might say.

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*Read before the Massachusetts Medico-Legal Society, Feb. 5, 1908.

*Read before the Massachusetts Medico-Legal Society, Feb. 5, 1908.

The place where the body lay was just beside a cart path leading back from farm buildings into the fields and pastures in the rear, and on the back side of a small rocky knoll, about twenty or thirty rods back from an area including a part of the farm which had been cut up into streets and was well built over with houses; probably there were nearly or quite one thousand people living within sight and hearing of the place where the body lay.

The body had been found by boys who were skating on a near-by brook, and was soon recognized by some of those who gathered there as that of the young Pole whose name I have given. He had boarded for some months at a house almost in sight of the place where his body lay, with a family, the head of which claimed to be his first cousin.

On Thursday, Jan. 9, he had been at his regular work all day and on Thursday evening was reported to have been at his boarding place writing a letter until about nine o'clock, he then went out to a near-by Polish store where he made some purchases and remained talking for some time and then went back to his boarding place, got some money which belonged to him and again went out alone about ten o'clock in the evening, saying as he went away, " If I don't turn up by midnight look for me at the police station." There was reported to have been a social gathering of some sort that evening at his boarding house, drinking and some carousing, and his cousin, the keeper of the house, said that Ludwyk left the house to avoid the company and the drinking, as he did not drink at all.

The body when seen by me lay at full length upon the back, arms extended above the head but not resting upon anything, hands clenched. Body was warmly dressed in clean, neat suit and overcoat and light-weight dress vici shoes; had on fleece-lined tan-colored kid gloves and no hat on his head, the gloves, the whole of his face, front of the coat and pants were smeared and spattered with blood. There were no indications of resistance or a struggle, either about his person or upon the ground around where the body lay.

There were two patches of coagulated and frozen blood just at the right of the body as it lay, one corresponding to the location of the head and the other to that of the pelvis; there was estimated to have been a pint or more of blood in the two spots. It would appear as though the body lay face down while the bleeding was going on and was then turned over upon the back as found.

The battered and broken black derby hat lay on the ground on the right side of the body. The clothing was not much disturbed except that the overcoat and under coat were unbuttoned, all but the upper button, the front of the pantaloons were cut across by some sharp instrument, the penis was cut off close to the body with some sharp knife apparently with one sweep, and was frozen on to the inside of the hat, the scrotum was cut away, leaving the testicles exposed on all sides, the pieces of scrotal tissue were ground into the dirt and so coated with frozen dust as hardly to be recognized. The body was very rigid and the arms and legs were frozen.

The body was removed to the undertaker's, and at three o'clock of the same day, Jan. 11, an autopsy was done which revealed a comminuted fracture of the right side of the skull most marked in the temporal region and at the outer angle of the right eye; at that part of the skull the loose fragments of bone could be easily removed by the fingers. Some of the smaller fragments were embedded in the inner side of the scalp and some were driven into the substance of the brain; there was a large area of infiltration of blood on the right side of the head between the scalp and the skull, and the dura mater was wounded, but there were no clots of any size in the brain substance.

The area of violence could be easily made out on the skin on the right side, and the point of greatest violence was at the outer angle of the right eye.

There was a small punctured wound on the bridge of the nose which would admit closed dressing forceps into the right nostril.

There were no other lesions of importance found upon the body, no finger marks and no abrasions which would indicate any resistance or a struggle.

The heart, lungs, liver, kidneys, spleen, stomach and bowels were all carefully examined and were apparently those of a man in perfect health, the stomach contained a small amount of liquid and no solids. The body measured 5 feet 10 inches, and was estimated to weigh 170 pounds, was well developed and muscular.

He is reported to have kept company with a young Polish girl, seventeen years of age, who lived at a house where the murdered man formerly boarded, but it is said that they had quarreled and had not been seen together during the last two months.

But one of the night police claims to have seen them the Thursday evening in question, at about ten o'clock, walking towards the place of the murder, and another night officer says he saw five foreigners which he believes to have been Poles going in the same direction, a little later in the evening.

The murdered man was claimed to have worn a belt containing $136.00 when he left his boarding-house, on Thursday evening, and he also had on a gold hunting case watch in a rubber outside case. Nothing has been found indicating where the money or the belt went to, but the rubber outside case of the watch was found near the body, and the gold watch and chain were found wrapped in a quantity of brown manila wrapping paper, on the sidewalk of the street where he once boarded, about a week after the time of the murder. It lay in plain sight of all who passed on the street and must have been placed there shortly before it was found.

A green birch stick about two feet long and two inches in diameter, with a well-formed handle whittled out on one end, blood stains and hair on the other end, was found by some boys not far from where the body was found. The young girl before mentioned is not under arrest, and three men living in the same house with her have been arrested but allowed to go on account of lack of evidence against them.

The murderer is still at large after a lapse of three weeks, and if long service as medical examiners has developed detective ability in any of the members here present, any suggestions will be gladly received and reported to the state officers and local police who are working to obtain evidence sufficient to arrest and later to convict the guilty party.

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FARMERS AND TUBERCULOSIS.— At the farmers' meeting at Landenberg, Pa., Aug. 27, 5,000 people were in attendance. The important phase of the gathering was the launching of the antituberculosis campaign for pure milk. The meeting was addressed by dairymen, physicians and educators from various parts of the country. — *Jour. Am. Med. Asso.*

Medical Progress.

REPORT ON THE PROGRESS IN ORTHOPEDIC SURGERY.

BY E. H. BRADFORD, M.D.

ARTHRITIS DEFORMANS AND THE SO-CALLED RHEUMATISM OF THE JOINTS.[1]

THE writers have published a series of anatomical studies based on skiagrams for the purpose of defining the polyarthritis in distinction from osteo-arthritis deformans, primary chronic, destructive, progressive arthritis, arthritis deformans, secondary chronic rheumatism of the joints. The anatomy of chronic polyarthritis and the differential diagnosis of the different forms of polyarthritis form chapters of the article.

Arthritis deformans and primary chronic progressive arthritis and secondary chronic rheumatism of the joints can be distinguished by anatomical differences. In arthritis deformans the synovial membrane is rarely affected with proliferating fringes and the development of new vessels; the anatomical changes are more such as are seen in traumatic arthritis.

Primary chronic polyarthritis attacks the synovial membrane early and there are marked fringes and development of vessels with a collection of cells in the adjacent fibrous tissue resembling a highly inflamed process suggesting infectious arthritis. The cartilage in primary chronic polyarthritis is little affected, even in advanced stages; the contrary is seen in arthritis deformans — the latter is characterized by early destruction of the cartilage.

THE OPERATIVE TREATMENT OF STIFF JOINTS BY BONE TRANSPLANTATION.[2]

Lexer writes that operation on stiff joint consisting of the placing of a membrane between bones results in partially stiff joint or in a weak joint, through the object desired is to develop a normal joint as far as is possible. The writer has transplanted, in a resection of a stiff and distorted knee-joint, the whole knee-joint of a freshly amputated limb. The result was complete healing, with motion at the joint, though owing to the stiffened condition of the muscles of the deformed limb, the functional use of the limb was not as great as might be expected later and would be improved by muscle transplantation.

In other cases, where large portions of bones were removed from the tibia and humerus, transplantation of portions of bone with periosteum taken from an amputated limb were used. In these cases, where the muscular tissue was less injured, good motion was gained.[3]

COXA VALGA AND ITS VARIETIES.[4]

The writers define coxa valga as an affection of the hip which is characterized by a valgus position of the whole lower extremity and an abnormal direction of the neck of the femur. The varieties are hyperflexion of the neck — hyperflexion combined with anteversion or retroversion. Twenty-five cases are to be found in the literature where the inclination of the femoral neck was measured with variations from 130 to 180°, the normal being 128. Thirteen specimens of bone in the Musée Dupeytren are described with a variation from 140 to 160°.

The writers consider that there is a congenital variety combined with congenital dislocation of the hip, an acquired variety without osteomyelitis, achrondroplasia, osteomalacia, rickets and tuberculosis after a fracture of the neck, traumatic separation of the epiphysis, a static form following scoliosis, ankylosis of the knee, amputation, genu valgum, club foot, after paralysis and long confinement to bed.

The treatment in the early stages is immobilization in abduction and inward rotation. In the severer cases it is subtrochanteric osteotomy.[5]

COXA VARA.[6]

The limitations of motion of the thigh on the pelvis are as follows: Internal rotation, hyperextension, diminution of flexion and an association of a certain amount of rotation with flexion. These modifications may be due to cartilaginous and osseous changes or to alterations in ligaments or of the muscles.

The writer is of the opinion that the alterations in the ligaments are of more importance than has been supposed, and describes an interior ischio-femoral ligament which is of importance not only in coxa vara, but also in congenital dislocation of the hip.

TRUE DISLOCATION IN THE COURSE OF COXALGIA.[7]

The writers in reporting a few cases generalize as to the pathology of these dislocations.

The cause, according to these writers, is partly a degree of muscular contraction, or the thickening of the intra-articular tissues, but the chief cause is the softening of the capsule and fibrous cartilage and tuberculous infiltration of the capsule.

The dislocation is spontaneous and in one case showed the typical symptoms of sudden dislocation. In the majority of cases, however, the dislocation is more gradual. The displacement occurs without attention having been called to it and is only discovered by the presentation of physical signs characteristic of luxation, as if the displacement had taken place progressively without being noticed. The head is always upwards, but it may be more or less forward or backward. External rotation of the limb is characteristic in the majority of cases, apparently owing to the seat of the capsular lesion.

In the majority of cases the capsule is attacked in its totality and yields to the weight of the limb, which is rotated outwards. If the capsular lesion is limited to the posterior portion of the hip, dislocation may take place, but Bigelow's ligament, preserved in part, holds the limb in internal rotation. The external rotation is usually very pronounced.

Kirmisson has shown the possibility of reduction of these dislocations in the early stage of coxalgia. This reduction is usually not difficult and in some cases can be maintained. This should be done with precaution, as in one instance suppuration was caused by the attempt at reduction. The writers think that if the luxation is recent and can be reduced by light traction, with light abduction and with a slight pressure on the trochanter, this can be done with safety.

The conclusions of the writers are as follows:

True dislocations in hip disease should not be reduced if suppuration is present. In the reduction violence should not be used.

THE TROCHANTER SPINAL LINE.[8]

The last six years the writer has utilized a simple method for the determination of the situation of the great trochanter. The patient lies upon the back, a line is drawn which, passing from the great trochanter over the anterior superior iliac spine, is prolonged to the median line, but there it divides this at a variable point in different subjects, sometimes a little above and sometimes a little below the umbilicus. Normally the lines from each side strike the median line at the same point and form a symmetrical figure. If this does not occur, one of the trochanters is higher. The measurement is of no value if both hips are equally affected.

This method has an advantage over the Rosêr Nélaton line in that there is less likelihood of error.

TENOTOMY OF THE ILIOPSOAS MUSCLE.

This operation, first performed by Sargent, of Worcester, has been recently performed by Walzberg[9] through an oblique incision at the outer border of the sartorius, a short distance below the anterior superior spine. The sartorius sheath is divided and the muscle pulled toward the inner side and a portion of its sheath cut. The middle border of the rectus femoris is divided by a blunt dissector and the profunda is found, which must be divided and ligated with double ligatures. The trochanter minor is then found and the iliopsoas tendon can be divided.

Strict asepsis is necessary and attention to drainage, as the wound is deep.

Anzoletti[10] recommends a modification of this operation with less danger and less difficulty. The finger is passed into the fold between the adductor minimus and the quadratus femoris. The adductor minimus and the quadratus femoris are pulled apart and their insertion in the region of the trochanter is laid bare. The tendon can be cut across or by means of a curved osteotome. The trochanter minor can be separated, using an osteotome from the diaphysis and then separated from the psoas tendon by dissection. The advantage of this procedure is that the incision is made on the convex side of a contracted hip-joint, is more easily done and gives better drainage and the operation is freer from danger, as the nerves and vessels can easily be avoided.

SNAPPING HIP.[11]

Brunn has studied the literature and concludes that the origin of the affection is congenital and due to a defect in the capsule. In the case reported there was a swelling in the neighborhood of the trochanter which could be moved forwards and backwards. This swelling passed with a snapping noise under a band of fibrous character. This should be removed by operation. The symptoms are pain and impairment in gait.

Horand[12] has collected certain cases characterized by a distinct click at the hip, audible on walking, but there was no actual lesion nor anatomical abnormality. The snapping occurs at the instant the great trochanter passes beneath the fibers of the gluteus maximus. This has been confirmed twice by exploratory operation. The sound is usually preceded by forced abduction and external rotation.

In severe cases an operation recommended by Beyer can be performed. The anterior border of the gluteus maximus is freed and the tendon and lower portion of the muscle is divided and they are sutured in front and behind the trochanter, partly to the periosteum and partly to the aponeurosis.

VOLKMANN'S ISCHEMIC PARALYSIS.[13]

The writer presented a four-year-old child where, after fracture of the humerus treated by plaster bandages, marked abscess on the lower arm had developed. Gradual deformity with the claw hand presented itself. After thirteen months of massage the radial nerve was laid bare at the site of the fracture without result and the flexor tendons were dissected out and isolated. Later, a resection of the ulna and radius to the extent of two centimeters was performed, allowing dorsal flexion of the hand and stretching of the fingers. The bones were united by aluminum rods eight months after the operation. Bending and stretching of the hand and fingers gradually improved.

The writer has collected 59 cases from the literature; 80% of those were due to an unnecessarily tight plaster bandage. The beginning of the paralysis is always rapidly increasing swelling; cyanosis, a bending and contracting of the fingers and hands, shortening of the bone, or lengthening of the flexor tendons are to be considered. The writer prefers the first method. Blake has used this method in 3 cases.

VOLKMANN'S PARALYSIS.

Perchaud,[14] after a careful study of the subject, prefers tenoplasty of the flexor tendon as a method of treatment. He has made some animal experimentation as to the cause of this affection and finds that ligature of the arteries has not produced paralysis, but is followed by gangrene. An elastic ligature applied to the upper portion of the limb has developed this condition in 4 cases in which the experiment was made. A cicatricial sclerosis of the muscles was found to have been developed with an increase of the connective tissue, the perimissium being as thick as the muscular fibers. There was no striation of the muscular fibers, either transverse or longitudinal, but they became grandular as if decomposed in a number of the smaller blocks colored yellow by picrocarmen.[15]

SURGICAL TREATMENT OF INFANTILE PARALYSIS.[16]

The writer speaks of tenotomy, arthrodesis and tendon transplantation, regarding the method of Lange, i. e., the implantation of an active tendon upon a new point in the bone, as a great advance. The writer has had no result from the transplantation of the peroneus longus on the tendo Achillis in calcaneus. Transplantation of the sartorius or of the ham-strings into the quadriceps give active motion in one half the cases.

In the upper extremity the writer has, in 4 cases, transferred the head of the triceps on to the biceps with result. In 5 cases of paralysis of the radialis he has gained a dorsal flexion of the hand by lengthening the tendon of the flexor carpi radialis and ulnaris by means of silk and inserting them into the base of the second and fourth metacarpus.

The writer has attempted grafting of the nerves in a number of cases. Paralysis of the deltoid was diminished by a splitting of the fifth root of the cervical nerves and a grafting of one half of the peripheral end of the sixth cervical root. He also gained in 2 cases of calcaneous improvement through the activity of the gastrocnemius and soleus through a nerve anastomosis, but he thought that the field of usefulness of nerve transplantation was very limited.

Lange [17] is also in favor of the tendon transplantation, though he thinks that the method has less supporters than formerly, but he considers that careful study of the indications, accurate selections of operations and skilled and patient after-treatment are necessary. Electrical investigations are of little importance.

The operation should not be done before the fifth year. Correction should be accurate and the osteotome is to be resorted to if necessary. Great accuracy and strict asepsis are absolutely necessary. The patient should be kept in bed from four to six weeks after the operation with plaster bandages and three months later apparatus should be employed.

Tilanius is in favor of arthrodesis in complete paralysis of the shoulder; tendon transplantation is to be used in partial paralysis. Tendon fixation can be employed in extensive paralysis of the foot, the knee and the hand.

Breeman considered the physical therapeutics were of great value and De Smidtt thinks that apparatus is of assistance.

Samter, after eight months' lack of power of the deltoid, following luxation of the humerus, transplanted the clavicular portion of the pectoralis major, and nineteen days after the operation the patient could utilize the newly formed deltoid. At present the arm is active to an extent of 40°.

Lexer,[18] in considering the case, would suggest that a transplantation of the process is to be preferred.

CALCANEUS SPURS.[19]

Certain authors describe an anomaly of the calcaneous spurs developed under the influence of muscular or ligamentous traction which distort the posterior epiphysis. Haglund admits that these projections are at the point of traction of the muscles, but he does not consider that they have any relation to the epiphysis, which is much more posterior. He considers that these projections are of the same nature as those which develop at the points of implantation of ligaments and tendons elsewhere, similar to those seen in arthritis deformans in different bones.

The indication is removal of the spur, but patients do not always submit to this operation, and as a palliative measure he suggests the use of a ring pad with a concavity adapted to the projection of the spine.[20]

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[11] Brunn: Beitr. zur klin. Chir., Bd. 58, Heft 1, S. 121.

[12] Gaz. de Hôp., 1908, no. 110.

[13] Rev. de Chir., 1908, Heft 11, p. 654.

[14] Thèse de Doctorat, Bordeaux, 1909.

[15] See also, Bardenheuer: Meeting of the German Scientific Medical and Natural Science Association. Zentralbl. für Chir. und Mechan. Ortho., December, 1908, p. 547.

[16] Tubby: Meeting of the British Medical Association, July, 1908.

[17] Utrecht meeting of the Dutch Orthopedic Society, Nov. 29, 1908

[18] Berl. Klin. Wochenschr., 1909, p. 1895.

[19] Haglund: Zeitschr. für. Orth. Chir., 1908.

[20] See also: Blencke: Zeitschr. für Orth. Chir., xix Bd., 3 und 4 Heft.

(To be continued.)

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Reports of Societies.

AMERICAN CLIMATOLOGICAL ASSOCIATION.

THE TWENTY-SIXTH ANNUAL MEETING, HELD AT FORTRESS MONROE, VA., JUNE 4 AND 5, 1909.

(Continued from No. 10, p. 335.)

DR. H. LONGSTREET TAYLOR, of St. Paul, read a paper on

THE CLIMATE OF THE NORTHWESTERN STATES OF NORTH AMERICA,

and divided the subject into that of the seacoast, valley, mountain, plateau and plain. After describing the Puget Sound region, the valley of the Columbia River and the adjacent arid region, the mountain climate of Idaho and Montana, Dr. Taylor described some of the features of the Yellowstone National Park. This has elevations of seven thousand to eight thousand feet and about two thousand springs, many of which are thermal and medicinal. There are fine camping grounds, but during the winter there is a heavy snowfall and the extremely cold weather renders it difficult and hazardous to attempt to enter the park in winter or even to pass through it. It is open to the public only in summer. North and South Dakota have much lower elevations. Minnesota has an average elevation of one thousand feet. The average snowfall of forty-nine inches insures to Minnesota cold, dry winters. Duluth, at the western end of Lake Superior, has a cool summer. There is a state sanatorium for the poor tuberculous on Leech Lake, where patients sleep in open leanto's at a temperature of 37° F. below zero without injury or much discomfort. The Pokegama Sanatorium, near Pine City, about half way between St. Paul and Duluth, has been open for four years. The results obtained are as good as those reported by other sanatoria. The steady cold and the invigorating dry temperature act as a tonic, and in the spring they are more robust than those who have spent the winter in the South. Malarial fevers are not indigenous in this region. " Mountain fever " in the northwest is typhoid fever. The spotted or " tick " fever of Montana, Wyoming and Utah has been studied by Drs. Wilson, Chowning and Westbrook, of the University of Minnesota, and was found to be due to the bile of infected wood ticks.

Dr. Charles F. McGahan, of Aiken, S. C., read a paper on the

CLIMATE OF THE SOUTH.

The climatic data were given for the Atlantic and Gulf coasts; the sandy belt of the Carolinas, including the mountain region of the Virginias and western North Carolina; the great South West; southern California. In the first division Norfolk, Charleston, Miami and Mobile were chosen for detailed description; in the second division, Aiken, Virginia Hot Springs and Asheville were included; in the third, San Antonio, Phœnix and Prescott; and in the fourth, San Diego, Strawberry Valley, Redlands and Santa Barbara. The paper was abundantly and forcibly illustrated by flashes of lightning, peals of thunder, a succession of heavy showers followed by sunshine and a rainbow demonstrating some of the features of the climate in early June at Fortress Monroe. These interruptions, however, while they delayed the reading of the paper, were, in a measure, instructive.

Dr. Charles D. Alton, of Hartford, Conn.: The first two papers this afternoon dealt with the climatology of large sections of the country. The great mistake has been made in the past ten or fifteen years of generalizing on climate. Now it happens oftentimes that a patient will come to us and say, " Shall I go to California?" or Colorado, or some other section in the West or Northwest or even the South? And for a great many years members of the profession would say, " Yes, go to California," without the slightest idea of the differences of climate in California. And papers such as we have had this afternoon, the first two especially, have drawn our attention to the varieties of climates in these large sections. We know that in certain places in California one patient will do remarkably well in a small subdivision of the southern part of that state. That section is a most enjoyable place for that particular patient. Then another patient will not do nearly so well there. And it is only, it seems to me, by the study of the details of climate, the special characteristics of small localities in large areas, that will bring us to the truth as to the best places to send our patients. Take the great Northwest, for instance. I have known of patients being sent even to west of the Cascade Range because they have heard how mild and gentle and soft the climate is there, forgetting some of the other characteristics of that climate which make it not at all adapted to their particular case. Then the interior or Spokane region, or the Helena region, with its extremes of climate, cold and hot, shows us that to take the mean of a climate is very delusive. We have to take a climate as it is, with the great extremes of heat and cold, and find a climate where the extremes are not so great. We think of a mild climate, for instance, in eastern Tennessee. We think of Walden's Ridge as one of the most delightful places anywhere in the South, but, as we learn from reading, on the western slope of that ridge they are exposed to northers, as they call them. Sudden cold winds will sweep down, and immediately following that there are attacks of pneumonia. Thus we were told by the health officer of Michigan some years ago that immediately following high cold winds in Michigan the pneumonias increased. This indicates that protection from sudden changes such are necessary in climates to which we may send our patients. In our little city of Hartford, in the valley of the Connecticut, I know that a temperature of zero is a painful temperature at certain times in the winter on account of the moisture in the air. I well recall a certain Sunday there when I suffered painfully in that temperature, and yet we have only a moderate range of extremes in that climate. The following Sunday I happened to be at Des Moines, Ia., and there was a temperature of twenty degrees below zero. I was unconscious of any discomfort whatever in that temperature. So that it behooves us, as I say, to study the characteristics of small localities within the large areas when we would wisely send our patients to seek a new climate.

Dr. John B. Nichols, of Washington, D. C., read a paper on

THE INFLUENCE OF METEOROLOGICAL AND CLIMATIC CONDITIONS ON METABOLISM.

Metabolism consists largely of two sets of processes: heat or energy production and heat dissipation or thermogenesis and thermolysis. Heat is produced by the oxidation of material from either the food or the body substance, but under ideal conditions the energy produced should be derived entirely from the food without any drain on body material. Dr. Nichols cited Rubner's experiments showing the effects of surrounding temperature on metabolism. Rubner measured the elimination of heat in a fasting dog exposed to different temperatures. It was shown that the nitrogen elimination, urine excretion, was not affected by changes in the surrounding temperature. The humidity of the atmosphere influences the escape of body heat mainly through affecting the evaporation of water. Total metabolism or oxidation is increased both by warm and by cold humid air; by warm humidity through overwarming of the body cells from the obstruction to heat loss effected by lessened evaporation; by cold humidity in compensation for the increased heat loss by conduction. Winds and even imperceptible air currents markedly favor heat loss by increasing both radiation, conduction and evaporation. Obesity is a factor. An abundance of subcutaneous fat, by presenting a relatively less body surface for heat dissipation and by protecting against radiation, conduction and evaporation, lowers metabolism. At higher temperatures with humid air heat loss is so much interfered with in obese persons as to cause them to suffer more distress under these circumstances than slender subjects. A generous diet is needed in cold weather or in cold climates to compensate greater heat loss, and for this purpose fat or carbohydrate is required rather than nitrogenous food. Excess of food increases body oxidation, carbohydrate least, and protein much the most.

DISCUSSION.

Col. William C. Gorgas, of Canal Zone, Panama: The work of the sanitary department at Panama has been well recognized by the profession in the United States. We have, perhaps, been given credit for some things that we have not done, but we have taken everything that has come to us, whether we deserved it or not.

The question of manufactured climate is entirely new to me. I had not thought of that before. But, acting upon the same principle as we have in the past, we will accept the statement that by our hard work we have changed the climate in Panama.

My life in sanitation for the last ten or fifteen years has rather tended to minimize in my mind the paramount importance that I used to ascribe to climatic conditions in those diseases which we considered most affected by climate — malaria and yellow fever. Of course, in the old days, before we knew the exact causes of these two diseases, we laid great stress upon the climatic conditions. Certain conditions of moisture and temperature were absolutely essential to their development. As the method of propagation of these diseases was discovered, it tended to minimize the idea that climatic conditions affected them to any great extent. From personal experience in Cuba and Panama, I am rather inclined to look upon the debility suffered by the Caucasian in these places in the past as being more particularly due to chronic malaria and other infections than to climatic conditions. As we have protected the men from these conditions their health has remained good, in spite of latitude, heavy rain fall and excessive heat. It was a very general idea everywhere, both at home and down there, that tropical conditions tended to debilitate and pull down the white man. I do not now believe that this is true, and, in a general way, my opinion has gone in the other direction since I have worked and lived in these latitudes. I am now rather inclined to think that the effects that we have been accustomed to look upon as climatic are due, in a location like Panama, to chronic malaria. If the laborers are protected from malaria they seem to retain their vigor.

We have about eight thousand Americans, including men, women and children, on the Zone, connected with the work. We can keep a very accurate record of these eight thousand. The men are principally machinists, foundrymen, steam-shovelmen, men of a higher intelligence than the ordinary laborer. In these men the death-rate is small. You can get a very fair average from eight thousand people. Their general appearance is better than that of the same class of men at home. I do not mean to say that the climatic conditions are better than in their homes in the United States, but the men probably live in much better hygienic surroundings. They are like a country population rather than a city population. The quarters are large, airy and well-screened.

We have about three thousand woman and children, and their condition of health is about the same as of the men. Their dwelling houses are much better than those of the same class in the United States. It has rather surprised me that the death-rate of our women and children has remained smaller than that of the men. The death-rate from disease among the white men will run 3 or 4 per 1,000 per year; and that of the women and children slightly under this. I do not know why this should be. One would suppose the death-rate among women and children would be much higher than that among selected men. The whole tendency, in my mind, has been not to lay much stress on actual climatic conditions, but rather to attribute the debility which the whites in the past have suffered from in the tropics to the infections so rife in these regions. Of course, my experience in Cuba and Panama is not a sufficiently large one upon which to generalize, but the tendency in my mind is to lay less and less stress upon climatic conditions themselves.

Dr. James M. Anders, of Philadelphia: It is a well-recognized fact that climate is responsible for the various races, and, therefore, it must have a tremendous effect upon the bodily metabolism. But the exact influence of different climates upon metabolism has not as yet been determined. And I want to say that the method that has been adopted by Dr. Nichols, namely, of considering each climatic factor separately, is the correct one, and the data thus obtained will furnish us with facts from which we can draw reliable conclusions as to the general effects of climate. Certain facts relating to the influence of cold, heat and other meteorologic elements are well understood perhaps, and yet it is highly desirable that these separate climatic elements be more thoroughly and systematically investigated from the experimental side.

If I understood Dr. Nichols aright, he said that in cold latitudes the proteids did not need to be increased. That, of course, is a generally accepted fact. He also stated that in order to maintain the bodily heat and to preserve the tissues the carbohydrates and the fats must be given in liberal amounts, or in more liberal amounts than in warmer latitudes. With this position I am fully in accord, but it ought to be thoroughly understood, and it is, I believe, by expert dietitians, that fats after all, while they maintain the heat of the body, do not preserve the tissues of the body, and we must rely solely upon the carbohydrates so far as this indication is concerned. This is of practical bearing in dieting persons living at the north or in cold latitudes.

Dr. Nichols, in closing: I do not want it to be understood that I have carried out any of these metabolism investigations myself. I have simply given the results reported. I do not suppose there have been a dozen institutions equipped in this country and abroad to carry out investigations as elaborate as those I cited. They all require a large staff and a large endowment.

The pecuniary values of food have been worked out for this country by the Department of Agriculture, and are given in their publications, so that that same information is available for American foods, computed at American prices, as has been determinedly by the work of Kœnig for Europe. I believe, as a general proposition, that the well eat too much, the sick too little.

Dr. H. D. Arnold, of Boston, presented a

A DIET CHART FOR EVERY-DAY USE.

This is the outcome of Dr. Arnold's attempts to give the students of Tufts College Medical School some practical instruction in dietetics. On these charts are all the statistics and other data necessary for the calculation of the nutritive value of a diet for any individual, and space for recording the diet and its caloric value. The records for five successive days are placed in separate columns and at the bottom the total results are summarized.

The weight of the patient and urea excreted are also noted on these charts. Pounds are used in these estimates of body weight and not kilograms. This chart is useful in regulating the diet in cases of diabetes, nephritis and obesity. The quantitative regulation of the diet is of as much importance as the qualitative regulation. The basis of scientific dietetics is the calculation of the nutritive value of a food (expressed in calories), and the regulation of the total amount of nutriment and the amounts of the three ingredients, protein, fats and carbohydrates.

Dr. John H. Lowman, of Cleveland, Ohio: I wish to refer to another chart which you may not all know about, namely, that of Kœnig. He spent his life in making analyses of foods. Recently he has made a practical chart of his work, done in colors, with the proteids in blue, the fats in yellow and the carbohydrates in red, the chart itself being of some light color. The thing is so striking that immediately you see the analysis of the food, and it can be made practical to the nurses. I brought this to the attention of the visiting nurses in Cleveland, gave them a few talks on the value of foods, etc., gave them a few of these charts and they readily grasped the situation Another point in connection with Kœnig's charts that is extremely interesting is the amount of caloric value which you can buy for one mark, of meat or beans or milk. For instance, you could get 4,000 calories in beans and in peas and in rice and in oatmeal, etc. Another interesting thing was the extremely high cost of eggs. I had these charts hung up in our dispensary at the Lakeside Hospital and the Visiting Nurses Association, and they refer to them constantly, and they have frequently spoken to me of the value of the charts. It is a thoroughly practical application of the theory of feeding. I ask them, for instance, to work out a ten-cent meal for a family, and they would select beans and the cheapest meat and skimmed milk, which is cheaper than unskimmed milk.

Dr. J. M. Anders: With Dr. Reed I was very much struck with the tables or charts which Dr. Arnold has presented. From personal experience, I know that the average physician's knowledge of dietetics is woefully deficient, and he is, as a rule, willing to acknowledge the fact. I am quite sure that if the profession would use the tables presented by Dr. Arnold a distinct advance would be made in this branch of the treatment of disease.

Dr. Charles L. Minor: I was delighted with Dr. Arnold's charts, which will enable us to make practical application of our knowledge of the calorific value of foods. I think every one here has at one time or another tried to measure his patient's food by calories, but found it so difficult that he had to give it up. This method seems really practical, and I think I shall repent as regards my skepticism and go home and try it myself. I should like to know whether he found it practicable in his private patients, or whether he has used it only with institution patients.

Dr. Arnold, in closing: Dr. Reed asked about getting the charts and about having them published. At the present time, I am trying to arrange for that. I have some of these charts personally, and should be very glad to supply Dr. Reed or any of the other members if they will let me know. I hope to get somebody to take that job off my hands, but the publishers I have spoken to seem to think there is not any particular demand for the charts at present.

Dr. Reed spoke of cases of excessive eating as being much more common that insufficient eating. I entirely agree with him. However, I have been struck with certain cases where the results of insufficient nutrition were rather surprising, too. I think that is less frequently recognized, and, having only a few minutes in which to touch on certain topics, I spoke of that. I have very vividly in mind one of my own patients with advanced cardiorenal disease who I thought last spring was necessarily going to pieces from the advance of his disease. On regulating his diet according to these charts I found that he was getting only 1,400 calories instead of 2,500 calories. Giving him a sufficiently nutritious diet changed him from an apparently hopeless case to a man in good condition.

My own experience with the charts has been in private practice. I have not been on duty at the hospital since I got them in shape, but the work has been carried out at the hospital by some of my colleagues, and found satisfactory.

I am not familiar with the particular colored chart which Dr. Lowman spoke of. The question of having these charts made in colors came up. However, it is essentially a matter of figuring, and it seemed to me that the colors were unnecessary. What I have aimed at is to get something that a physician can carry around in his pocket. For institutional work a chart that can be hung on the wall is all right. My object is to get the essential things that the physician needs in calculating a diet on a chart that he can carry in his pocket. Dr. Lowman spoke about the nurses taking up the work. I have found that an intelligent nurse can take this chart and fill it out entirely for the patient, and when you come to see your patient you get all the data that you need about the diet as quickly as you would look at a temperature chart.

Dr. W. F. R. Phillips, of Washington, read a paper on the

SEASONAL INFLUENCE ON SUICIDE.

By means of a chart, he showed that if the vital statistics of countries within the temperate zone be examined with reference to deaths by suicide it will be found that there is a regular annual rise and fall in the number of deaths so recorded and that the greatest number coincides with the warmest part of the year and the smallest number with the coldest portion. Dr. Ogle, of England, showed this conclusively in 1886, and Morselli, Strahan, Leffingwell and Dexter, in statistics covering various countries, arrived at the same conclusion. Morselli attributes the seasonal influence chiefly to the physiologic effects of high and low temperature. Dexter found in studying the suicides of New York and Denver that they were excessive on warm, clear, humid and windy days. Were we to chart graphically our daily foodstuffs according to quality and quantity, as to freshness and variety, we would find striking if not significant contrast between these curves and those representing our annual suicides. No one can question the profound metabolic effects that variety in food causes; and in a fluctuation clearly seasonal in its causation we may have by its influence upon an stable system another source of increment in our seasonal suicides. Dr. Phillips laid stress on Strahan's classification of rational suicides and irrational suicides. In the former case it is difficult to conceive how they could be affected by meteorologic influences, since they are based solely upon reasoned-out objects and ends to be accomplished. Statistics are not so gathered as to enable us to make the scientific analysis needed to establish or overthrow our hypotheses.

Dr. J. M. Anders: Dr. Phillips's paper was one that interested me also, and the facts adduced are somewhat startling as to the effect of climate upon self-destruction. His etiologic subdivision of the cases into rational and irrational suicides is a very excellent one. I am quite certain that many cases of self-destruction are perpetrated by persons who are perfectly sane, and it would seem to me that the cases that are to be classed among the rational forms of suicide should make a better showing than Dr. Phillips' presentation would lead us to believe. In other words, there are a great many persons who commit suicide because of business failure or going into bankruptcy rather than face their creditors. The number of cases in which defaulters, rather than face courts of justice, commit suicide is also quite considerable, and we all know that the convicted murderer is very apt, if he has the opportunity, to commit suicide in preference to hanging. Again, suicide is said to be distinctly hereditary.

Buckley and others have also called attention to the fact that suicide is not infrequently epidemic in its tendency.

Dr. Sanger Brown, of Chicago, read

A NOTE ON FRESH AIR IN THE TREATMENT OF ACUTE INSANITY.

Dr. Brown advocated in the case of noisy and maniacal patients the use of rooms measurably impervious to noise and equipped with efficient forced ventilation. Institutions should also be supplied with open pavilions and porches so as to enable certain patients to spend their days wholly in the open air. The use of drugs is deprecated.

Dr. Charles L. Minor, of Asheville, N. C.: As a believer in fresh-air therapeutics, I was glad to see the alienists coming over to our side in the matter, but I believe I shall have to take issue with Dr. Brown in recommending forced ventilation. I believe, as far as it has been tried in hospitals and institutions, that it has been considered a failure. I may be wrong, but that has been my impression. The inlet and outlet ducts have not done the work, and I think the doctor would probably be safer in not trusting too much to it, but putting his patients out of doors, although I understand their mental condition makes that difficult in some cases. Certainly I believe the modern idea is, and rightly, that forced ventilation has not been a success, and while it might be possible that with large enough pumps and ducts it could be made so, generally it has not been the case. If the doctor builds his outdoor pavilions with cement floors, as he recommends, I am afraid he will have trouble. Anybody who has lived much in Italy will recognize that cement is one of the most chilling substances to live on that we know of. Men who work in laboratories with cement floors are very apt to suffer in various ways.

Dr. H. H. Whitcomb, of Norristown, Pa.: I should like to add my word of commendation to Dr. Brown's paper regarding what he has said as to fresh air in the treatment of the insane. I have been greatly surprised and gratified recently at the results of the fresh-air treatment in the institution in our town with which I am connected. We have recently opened a new building that accommodates about two hundred patients. Of this number, at least one half of them have been constantly in the open air night and day since last October. It has been gratifying to us to see the rapidity with which the patients have quieted down. Their mania has been less frequent and much more rapidly subsided by the open-air treatment than any medicinal remedies ever used before. Of course, the experiment has not been conducted by us long enough for us to draw very accurate conclusions yet, but the fact that the patients are much more quiet and much more comfortable is enough to indicate that the method is of value.

Dr. Charles W. Richardson, of Washington, read a paper on

CONSTITUTIONAL CONDITIONS AFFECTING NASAL CATARRH.

This paper related to the subtle influences that certain conditions, unattended with any organic change, exert upon the mucous membrane of the nose, throat and bronchial mucous tract. The local manifestations of these disturbances are more frequently in the form of vascular changes in the turbinal tissue of the nasal tract. They include the paroxysmal form of vasomotor turgescence of the nasal mucosa, occurring occasionally at periods during the day, more frequently at night; a more or less constant type of vasomotor turgescence of the nasal mucosa most intense at night; a vasomotor turgescence of the nasal mucosa occurring at night, attended with a similar condition in the bronchial tract, as evidenced by coughing and wheezing. The cause seems to be an inordinate demand made upon the nervous system without a proportionate amount of physical exercise and rest. The first type is more common among vigorous males of neurotic temperament and addicted to intense mental work to which they enslave themselves. The second group occurs almost entirely in the female sex; it is evident in those of a neurasthenic temperament, most frequently in women who are office workers, whose duties are exacting and require the expenditure of great nervous energy and sedentary in habits. The third type is not so intensely individual in character as the first two. It may be engrafted on either of the former conditions after they have existed for a varying period, or may have no antecedent vasomotor disturbance.

Illustrative cases were cited in each group. The rational treatment of them is to diminish the amount of work, increase the amount of exercise, living in the open air as much as possible, with rest and proper diet. Local treatment is the usual recourse, and as a result these unfortunates suffer cauterization of the turbinates, and even the horrors of partial or complete turbinotomies. Any local treatment should be very mild.

Dr. J. N. Hall, of Denver, reported on

TWO HUNDRED AND FIFTY CASES OF PNEUMONIA IN COLORADO.

Dr. Hall studied 250 cases of lobar pneumonia seen in Colorado and showed the mortality of this disease in private practice; also the time of year when the disease chiefly occurs. He compared the known outcome of the cases with the temperature findings.

The average death-rate was shown by a study of the very accurate returns of the State Board of Health of Colorado, which was 172.9 per 100,000. The causes for the alleged great mortality of the disease in higher altitudes of Colorado was discussed, and the relations of this mortality to the low atmospheric pressure.

Dr. Hall quoted the opinion of Dr. Sol Kahn, of Leadville, 10,200 feet, who has had an experience with this disease for twenty years at this elevotion. He thinks that the reason pneumonia is more fatal in such a place as Leadville is that there is more or less universal pneumonoconiosis in those who have worked in the mines for some years, and who constitute so large a proportion of the population. The mortality of the series reported to Dr. Hall was 42.8%. Dr. Hall has seen many cases improve as if by magic on being removed to the lower elevations.

Dr. A. Jacobi, of New York, read a paper on

THE VARIATIONS IN THE MEDICINAL THERAPY OF PNEUMONIA IN THE LAST HALF CENTURY.

After paying his respects to the physicians of former times Dr. Jacobi said that under the orders of his revered teacher, Friedrich Nasse, at Bonn, in 1849–1851, and the supervision of his clinical assistant, Dr. now Sir Herman Weber, of London, he treated old Abraham, seventy-eight years old, with large doses of tartar emetic and two venesections, one on the cephalic, one on the saphena, until he survived. This was Rasori's teaching. After this, until 1853, Dr. Jacobi did the same things in New York. After a few years Dr. Jacobi said he became less sanguinary, though Payne, of the University Medical College, was still alive and teaching. Rasori relied on antimony, emetics, narcotics and digitalis, which he considered to be sedative. Brown relied on nutrients and tonics, stimulants and analeptics. Amongst the latter, warmth or heat and digitalis held a high rank. The therapeutic nihilism of Vienna was the result of the observation of unsuspected and in part incredible changes found at autopsies. A hepatized lung was not believed, when found at the autopsy, to have ever been accessible to treatment or to improvement during life. Then came antipyresis and antiphlogosis. The reduction of fever began to be looked on as a general duty. That was accomplished by chemical aids when water did not suffice or was not selected. Quinine,. antipyrin, acetanilid were used. Digitalis was often replaced by strophanthus, which was eulogized by Livingstone and Kirk in 1865, and strongly recommended by T. R. Fraser. Veratrum and mercury came into their own again. Then the microbic origin of disease modified treatment. The diplococcus lanceolatus was attacked by sera. Roemer's polyvalent serum was used. The various forms of pneumonia were described: acute lobular pneumonia, interstitial pneumonia, streptococcus pneumonia, highly contagious and sometimes epidemic, and Marmorek's serum was advocated in the latter class. Sir Herman Weber was credited with noting the infectious and contagious character of pneumonia, in 1869. Typhoid pneumonia, tuberculous pneumonia, malarial pneumonia and syphilitic pneumonia were noted.

The treatment involves extermination of the living or other causes; if this cannot be done, prevent the living or other causes from exterminating the man. The principal indication is to treat the man, not the disease. This includes rest of body and mind, no visitors, no noise, no excess of light, no high temperature of the room air, not necessarily or not always so low as Northrup recommends in all cases; liquid food; milk diluted with cereals; milk diluted with hydrochloric acid according to the plan of Dr. I. Rudisch; plenty of water or lemonade or hydrochloric acid in water; purgatives, such as calomel; no heavy bedding; mustard to the chest; mustard foot baths in bed. In very fulminant cases, with excessive congestion and cyanosis, a venesection. It is understood that a high temperature is not a uniform danger. But this may be so in the old or anemic. Whether a warm bath, or a warm bath gradually cooled, or a cold bath, or cold washing and sponging and friction, or a warm or a cold pack over the chest and abdomen are indicated, or the local application of an icebag is used, depends on the individual case and the individual doctor. No uniform rules fitting every case of pneumonia can be given. It takes brains to treat lungs.

Dr. DeLancey Rochester, of Buffalo, read a paper on

THE INDICATIONS FOR VENESECTION IN PNEUMONIA.

The essence of the scientific treatment of pneumonia has been summed up by one of our English confrères as "to make the blood clean and to keep it circulating."

Dr. Rochester cited a desperate case in which 200 ccm. of blood was taken, in which the picture changed from impending death to that of mild febrile sickness in five hours, and stated that he had eight cases of this kind on record. A warning was given not to bleed even in very toxic cases if improvement, even though slight, has begun. In two cases some years ago, Dr. Rochester found that bleeding under those circumstances was followed by an increase in toxic symptoms; in one case death ensued in forty-eight hours. In these cases Dr. Rochester believes he removed blood in which antibodies had begun to form in sufficient quantities to win the battle. The indications for bleeding are a profound and increasing toxemia, with a tendency to hyperpyrexia which shows no evidence of yielding to the ordinary methods of treatment. Another indication for bleeding is when, through marked involvement of the lung and the effect of toxemia, the right side of the heart is dilating and unable to empty itself; in other words, when the circulation is failing through weakness of the right ventricle. This shows itself by increasing cyanosis, increasing dyspnea, edema of the lungs, enlargement of the liver and fullness of the veins of the neck and the evidence of dilated heart by physical signs.

Dr. A. K. Stone, of Boston, read a paper on

THE INTRAVENOUS ADMINISTRATION OF STROPHANTHIN IN OTHER THAN CARDIAC DISEASE; WITH SPECIAL REFERENCE TO ITS USE IN COLLAPSE IN THE COURSE OF PNEUMONIA.

He gave a brief résumé of the literature on the intravenous administration of strophanthin; the dangers of administration; cases illustrative of its effects in collapse in pneumonia following surgical operations; in delirium tremens. Dr. Stone showed a unique microscopic specimen of spirochetæ from a case of specific aortitis. To appear in a subsequent number of the Boston Medical and Surgical Journal.

DISCUSSION.

Dr. R. H. Babcock, of Chicago: The very excellent papers have opened up a theme for unlimited, and I might almost say, unprofitable discussion.

I was extremely interested in Dr. Stone's presentation of the benefits to be derived from the use of strophanthin. I would like to ask the doctor once more, however, before discussing this matter, if I understood him correctly that he used Merck's strophanthin, and made up the hypodermic solution out of that.

Dr. Stone: For most of the cases Boehringer's strophanthin was used. For a number of them Merck's strophanthin was used, being kept in solution in water.

Dr. Babcock: By Boehringer's, do you mean the drug as imported?

Dr. Stone: I mean as it is imported in the ampullas.

Dr. Babcock: I am glad to hear the doctor state this, because I believe from one sad experience, and from the statements made by Hatcher, I think, in an article last winter on the pharmacology and uses of strophanthin, that Merck's strophanthin and strophanthins of that nature are not reliable, because they are not standardized, and we may obtain much more powerful effects than we look for, and, indeed, very disastrous effects. The strophanthin which is imported in these little tubes is a perfectly reliable and standardized preparation. I have had some experience with that intravenously, and, therefore, Dr. Stone's report is of very great interest to me. A milligram, however, strikes me as rather a full dose. I have preferred to use a little less. I think these tubes hold a milligram of strophanthin in 15 minims. I would consider that, except in a very desperate case where it was a question of life or death very shortly, it would be better to use a somewhat smaller dose, say 10 minims, and not the full 15.

In the course of last winter, in a woman with a dilated and intractable heart which nothing had improved, I used Merck's strophanthin. I had a hypodermic solution prepared and injected half a milligram. I had been unable to obtain Boehringer's strophanthin in the city, and, therefore, fell back on Merck's strophanthin in utter desperation, since everything else had failed to control that heart. I administered, as I say, half a milligram. In half an hour the woman was dead. I am grieved to say that I believe the disastrous effect was probably due to the overpowerful action of that strophanthin, that we got in that case a very much more powerful effect than should have been produced by half a milligram, and it confirmed my belief that with a preparation that is not standardized we should use it intravenously with the very greatest possible care. In her case the heart, which had been running very rapidly and feebly and very irregularly, became reduced to 100, to 80 and to 60, with perfect regularity, and the woman died and, it seems to me, died from the overwhelming effect of that small dose of strophanthin on that dilated heart.

Dr. Stone made a remark to this effect: "that if a physician is at hand ,to act promptly." I believe that in every case of serious pneumonia there should be a physician in constant attendance, if possible, during the time when the patient is in greatest danger, because it is only by the very promptest action, sometimes, that we can pull a pneumonia patient out of a hole. This leads me to remark that in the management of pneumonia — I think this was touched upon by Dr. Jacobi — it is the intelligent appreciation of the conditions of each case, and the physician's ability to recognize the indications for prompt treatment, which have very much to do many times with the recovery of the patient. Of course, I am convinced by a considerable experience that there are many cases of pneumonia which are doomed from the outset to death; that the physician can do nothing to stay the downward progress of the disease. The bacteriemia and toxemia are so profound that the resistance of the organism is overwhelmed from the start, and no matter how much we do, we can do nothing more than possibly prolong life.

In regard to Dr. Taylor's paper: If I understood the paper correctly, it means hypotheses which are not substantiated either by pathological or by pharmacological experimentation. I had supposed that the experienced practitioners of the country had come pretty largely to realize that carbonate of creosote and salicylate of soda are powerless to combat the infection of the pneumococcus. Such certainly is my belief.

It seems to me that the results which Dr. Taylor has seen simply prove that in all cases, if we treat them symptomatically, we aid nature, but that many of the statements on which the treatment appeared to be founded are purely theoretical.

Dr. Jacobi's paper was most interesting and most instructive, but it furnishes a sad commentary on the inability of the medical profession to combat pneumonia, except in a purely empirical and symptomatic manner. As yet, we possess no means of meeting and overcoming this very terrible infection. I was very much gratified, however, to hear the doctor, in his closing remarks, express his belief and faith in certain remedies which have proved, it seems to me, very powerful adjuncts in the treatment of pneumonia in my hands. I was much pleased to hear what he said concerning the use of camphor. Hypodermic injections of a 10% solution in olive oil (I shall hereafter try sweet almond oil) have, I am sure, helped me to combat collapse in a very powerful and gratifying manner.

(To be continued.)

Book Review.

The American Illustrated Medical Dictionary. By W. A. Newman Dorland, A.M., M.D. Fifth edition, revised and enlarged. Illustrated. Pp. 876. Philadelphia and London: W. B. Saunders Company. 1909.

The fifth edition of this well-known dictionary includes more than two thousand new terms, the majority of which, it is stated, appear for the first time in any dictionary. We have spoken with favor of this work in notices of previous editions, and we see no reason whatever to change our earlier opinion. The book retains its form with flexible binding and remains essentially the same size as the previous edition.

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THE MEDICAL EXPLANATION OF ALLEGED CHRISTIAN SCIENCE CURES.

In the *Journal of the American Medical Association* for July 27, 1907 (vol. xlix, p. 328), appeared a paper by Dr. James B. Herrick reporting a case of recovery from generalized blastomycosis. This paper has recently been made the text of another attack on medical methods of treating disease in the form of an article in the *Arena* (No. 231, p. 330) entitled "Medical Explanations of Christian Science Cures Considered in the Light of Typical Cases." Such attacks are seldom worth attention, but in the present instance it is interesting to analyze the writer's arguments in order to see how easily a layman's natural ignorance of the pathology and clinical course of disease may lead him into honest misapprehension of the physician's point of view.

In Dr. Herrick's case the diagnosis is unquestionable, being confirmed by microscopic examination and cultural test. His paper describes the patient's condition, her treatment with potassium iodide and sulphate of copper, and ultimate complete recovery after six months of outdoor life in California. Dr. Herrick makes no attempt to explain this unusual cure, apparently the first recorded in an undoubted case of generalized blastomycosis, but from his statement any physician would probably consider it due to the development in the patient's blood, under favorable hygienic environment, of some substance, be it alexin, antitoxin, bactericidin, opsonin or what not, which destroyed the organism causing the disease, neutralized its toxic effects and led to its elimination from the body, precisely on the analogy of natural recovery from pneumonia, diphtheria, typhoid or other self-limited infectious process. Not so Mr. Flower, author of the article in the *Arena*. On the basis of a statement by the patient's husband, which incidentally alleges that the weather in California was so disagreeable that she was confined to the house most of the time, Mr. Flower declares that the credit for the cure belongs to Christian Science and the ministrations of a Christian Science practitioner, so-called, who attended the patient. Assuming that climate had no beneficial effect whatever, this conclusion is of course only another example of the *post hoc propter hoc* argument, a two-edged sword in any hands, and the cause of most of the fallacious deductions of the layman in his attempt to interpret disease, as it has been also in medical science. Because the patient got well, it does not follow that Christian healing, any more than the use of drugs, cured her. The real lesson of this case for both physician and Christian Scientist is that recovery from disease is a biological process which may be helped or hindered but is not directly caused by any treatment; that in most diseases it generally occurs whatever the treatment; that in certain diseases, usually fatal, it may occur in consequence of favorable physiological reaction peculiar to the particular patient, beyond the present observation or understanding of either medicine or Christian Science. This point of view it is hard for the layman to take. To him disease is a malign, half-personal entity, not a natural phenomenon, and in face of it he is prone to invoke alleged supernatural power and put his trust in princes of the darkness of ignorance. When he recovers, the credit goes all to his counselors, and his allegiance to them is cemented a hundred fold. In the case of Mr. Flower, this failure to grasp the biological concept of disease is responsible for his triumphant attribution of potency to Christian Science. It were intolerant, however, not to recognize that there is an element of truth in Christian Science, as in all popular delusions, and that the attitude of mind which it cultivates may be a definite adjuvant to natural recovery from disease. Every physician knows that a persistently cheerful and serene patient will often get well of a sickness generally fatal to one of melancholy or timorous temperament. Perhaps this is less that the disposition has any direct influence on the malady than that it is evidence of a fundamentally vigorous, healthy, physiological organization which will react successfully to the effects of disease processes. Be that as it may, the invincible optimism inculcated by Christian Science teaching is doubtless of value, if only reflexly, in the treatment of certain diseases, probably often more so than the drugs which a doctor might give. To this, and not to any metaphysical or spiritual power, are to be attributed the cures, both of functional and of organic disease, claimed by Christian Science, but in reality occurring under natural, though perhaps uncomprehended, law, exactly as they do in the hands of the physician.

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ECONOMIC WASTE FROM PREVENTABLE DISEASE.

The Committee on Congestion of Population in New York has issued a statement to the effect that the economic waste in the city from certain preventable diseases amounts to between $37,000,000 and $41,000,000 annually. This estimate is based on the loss of the time of wage earners through illness and untimely death, due largely to congestion of population. It is argued, therefore, that it would be the part of wisdom to make a more careful study than has hitherto been done of the conditions concerned with preventable diseases. Having given a list of the diseases which the Health Department classifies as preventable, the committee states that in its estimate no value was placed on the days of sickness of persons under twenty. A value of $2,000 was assigned as that of a man's life, that is, his prospective earnings at time of death from twenty to sixty-nine years of age. This is smaller than the total prospective earnings which was assessed by the State Department of Health, and there were comparatively few deaths of males over fifty-nine. If, however, the value of only $1,500 be assessed for the cost of each death of men between the ages of twenty and sixty-nine, the reduction is but $16,000 for a total estimate for four years. The value of the life of a female between twenty and sixty-nine at the time of death is placed at $1,000. The value of wages lost by males from twenty to sixty-nine years old is placed at the moderate sum of $2 a day, and of woman at 75 cents. Boys between the ages of five and twenty years are valued at $1,000 and girls at $500; while from birth to five years of age $100 is taken as the value of life for both male and female. Under this calculation the economic waste in New York City from the preventable diseases mentioned may be conservatively estimated at $95,155,000 for the four years 1905 to 1908 inclusive, and the economic waste from these diseases among persons from twenty to sixty-nine years of age, at $71,093,408, making a total of $166,248,408.

The misery and suffering caused by preventable diseases, by reason of hundreds of families being broken up, it is, of course, very difficult to estimate in terms of dollars and cents. Some typical instances of this kind having been cited, the statement concludes: "But if the suffering and tragedy of these families could be estimated and multiplied by the total number of deaths, the sum total is the record of preventable tragedy, one which would stir New York City beyond all possible records of economic waste."

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THE STERILIZATION OF CRIMINALS.

At the recent meeting of the Prison Congress, held at Seattle in August last, a very able paper on sterilization of habitual criminals was presented by Dr. H. C. Sharp, formerly of the Indiana Reformatory. The paper was far from being of a purely speculative kind, which might have been relegated to a medical assembly, but it was a report of the successful application of the method adopted in several hundred cases.

As both men and women are interested in the question of a pure birth-rate, and since males and females have been alike submitted to this treatment, it was consequently eminently proper that the sober-minded members of the Congress should treat this much-discussed question with deliberation. Four hundred and twenty-one sterilizing operations have been performed with a sucessful outcome, so that it is no longer in the experimental stage and it is now sanctioned by the law in Indiana. There were, nevertheless, some few persons present who objected not only to public discussion of the subject, but who even more violently decried this method of dealing with the problem.

Strong objection was made by one man, who considered the entire question an "outrage." He was quite willing to trust to nature to look after the reproduction of the race, but President Gilmour ruled that while one out of every 192 persons in England was a charge on the public, it was necessary to discuss means of preventing such a great waste of humanity.

Several women spoke warmly in favor of the "Indiana idea," as did also Mr. Longfitt, of Pennsylvania, who stated that that state was at present caring for 150 feeble-minded descendants of one family. Miss Krueger, of the Humane Society of Seattle, gave some startling facts demonstrating the need of preventing the birth of children to the most depraved men and women.

After further violent sentiments in opposition had been uttered, delegates from California and Connecticut quietly stated that those states have likewise adopted the "Indiana idea," and thus the subject was threshed out, and the great preponderance of opinion was with Dr. Sharp and his doctrine and practice.

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MEDICAL NOTES.

Yellow Fever in Venezuela. — Announcement is made through the Marine-Hospital Service that yellow fever has appeared at La Guayra, Venezuela.

BOSTON AND NEW ENGLAND.

Acute Infectious Diseases in Boston. — For the week ending at noon, Sept. 7, 1909, there were reported to the Board of Health of Boston the following cases of acute infectious diseases: Diphtheria 32, scarlatina 7, typhoid fever 28, measles 2, smallpox 0, tuberculosis 34.

The death-rate of the reported deaths for the week ending Sept. 7, 1909, was 16.24.

Boston Mortality Statistics. — The total number of deaths reported to the Board of Health for the week ending Saturday, noon, Sept. 4, 1909, was 185, against 228 the corresponding week of last year, showing a decrease of 43 deaths and making the death-rate for the week 15.48. Of this number 105 were males and 80 were females; 180 were white and 5 colored; 121 were born in the United States, 56 in foreign countries and 8 unknown; 36 were of American parentage, 118 of foreign parentage and 31 unknown. The number of cases and deaths from infectious diseases reported this week is as follows: Diphtheria, 27 cases and 1 death; scarlatina, 9 cases and 1 death; typhoid fever, 31 cases and 1 death; measles, 7 cases and 0 deaths; tuberculosis, 62 cases and 17 deaths; smallpox, 0 cases and 0 deaths. The deaths from pneumonia were 12, whooping cough 0, heart disease 19, bronchitis 0 and marasmus 8. There were 15 deaths from violent causes. The number of children who died under one year was 56; the number under five years 68. The number of persons who died over sixty years of age was 38. The deaths in public institutions were 77.

Cerebrospinal meningitis, 1 case and 1 death.

Of the above the following were non-residents: Consumption: 2 cases and 3 deaths.

Deducting deaths of non-residents, the total is 159. The corrected death-rate is then 13.31.

A Centenarian. — It is announced that Mrs. Kate Gorham, of Waltham, Mass., has died at the age of one hundred and two years. The immediate cause of death was an injury caused by a fall.

NEW YORK.

Removal of Spleen. — At the Harlem Hospital removal of the spleen was recently successfully performed in a little boy seven years old. The operation was undertaken as the only means of saving the life of the patient, who in falling down the dumbwaiter shaft of his home had ruptured his spleen. Five days after the removal it was reported that he was improving steadily and would probably be able to leave the hospital in the course of a fortnight.

A Centenarian. — Mrs. Mary Elizabeth Farrell died at her home in Midland Park, Bergen County, N. J., on Aug. 31, at the age of nearly one hundred and six years. She was of Dutch parentage and was born in Morris County, N. J., Dec. 17, 1803. She was married eighty-nine years ago, and had been a widow for more than forty years. She was the mother of ten children, and her oldest surviving son is now eighty-three years old.

Elephantiasis. — A remarkable case of elephantiasis, whether of one of the varieties having its origin in the skin or of the character of acromegaly is not stated, was recently admitted to the New York Hospital. The patient, a female thirty-eight years of age, was brought to the hospital on account of an attack of pneumonia, and died within a few hours. She was a French woman, the wife of a restaurant keeper, and was of ordinary size at the time the elephantiasis first made its appearance three years ago, while at the time of her death she weighed no less than 500 pounds.

New Building for Polyclinic Medical School and Hospital. — It is announced that the New York Polyclinic Medical School and Hospital has purchased a plot of property near Ninth Avenue, extending from 50th Street to 51st Street. On this it is purposed to erect a building twelve stories in height, and the entire expenditure, including the price of the land and the equipment of the structure, will be over $1,000,000. It is stated that the present property of the institution, on East 34th Street, is to be maintained for a time at least as a branch, though it may eventually be sold.

Current Literature.

Medical Record.

Aug. 7, 1909.

1. Woodruff, C. E. *Who are the Unfit?*
2. Gibson, C. L. *Tuberculosis of the Pericardium Cured by Incision and Drainage.*
3. Hicks, J. R. *The Ophthalmo-tuberculin Reaction.*
4. Dale, J. E. *Brain Tumor with Unusual Symptoms.*
5. Macht, D. I. *Mumps v. Tetanus. A Clinical Note.*
6. Benedict, A. L. *The Unreliability of Measurements of Ancient Skulls.*
7. *Bainbridge, W. S. *Tabular Report of Cases of Cancer treated with Trypsin.*
8. *Baird, A. W. *Ivy Poisoning.*

7. The article contains a tabular view of the results of trypsin treatment of cancer in a hundred cases which were previously discussed in an article in the New York *Medical Record* of July 17, 1909.

8. The author recommends for ivy poisoning the use of a 2% to 4% solution of permanganate of potash applied warm, after washing carefully with warm water and a non-irritating soap. [W. B. R.]

Aug. 14, 1909.

1. Kean, J. R. *The Military Obligations of the Medical Profession.*
2. Stokes, C. F. *Some Features of the Medical Department of the Navy in Peace and in War.*
3. Le Boutillier, W. G. *The National Guard Surgeon.*
4. Brooks, H. *The Hygiene of the Regiment.*
5. Fowler, E. P. *Instruction of the Hospital Corps.*
6. St. Jacques, E. *Medical Education in France and Germany.*
7. Loveland, B. C. *Traumatic Hysteria in Its Relation to Surgery.*
8. Judson, A. B. *The Hygiene of the Air Passages.*
9. Jewett, C. *Skin Disinfection with Iodine in Abdominal and Other Operations.*

New York Medical Journal.

Aug. 28, 1909.

1. Walsh, J. J. *The Medical Profession for Six Thousand Years.*
2. Robinson, B. *Peritoneal Adhesions.*
3. Clowe, C. F. *Mind and Its Relation to Heredity.*
4. Steinhardt, I. D. *Tuberculosis of the Knee-Joint.*
5. *Potter, F. C. *A Pathological Study of a Case of Pseudohypertrophic Muscular Dystrophy.*
6. Rohdenburg, G. L. *The Results of Treatment in One Hundred and Seventy-two Cases of Pulmonary Tuberculosis in the Out-Patient Department of the German Hospital.*
7. Schmiergeld, A. *Contribution to the Study of the Blood Pressure in General Paresis.*

5. Potter reports autopsy findings in a case of pseudohypertrophic muscular dystrophy, which succumbed to pneumonia at the age of fifteen. Typical changes of pseudo-hypertrophy were found in the peripheral muscles; there was shrivelling and degeneration of the peripheral nerves and the anterior nerve roots; also of the cells of the anterior horns and of Clarke's columns, especially in the lumbar cord. Most important of all was the demonstration of hypertrophy, atrophy and fatty infiltration of the heart muscle with a slight fibrosis. There was also marked fatty infiltration in the liver. The writer is inclined to the belief that the nerve changes in this disease are secondary to those in the peripheral muscles, rather than *vice versa*, but that there is a transitional form in which the neural and muscular alterations are merely coincident. [L. D. C.]

The Journal of the American Medical Association.

Aug. 28, 1909.

1. White, J. H. *The Scope of Preventive Medicine.*
2. Hemenway, H. B. *Limitations in Public Health Administrations.*

3. ***Knowles**, F. C. *Molluscum Contagiosum. Report of an Institutional Epidemic of Fifty-nine Cases.*
4. ***Hay**, E. C. *Comparative Value of the Internal Administration, Inunctions and Injection of Mercury in Syphilis.*
5. ***Varney**, H. R. *Inoculations of Polyvalent Staphylococcic Suspensions in Staphylococcus Infections of the Skin.*
6. **Walsh**, J. *Chloroform rather than Ether Anesthesia in Tuberculosis.*
7. **Robertson**, C. M. *Anatomy and Physiology of the Tonsil.*
8. **Mayer**, E. *Conditions of the Faucial Tonsil which Call for Operative Interference.*
9. **Pierce**, N. H. *Removal of Tonsils.*
10. **Packard**, F. R. *Adenoid Operations.*
11. **Cohen**, L. *Post-operative Tonsillar Bleeding. Its Surgical Control, with Mention of Cases.*
12. **Hussey**, F. V. *Trifacial Neuralgia.*

3. Knowles cites fifty-nine cases of molluscum contagiosum in an institution, and cannot explain this sort of an epidemic unless the disease is contagious. The face is usually attacked first, near the eyelids. The etiologic factor is not known, though a coccus is found in a few cases. The skin does not have to be broken for the infection to occur.

4. Hay does not believe with Fournier that the internal is the true method of treating syphilis, or with White, Keyes and Taylor, who favor the proto-iodid pill. Hay believes in combining the inunction or the injection method with the internal, because the last method is so slow, irritates the gums and gastro-intestinal tract, and is at times uncertain in its action and often causes gum irritation before it has acted at all on the disease. There is no standard dose. This must be varied according to the individual and can be as large as we please so long as we do not overdose him. If a pill is used, Hay prefers one composed of biniodide of mercury and the iodides of arsenic and gold as being non-irritating. Hay claims the inunction method is the oldest and generally the most effective, although most distasteful to the patient on account of its uncleanliness and the difficulty of secrecy. It is, however, intense and potent. Some skins are impervious to this method, however. Hay prefers Squibbs 50% ointment, rubbed into the back. He claims that injections are in most cases inferior to inunctions and that insoluble injections are too dangerous to be employed except in selected cases.

5. Varney, in the treatment of staphylococcus infections of the skin, uses polyvalent suspensions containing no less than twenty different strains. New strains are occasionally added to give greater virulence; thus a stock culture is obtained which is even more effective than an autogenous vaccine. [E. H. R.]

The Lancet.

Aug. 14, 1909.

1. **Keith**, A. *Malformations of the Heart.*
2. ***Semple**, D., **and Matson**, H. S. *On the Preparation and Keeping Properties of Antityphoid Vaccines.*
3. ***Aitken**, J. *Congenital, Hereditary and Family Hematuria.*
4. **Toogood**, F. S. *The Genesis of the Modern Infirmary.*

2. Semple and Matson, as a result of their investigations on the effect of heat on the immunizing properties of typhoid vaccine, conclude:

(1) That the sterilization of anti-typhoid vaccine can be efficiently accomplished by the addition of ½% carbolic acid.

(2) Heating of vaccine in order to sterilize it diminishes its immunizing properties and curtails its keeping properties.

(3) Anti-typhoid vaccine sterilized by the addition of ½% carbolic acid retains its immunizing properties unimpaired for two years at least. This has been definitely proved by animal experiments.

(4) Anti-typhoid vaccine sterilized by heating for twenty minutes at a temperature of 60° C. has considerably deteriorated after being kept for two years.

3. Aitken reports an interesting series of cases of congenital, hereditary and family hematuria. His family consists of seventeen persons, of whom ten have suffered from hematuria. There is no history of hemophilia, nor is there any rheumatic tendency in the family. The hematuria has been inherited, first, through the female side, and then, on two occasions, through the male side. The condition has probably been congenital in six cases. Two of the six cases were noticed to pass blood-colored urine during the first week of life. The children are subject to periodic febrile attacks occurring at irregular intervals, during which the quantity of blood passed is materially increased. These attacks have always been attributed to catching cold or to digestive disturbances. They set in suddenly and are accompanied with frequency of micturition, but no pain. Albumin may be present up to ½%, with abundant blood-casts and a few hyaline casts. There has never been edema or dropsy; the heart and vessels appear normal. Others who have reported this condition believe that life is not endangered or shortened. Aitken, however, thinks that a very guarded prognosis should be made. [J. B. H.]

British Medical Journal.

Aug. 14, 1909.

1. ***McGavin**, L. *The Double-Filigree Operation for the Radical Cure of Inguinal Hernia, with Notes of Thirty-three Cases, and on Certain Cases of Ventral Hernia Cured by the Implantation of Filigree.*
2. **Coombs**, C. *Acute Necrosis of the Skin.*
3. **Keith**, A. *Three Demonstrations on Congenital Malformations of the Palate, Face and Neck.*
4. **Paton**, J. *A Note on Prognosis in Tetanus.*
5. **Stretton**, J. L. *The Sterilization of the Skin of Operation Areas.*

THE SEVENTY-SEVENTH ANNUAL MEETING OF THE BRITISH MEDICAL ASSOCIATION.

Section of Navy, Army and Ambulance.

6. **Thomas**, J. L. *Introductory Remarks.*
7. **James**, H. E. R. *An Account of the Officers' Training Corps, with Special Reference to its Medical Branch.*
8. **Porter**, R. *Physical Training of Recruits in the Army.*
9. **Hendley**, T. H. *Contrast between the Treatment of the Wounded under the Mogul Emperors and King Edward VII.*
10. **Bassett-Smith**, P. W. *The Diagnosis of Syphilis by Some Laboratory Methods.*
11. **Lambkin**, F. J. *The Arylarsonate Treatment of Syphilis: Its Probable Future Effects in the Services.*
12. **French**, H. C. *Arsenical Compounds in the Treatment of Syphilis.*
13. **Crawford**, G. S. *On the Beneficial Results of Recent Sanitary Work in Malta.*
14. **Giles**, P. B. *On the Permanent Attachment of Transport to Field Medical Units.*
15. **Mahan**, F. F. *A British Man-of-War at Messina.*
16. **Carvell**, J. M. *The Existing Ambulance Organization of the Home Railway Companies; with Suggestions for Its Amplification and Unification.*
17. **Rivers**, W. C. *Rhinology as an Aid to Diagnosis of Pulmonary Tuberculosis; with Special Reference to the Physically Selected Cases.*
18. **Wallis**, J. G. *A Detailed Scheme for an Unexpected Landing Party Using Material Available.*

1. McGavin describes in detail the double-filigree operation for the radical cure of inguinal hernia. This, he believes, is particularly suitable for (1) elderly subjects; (2) those adult patients where the strain of certain occupations is so constant and severe on abdominal walls that it is unreasonable to expect a cure when treated by ordinary operations; (3) those patients, though young, in whom the muscular structures of the part are found to be thin, badly developed or stretched and loose over a large area; (4) those in which the hernia has recurred, especially if after a carefully carried out operation followed by a primary union; (5) those in which the hernia is of such a size that the gap cannot be closed without the exercise of such tension as to produce strangulation of the structures within the grip of the sutures.

The article is illustrated with numerous photographs and diagrams and contains thirty-two case reports. There are a few remarks on the treatment of ventral hernia by the same method. [J. B. H.]

Deutsche Medizinische Wochenschrift. No. 30.

July 29, 1909.

1. *Loeffler, F., Walter, E., Dibbelt, E., and Wehrlin, J. *A New Method for the Proof and Differential Diagnosis of Typhoid Bacteria by Means of Malachite Green, Safranin and Reinblau Media.*
2. Stieda, A. *Rachitic Coxa Valga.*
3. Braun, H. *The Operability of Gastric Cancer:*
4. Makkas, M. *The Treatment of Cardiospasm.*
5. Oestreich. *Stricture of the Transverse Colon Three Years after Pyloric Resection.*
6. Wechselmann, and Michaelis, G. *The Treatment of Multiple Abscesses in Infants with Specific Vaccine.*
7. Miura, K. *A Case of Recurrent Paralysis with Beriberi with Anatomical Lesion.*
8. Harrass, P. *A New Measure for Roentgen Ray.*
9. Goder, H. *A Method of Cutting Windows in Plaster Bandages.*

1. In an exact manner Loeffler and his co-workers in this article have explained their method of preparing a culture medium by which they claim to differentiate the typhoid bacillus early. By adding the coloring matter to the medium the typhoid bacilli take a blue color, while the other bacteria take to a great extent the red color. This new medium is considered to be of great value in attempts to identify the typhoid bacillus in the stools. [C. F., Jr.]

Münchener Medizinische Wochenschrift. No. 32.

Aug. 10, 1909.

1. Schmidt, A. *Neuroses of Internal Organs and Disease of the Nerves.*
2. *v. Herff, A. *Value of Local Treatment of Small Wound Inflammations of the Puerperium.*
3. Esch, P. *The Treatment of Hematocele after Ectopic Gestation.*
4. *Flörcken, H. *On Suture of the Heart.*
5. *Crämer. *The Distribution of Gastric Ulcer in Munich and the Bavarian Mountains.*
6. *Oberndorfer. *Frequency of Ulcus Rotundum Ventriculi in Munich.*
7. Katzenstein, J. *The Anemia of Infancy and its Prevention.*
8. Zweig, L. *The Treatment of Circumscribed Skin Diseases with Carbon-Dioxide Snow.*
9. Wehrsig. *Hyperkeratosis Subungualis (Unna) as a Result of Rœntgen Rays.*
10. Müller, C. *A Simple Method for Determining the Position of Deep Foreign Bodies by Means of Röntgen Rays*
11. Geigel, R. *Estimation of the True Size of Organs by the Size of their Shadow with Rœntgen Rays.*
12. Groth, A. *Lactation and Carcinoma.* (Preliminary communication.)
13. Raff, J. *Practical Experience with Scabies.*

2. v. Herff's statistics are chosen from many hundreds of cases of slight wound sepsis and endometritis following immediately after pregnancy. The cases have been grouped in classes and subdivided according to the degree and duration of the fever. The percentages of the clinic at Basel stand beside those of Königsberg. The cases were all such that radical measures were not deemed necessary. At Königsberg, local treatment was not used, but at Basel "self-drainage" of the uterus was promoted by the use of ergot and of hot douches. The results at Basel, according to the figures, were quicker and much better on the average than at Königsberg. The writer believes that when the canal is free, the uterus and vagina by contraction of their muscular fibers tend to drain themselves.

4. The reported case of puncture wound of the heart illustrates the good results which may follow operation for this condition.

5. From the facts collected, the writer shows the following conclusions: (1) That ulcer of the stomach is not as rare in Munich as was formerly supposed; (2) that it is on the average rather common in the Bavarian mountains; (3) that the hypothesis that a vegetarian diet is a safeguard against ulcer is a mistake.

6. Oberndorfer shows by autopsy statistics that ulcer of the stomach has been found much more frequently in Munich recently than in former years. He explains this as being due to more careful search for minute scars. He states that it is as common in Munich as in Kiel, thus striking a blow at the usual belief that ulcer is more common in north than in south Germany. Among two hundred and thirty-nine cases, the number of men and of women were almost equal. In both sexes ulcers or scars were most frequent in the fifth and sixth decades and distinctly less common in the seventh decade. (Although the argument of the writer on this point seems illogical, his figures suggest that ulcers may heal without leaving a visible scar.) [G. C. S.]

Berliner Klinische Wochenschrift. No. 33.

Aug. 16, 1909.

1. *Neisser, A. *Lupus or Tertiary Lues? Sarcoma or Primary Lues?*
2. Murray, J. A. *The Relations between Tumor Resistance and Histologic Structure of Transplanted Mouse Tumors.*
3. Klebs, E. *Antagonistic Therapy of Tuberculosis and Reversible Phylogenesis.* (To be concluded.)
4. *Brückner, E. L., and Much, H. *Further Communications on the Inhibitory Reaction of Human Sera on Cobra Venom.*
5. Frugoni, C., and Pisani, S. *Manifold Binding Properties of the Complement of Certain Sera (of Lepers) and their Significance.*
6. Thöle. *Vitalism and Teleology in the Natural Sciences.* (To be concluded.)
7. *Dubois. *The Psychopathology of the Phobias.*
8. Mitulescu, J. *Specific Substances in the Diagnosis and Treatment of Tuberculosis.* (Conclusion.)
9. *Runge, E. *Diseases of the Eye in Their Relations to Obstetrics.*

1. In a discussion of the differential diagnosis of syphilis, Neisser emphasizes the importance of the therapeutic test in ruling out lupus, sarcoma and the granulomata, without injurious delay to the patient.

4. Brückner and Much present a polemic paper in rebuttal of the attacks recently made on the Much-Holzmann psychoreaction. Their contention is supported by experimental evidence. Pending further expert investigation and report, the question must be considered still *sub judice.*

7. In an open letter to Oppenheim, Dubois replies to the former's criticism of his views on the etiology and treatment of the phobias, but adds little to the original exposition of his opinion.

9. Runge emphasizes the importance of examination of the eye-grounds in the diagnosis and treatment of the renal complications of pregnancy. [R. M. G.]

Deutsches Archiv für Klinische Medizin. Bd. 96.

Heft. 5 and 6. July, 1909.

24. *Reiss, E. *Weight Variations and Blood Concentration in Diabetes Mellitus.*
25. *Sandelowsky, J. *Blood Concentration in Pneumonia.*
26. *Oppenheimer, S., and Reiss, E. *Researches on Blood Concentration in Scarlet Fever, with Especial Reference to Nephritis.*
27. Bingel, A., and Strauss, E. *The Blood-Pressure-Raising Substance of the Kidneys.*
28. *Bracht, E., and Wächter. *A Contribution to the Etiology and Pathological Anatomy of Rheumatic Myocarditis.*
29. *Krönig, G., and Klopstock, F. *The Incidence of Toxic Meteorism in Infectious Diseases, Especially Pneumonia.*
30. Gigon, A., and Massini, R. *The Influence of Diet and of Fever on the Excretion of Sugar and Acids in Diabetes Mellitus.*
31. Nagel, M. *Contributions to the Casuistics and the Theory of Congenital Dextrocardia.*
32. Schmidt, P. *Researches on Experimental Lead Poisoning.*

24. Reiss made a clinical study of four cases of diabetes mellitus with especial reference to variations in blood concentration and body weight. His experience leads him to believe that renal insufficiency is at the bottom of these changes. The kidneys have both excretory and secretory functions; upon them the disordered metabolism in diabetes has an injurious effect, leading to anomalies in osmosis which manifest themselves in loss of fluid (and, therefore, loss of weight) as well as in water retention (gain in weight).

25. Sandelowsky, from his observations on eleven cases of pneumonia, comes to a similar conclusion, viz., that renal complications in this disease, too, can be traced to the effect on blood concentration of toxins circulating in the blood.

26. Oppenheimer and Reiss have studied blood concentration in ten cases of scarlet faver and conclude that in the concentration " curve " we may have a means of foretelling the onset of a renal complication. In a very severe case, the thinning of the blood serum gave warning of an approaching nephritis three days before symptoms appeared. Diminished concentration was noted also a few times in afebrile periods of the disease; in such instances it was not followed by a nephritis. The writers merely present their observations for what they are worth, adding that there may be cases of acute scarlatinal nephritis in which excretion of water and sodium chloride is not disturbed at all or not until after other kidney functions are impaired.

28. Bracht and Wächter examined the hearts of all cases of infectious diseases which came to autopsy at the Pathological Institute of the University of Freiburg during the semester 1907–1908. In three out of four cases of acute-articular rheumatism, they were able to demonstrate in the myocardium the tubercle formation regarded by Aschoff and Tawara as pathognomonic of rheumatic infection. The number of these little nodules was remarkably large, as shown by the accompanying plates. In no cases dying of other infections were such tubercles or anything like them found in the heart. With the diplostreptococcus cultivated from two cases of fresh rheumatic polyarthritis they succeeded in producing in rabbits not only characteristic articular and valvular lesions, but also myocardial changes which, while they did not correspond strictly to the little tubercles found in the human subject, could be clearly differentiated from heart muscle abscesses caused by ordinary pyogenic streptococci.

29. Krönig and Klopstock produced tympanites in dogs and rabbits in order to study this serious complication of severe infections. Its many bad effects are all mechanical; extreme distention alone causes death from respiratory failure. Meteorism always indicates severe toxemia; in pneumonia it is apt to appear at the onset of the disease, sometimes causing an acute abdominal condition to be suspected; in typhoid fever it is generally a late symptom.

The treatment of this complication is often unsatisfactory. Food which can cause intestinal catarrh or in any other way lead to increased intestinal fermentation should be forbidden. Extraordinary measures must be used to keep the bowels open. The writers have had some success clinically in restoring the tone of the intestinal muscularis with strychnia; in their animal experiments, this drug was a failure. Physostigmine did not fulfill their expectations. Treatment aimed at the underlying toxemia is, of course, of the greatest importance.

[L. D. C.]

Archiv für Klinische Chirurgie. Bd. 89. Heft. 3–4.

22. *v. Eiselsberg. *A Case of Injury of the Pulmonary Vein.*
23. *Clairmont, P. *Some Cases of Rare Tumor Metastases.*
24. Leischner, H. *The Surgical Treatment of Brain Tumors.*
25. *Clairmont, P., and Ehrlich, H. *Transplantation of the Hypophysis into the Spleen of Experimental Animals.*
26. *Ranzi, E. *Uranoplasty.*
27. v. Haberer, H. *The Question of Arterio-Mesenteric Duodenal Obstruction.*
28. *Denk, W. *The Radical Operations for Carcinoma of the Large Intestine.*
29. *v. Haberer, H. *The Question of the Functional Capacity of Lateral Entero-Anastomoses.*
30. *Odelga, P. *The Value of Colostomy in Inoperable Carcinomata of the Large Intestine, Especially in Carcinomata of the Rectum.*
31. *Ehrlich, H. *Primary Bilateral Carcinoma of the Breast and True Umbilical Adenoma.*
32. v. Kutscha, E. *Contribution to the Knowledge of Osteitis Deformans.*
33. v. Haberer, H. *A Case of Multiple Enchondromata and Exostoses.*
34. *Clairmont, P., and Ehrlich, H. *A New Operative Procedure for the Treatment of Habitual Dislocation of the Shoulder by Means of Muscle Plastic.*
35. *v. Frisch, O. *Tendovaginitis Crepitans.*
36. Pfister, A. *Contribution to the Knowledge of Post-Traumatic Ossifications.*
37. Sauerbeck, E. *Retarded Development of the Mesentery and Abnormal Relations in Position of the Intestine, Particularly of the Colon.*
38. Salzer, H. *The Question of Thyroid Transplantation.*
39. Fittig, O. *Separation of the Epiphysis of the Neck of the Femur and its Consequences.*
40. Nordmann, O. *Experiences in the Surgical Treatment of Diffuse Peritonitis.*
41. *Momburg. *Artificial Anemia of the Lower Half of the Body.*
42. Hansen. *Congenital Inguinal Hernial Sacs.*
43. Bardenheuer. *Contribution to the Question of the Operative Treatment of Acute Subcutaneous Traumatic Complete Paralyses of the Lower Roots of the Cervical Plexus.*
44. Seldowitsch, J. B. *Multiplicity of the Renal Artery and its Surgical Significance.*
45. *Neuber, G. *Inhalation Narcosis.*
46. Madelung. *The Replacement of Irreducible Dislocation of the Shoulder by Means of Arthrotomy from Behind.*
47. Steinmann, F. *Present Status of Nail Extension.*

22. Von Eiselsberg reports the case of a stab-wound of the left pulmonary vein which was successfully sutured in the Sauerbruch cabinet. The patient died on the fifty-fourth day of septic pleuritis and pericarditis, but autopsy showed the vessel-wound entirely healed, without trace of thrombosis or constriction. No similar case occurs in the literature.

23. Clairmont records several unusually located metastases of rare tumors, reviews the literature of the subject and concludes that clinically the occurrence of such anomalous neoplasms should always suggest metastasis from an occult tumor.

25. From a series of twenty animal experiments, the authors conclude that, under ordinary conditions, the hypophysis is not adapted for free transplantation.

26. As a result of personal clinical experience, Ranzi is led to prefer the Lane operation for cleft palate, though acknowledging the Langenbeck-Billroth method better for small defects. He believes that uranoplasty is best performed after the second year. He reports sixty-one cases.

28, 29 and 30. In this series of articles, the authors present the results of the treatment of cancer of the large intestine in v. Eiselsberg's clinic at Vienna during the past eight years. Of the 39 cases treated in this time by radical operation, 19 died in hospital, 7 have remained free from recurrence three years or more, 11 are well after shorter periods, 2 have already died of recurrence, and 2 could not be traced. These figures compare favorably with those from other clinics. With regard to the inoperable cases, Odelga concludes that colostomy is justifiable for the relief of discomfort and the prolongation of life. Its not insignificant operative mortality is due to the fact of the patients coming to operation so late.

31. As a contribution to the diagnosis of multiple tumors, Ehrlich describes a case of simultaneous primary cancer of both breasts and adenoma of the umbilicus. The latter condition has recently been made the subject of an article by Mintz (this *Archiv*, Bd. 89, heft 2, reviewed in this Journal, vol. clxi, p. 68.) There are excellent photomicrographs.

34. The authors describe and illustrate by plates and the

history of two cases their new muscle-plastic operation for habitual dislocation of the shoulder. They consider that, in the face of the multiplicity of pathologic causes underlying the condition, there is need of a uniform operative method applicable to the greater majority of cases. Since habitual dislocation of the shoulder ultimately arises from a disturbance in the coördination of the normal muscle contractions, they seek to overcome the tendency to luxation by an antagonistically acting muscular pull. This is secured by making a flap from the posterior portion of the deltoid, with its base at the spine of the scapula, passing it through the axilla, winding it around the posterior border of the neck of the humerus, and implanting it in the anterior median portion of the deltoid, with preservation of its contractile capacity. The advantages claimed for this method are its applicability to the majority of cases, the avoidance of opening the joint, and the speedy return of free mobility, whereby all further mobilizing after-treatment becomes superfluous.

35. From a careful clinical and histologic study of the condition which he terms tendovaginitis crepitans, v. Frisch comes to the conclusion that in the majority of cases it is a peritendinitis in the extra-synovial region of the tendon. The most frequent localization of the disease is that portion of a tendon which, during the play of the muscle, makes the greatest excursion relative to its surroundings. Those tendons are predisposed which during their movement suffer an abnormal pressure on the part of the neighboring organs. Microscopic examination shows in the initial stage a serous infiltration and marked hyperemia of the peritendinous tissue, later vascular new formation and accumulation of round cells. The tendon, especially its upper surface, is unchanged. v. Frisch believes that tendovaginitis crepitans of the radial extensors of the wrist is generally erroneously ascribed to the abductor longus and flexor brevis pollicis. Causal factors are over-exertion and pulling, though the disease may come on after simple contusion, not seldom spontaneously. This form, which occurs without known cause, frequently attacks persons affected with rheumatism.

41. Momburg reports 34 cases — 8 from the literature, 2 from personal experience and 24 from that of other surgeons — in which his method of securing complete anemia of the lower half of the body has been successfully employed, either at operation or to check severe hemorrhage, always without injury to the intestine or other viscus, respiratory embarrassment when an anesthetic was employed, or serious cardiac disturbance. He describes his method of applying and of removing the tourniquet, a five-foot rubber tube the size of the finger, and recommends the more extensive use of his procedure, which seems of sufficient possible value in surgery and obstetrics to deserve a thorough trial.

45. Neuber reports the consolidated statistics, from data given by 112 German surgeons, of 71,052 cases of general anesthesia. Of these, there were 23,809 cases of scopolamine-morphine narcosis, with 5 deaths; 20,613 of chloroform narcosis, with 10 deaths; 11,859 of ether narcosis, with 2 deaths; 10,232 of chloroform-ether narcosis, with 3 deaths; and 4,539 of other mixed narcoses, with 4 deaths. According to these figures, ether seems to retain its primacy as the safest anesthetic agent, while chloroform remains the most dangerous. The chloroform-ether sequence is but little safer than chloroform alone, since it is generally in the early stages of chloroform narcosis that fatalities occur. Scopolamine-morphine is nearly as safe as ether, and the surgical advantages of its "twilight sleep" are highly spoken of, especially its comparative freedom from post-operative pneumonia. [R. M. G.]

Die Therapie der Gegenwart.

July, 1909.

1. Strauss, H. *Acute Exudative Perisigmoiditis.*
2. *Scholz, F. *Studies on Oxygen Baths.*
3. Besser. *The Uric-Acid-Increasing Action of Coffee and of Methylxanthin in Health and in Gout.*
4. Nægeli, H., and Vernier, P. *A Contribution to the Treatment of Certain Diseases of the Heart and Kidneys.*
5. Brodzki, J. *The Imperviousness of the Kidney Filter.*
6. Mendel, F. *Fibrolysin and Fibrolysin Plaster.*

2. Scholz has studied, by request, some of the newer oxygen baths, and now gives the results of his investigations. Sodium perborate is the principal component of all, some albuminous substance being used as a "katalysator." The latter is added after the perborate has been distributed equally through the bath water. The best temperature for the baths is 34°–35° C. They are always given in the morning on an empty stomach. They are agreeable to the patient, have a sedative effect and (in contrast to carbonic acid baths) make breathing freer and easier. In general, the blood pressure is lowered; in severe myocarditis and advanced aortic aneurism, there is apt to be an initial rise; in nervous disorders and in health, the effect on arterial tension is very variable. The pulse is slowed when the blood pressure is lowered, and *vice versa.* A weak, irregular pulse is often steadier and stronger after the bath. The writer used the baths with success in cases of arteriosclerosis, organic and functional heart disease, asthma, emphysema and neurasthenia. He considers them particularly indicated where blood pressure is high.

In conclusion, it should be said that these baths are not altogether harmless, especially if the temperature is below 34° C. The patient should be told beforehand that the water is of a blood-red color with a thick yellowish-white scum on the surface, both of which cling temporarily to the bather's body. The question of expense is also to be considered in prescribing this treatment. [L. D. C.]

Obituary.

STEPHEN H. WEEKS, M.D.

Dr. Stephen Holmes Weeks died last week at the Maine General Hospital, in Portland, after an illness extending over more than a year. Dr. Weeks had had a long and honorable career as a practitioner in Portland, and his reputation extended far beyond the confines of that city. He was born in Cornish, Me., Oct. 6, 1835, was educated at Fryeburg Academy and graduated in medicine from the University of Pennsylvania in 1864. He was for some years professor of anatomy at the Maine Medical School and served as surgeon at the Maine General Hospital from 1874 until 1898. Since his retirement from active work at that hospital, he had been consulting surgeon. In 1889 he received the degree of master of arts from Bowdoin College, and in 1905, a doctor of laws from Amherst. He had long been identified with the best traditions of medicine in his native state, and his loss, although at a ripe age, will be severely felt among a wide circle of colleagues and friends.

Miscellany.

A PROTEST AGAINST SENDING AWAY DYING CONSUMPTIVES.

Cruel and inhuman practices are alleged in a statement recently given out by the National Association for the Study and Prevention of Tuberculosis against the Eastern doctors who persist in sending dying cases of consumption to the Southwest.

Fully 7,180 persons hopelessly diseased with tuberculosis annually come to die in the states of California, Arizona, New Mexico, Texas and Colorado, most of them by order of their physicians. The statement, which is based upon the testimony of well-known experts and all available statistics, shows that at least 50% of those who go to the Southwest every year for their health are so far advanced in their disease that they cannot hope for a cure in any climate, under any circumstances. More than this, at least 60% of these advanced cases are so poor that they have not sufficient means to provide for the proper necessaries of life, which means that 4,315 consumptives are either starved to death or forced to accept charitable relief every year.

It is not an uncommon thing, the National Association declares, for whole families, who can hardly eke out a living in the East, to migrate to the West in the hope of saving the life of some member of the family. In most instances, the abject poverty of such cases forces them to beg, or to live on a very low level. Often consumptives who cannot afford the proper traveling accommodations are found dead on the trains before reaching their destination. The resources of almost every charitable organization in the Southwest are drained every year to care for cases which would be self-supporting in their Eastern homes.

It costs, on an average, at least fifty dollars per month for the support of a consumptive in the Southwest, including some medical attention. The National Association strongly urges no one to go to this section who has not sufficient funds to care for himself at least one year, in addition to what his family might require of him during this time. It is also urged that no persons who are far advanced with tuberculosis go to so distant a climate.

Consumption can be cured or arrested in any section of the United States, and the percentage of cures in the East and the West is nearly the same. Any physician, therefore, who sends a person to the Southwest without sufficient funds, or in an advanced or dying stage of the disease, is guilty of cruelty to his patient. Renewed efforts are being made to stop this practice, and to encourage the building of small local hospitals in every city and town of the country. Attempts are also being made in southern California and in Texas to exclude indigent consumptives or to send them back to the East.

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Correspondence.

QUACKERY IN THE TIME OF QUEEN ANNE.

Boston, Aug. 28, 1909.

Mr. Editor: That the realm of medicine has always possessed both quacks and secretly prepared medicines for the cure of every ill is well known. That both the quacks and nostrums were thoroughly advertised is likewise well known.

In the famous *Spectator*, published in London, and which in good Queen Anne's time was edited by Addison and Steele, the latter making it a daily, there are to be found a number of advertisements of nostrums, which, for gulling the public, were in no manner inferior to those decorating the pages of the daily and weekly papers of the present enlightened age.

Thus may be found in a copy of the *Spectator* of the epoch referred to that there is "the most excellent Chymical Balsam, which infallibly cures the Gout or any rheumatick Pains, though the most exquisite and sharp that were ever felt. This most noble Balsam has long been made use of in private Families, who having found the Benefit think it a Crime it should not be published, that all who are afflicted may partake of so great Good. It cures all green Wounds and running Sores. Sold only at The Widow Gardner's Tobacconist in Little Britain, and Mr. Lawrence's Toyshop at the Corner of Bucklers-Bury, at 2*s*. 6*d*. the Pot with Directions."

Very truly yours,
Charles G. Cumston, M.D.

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PLEA FOR A MEMORIAL TO DR. TURNER.

Hartford, Conn., Sept. 3, 1909.

Mr. Editor: The late Dr. J. Edward Turner, a physician very widely known to the older members of the medical profession as the founder and projector of the first inebriate asylum in the world, built at Binghamton, N. Y., died in indigent circumstances, and was buried at Wilton, Conn.

No stone or monument marks his burial place up to the present time. The Society for the Study of Alcohol and Other Narcotics, recognizing this, have appointed a committee to solicit subscriptions for the purpose of erecting a monument over his grave costing about $600 or $700.

Dr. Turner was the first man in the world to point out the practical possibilities from the medical study and treatment of inebriates in an institution, and to indicate that the great alcoholic problem must be solved by a scientific study of the inebriate and the nature and influence of alcohol.

His views were denied and severely ridiculed, and he was persecuted as a crank and impractical idealist, but this only increased his ardor and energy to sacrifice his estate and time in the demonstration of the practical character of the first institution and the first effort to treat the inebriate medically.

In this he was a medical pioneer and veritable martyr, a century ahead of his day and generation, and his writings and books indicate a knowledge of the subject which even now is just beginning to dawn on the minds of the most advanced students.

The time has come when American physicians should recognize in a slight degree, if nothing more than with a monument, his marvelous work and studies, and it should be the duty of every one interested in this field of study to take part and assist in commemorating and showing to future generations that we are not oblivious of the real significance of his work.

Dr. L. D. Mason, of 171 Jeralemon Street, Brooklyn, N. Y., has been appointed treasurer of the Turner Memorial Fund, and earnestly solicits contributions of any amount for this purpose, and will acknowledge the same.

Subscribers to the fund will receive a copy of Dr. Turner's "History of the First Inebriate Asylum in the World," a volume of five hundred pages published a short time before his death, and containing an account of the struggles and beginnings of the first institution at Binghamton.

It is proposed that when the contributions are sufficient, a formal dedicatory service will take place at Wilton, Conn., at which historic addresses will be delivered of Dr. Turner and his work. Now that the alcoholic problem is coming into prominence, and is so intimately associated with the great hygienic problems of the day, it should be a privilege as well as a duty to aid in this effort to show the work of one of the great leaders in the ranks of American medicine, whose life and fortune was concentrated in bringing to the front the medical study of the drink and drug neurotic, and pointing out a broader phase of the alcoholic problem.

Correspondence is solicited either to Dr. L. D. Mason, 171 Jeralemon Street, Brooklyn, N. Y., or to the subscriber, who is chairman of the committee.

Truly yours,
T. D. Crothers, M.D.

RECORD OF MORTALITY

FOR THE WEEK ENDING SATURDAY, AUG. 28, 1909.

CITIES	Reported deaths in each.	Deaths under five years.	CITIES.	Reported deaths in each.	Deaths under five years.
New York	—	—	Waltham	7	2
Chicago	619	271	Pittsfield	13	4
Philadelphia	—	—	Brookline	4	1
St. Louis	—	—	Gloucester	10	2
Baltimore	200	69	North Adams	6	1
Cleveland	—	—	Northampton	4	1
Buffalo	—	—	Chicopee	5	2
Pittsburg	—	—	Medford	4	3
Cincinnati	—	—	Beverly	4	3
Milwaukee	—	—	Leominster	4	2
Washington	—	—	Hyde Park	5	8
Providence	—	—	Melrose	5	2
Boston	201	95	Newburyport	4	—
Worcester	46	21	Revere	8	1
Fall River	49	26	Westfield	9	4
Cambridge	25	14	Woburn	6	3
Lowell	41	22	Peabody	—	—
New Bedford	44	22	Marlboro	2	2
Lynn	22	11	Attleboro	5	2
Springfield	21	5	Adams	7	7
Lawrence	32	14	Clinton	1	—
Somerville	26	4	Gardner	6	3
Brockton	14	9	Milford	—	—
Holyoke	26	12	Watertown	7	3
Malden	14	6	Plymouth	—	—
Chelsea	2	1	Southbridge	4	2
Newton	10	1	Weymouth	7	3
Salem	19	6	Framingham	—	—
Haverhill	12	6	Wakefield	—	—
Fitchburg	8	5	Webster	—	—
Everett	10	1	Arlington	4	—
Quincy	13	7	Greenfield	0	—
Taunton	14	7			

LIST OF CHANGES OF STATIONS AND DUTIES OF COMMISSIONED AND OTHER OFFICERS OF THE PUBLIC HEALTH AND MARINE-HOSPITAL SERVICE FOR THE SEVEN DAYS ENDED AUG. 25, 1909.

KALLOCH, P. C., surgeon. Granted seven days' leave of absence en route to station.

WASDIN, EUGENE, surgeon. Granted one month's leave of absence from Aug. 22, 1909, on account of sickness.

GEDDINGS, H. D., surgeon. Detailed to represent the Service at the Sixteenth International Medical Congress to be held at Budapest, Hungary, Aug. 29–Sept. 4, 1909. Aug. 21, 1909.

ROSENAU, M. J., surgeon. Directed to proceed to Philadelphia, Pa., upon special temporary duty. Aug. 23, 1909.

CORPUT, G. M., passed assistant surgeon. Granted ten days' leave of absence from Aug. 13, 1909, on account of sickness.

VOGEL, C. W., passed assistant surgeon. Granted three days' leave of absence from Aug. 23, 1909, under paragraph 189, Service Regulations.

GWYN, M. K., passed assistant surgeon. Granted seven days' leave of absence from Aug. 17, 1909, under paragraph 191, Service Regulations.

STIMSON, A. M., passed assistant surgeon. Granted seven days' leave of absence from Aug. 16, 1909, under paragraph 191, Service Regulations.

EBERSOLE, R. E., passed assistant surgeon. Upon expiration of present leave of absence, relieved from duty at Manila, P. I., and directed to proceed to San Francisco, Cal. Aug. 20, 1909.

WOLLENBURG, R. A. C., assistant surgeon. Granted two months' leave of absence from Sept. 10, 1909.

ALTREE, G. H., acting assistant surgeon. Granted thirty days' leave of absence from Sept. 2, 1909.

BOYD, FRANK, acting assistant surgeon. Granted twenty-two days' leave of absence from Aug. 20, 1909.

FOGARTY, J. N., acting assistant surgeon. Granted eighteen days' leave of absence from Sept. 4, 1909, with pay, and twelve days' leave of absence from Sept. 22, 1909, without pay.

FRISSELL, C. M., acting assistant surgeon. Granted twenty days' leave of absence from Aug. 13, 1909, — nine days with pay and eleven days without pay.

MACCAFFRY, WARD B., acting assistant surgeon. Transferred from Reedy Island Quarantine Station to Cape Charles Quarantine Station. Effective Sept. 1, 1909.

O'REILLY, W. J., acting assistant surgeon. Granted two days' leave of absence from Aug. 31, 1909.

THORNTON, M. J., acting assistant surgeon. Granted one day's extension of annual leave, Aug. 15, 1909, on account of sickness.

MACDOWELL, W. F., pharmacist. Granted thirty days' leave of absence from Sept. 10, 1909.

MASON, M. R., pharmacist. Granted twenty days' leave of absence from Aug. 27, 1909.

MEGAW, H., pharmacist. Granted twenty-eight days' leave of absence from Aug. 21, 1909.

PROMOTION.

Pharmacist Walter H. Keen promoted to pharmacist of the second class, to date from May 24, 1909.

CHANGES IN THE MEDICAL CORPS U. S. NAVY FOR THE WEEK ENDING SEPT. 4, 1909.

WILSON, H. D., surgeon. Detached from the "Indiana" and granted leave for two months. Aug. 27.

SHAW, W. B., pharmacist. Ordered to the Naval Hospital, Norfolk, Va., for duty. Sept. 1.

SOCIETY NOTICE.

NEW ENGLAND HOSPITAL MEDICAL SOCIETY. — The New England Hospital Medical Society will meet at the Kensington Building, corner Boylston and Exeter streets, Thursday, Sept. 16, 1909, at 7.30 P.M. Section of Dentistry, Dr. Anne S. Worthen, chairman. Paper: Preventive Dentistry, Dr. Anne S. Worthen.

BLANCHE A. DENIG,
Secretary.

RECENT DEATHS.

DR. ALBERT BEACH WHITNEY, of New York, died on Aug. 30, in the seventy-second year of his age. He was a native of Westboro, Mass., and was graduated from Columbia College, New York, in 1861, and from the Philadelphia Medical College in 1863. Dr. Whitney had practised in New York for forty-five years.

DR. CHARLES WINEGAR CRISBELL, of Kingston, Ulster County, N. Y., died at his summer residence, Shelter Island Heights, on Aug. 30. He was forty-nine years of age and was graduated from the medical department of the University of Vermont in 1883. For several years Dr. Crisbell was bacteriologist to the New York State Department of Health.

BOOKS AND PAMPHLETS RECEIVED.

Treasury Department. Public Health and Marine-Hospital Service of the United States. Hookworm Disease in its Relation to the Negro. By Ch. Wardell Stiles, Ph.D. Washington. 1909.

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Original Articles.

THE RELATIONSHIP BETWEEN TRUE AND FALSE ANGINA PECTORIS.*

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Cases of angina pectoris have been divided into two groups: those which are associated with definite pathological lesions, and those which are not. The former have been classified as true, the latter as false, or pseudo-angina. In one, sudden death may be expected; in the other, recovery is the usual outcome. This division is convenient from the clinical point of view, but the question still persists whether it is not a purely artificial one, based on conditions which influence the outcome, but are of secondary importance in producing a paroxysm whose essential cause may be the same in both instances. The answer is difficult, for it is still impossible to give a definition of angina which will always serve to differentiate it positively from other cases, characterized by the sudden onset of cardiac or circulatory symptoms of more or less brief duration. It is even a matter of dispute whether it should be classified as a disease or as a set of symptoms arising from a multiplicity of causes. Richardson has urged that it is a special disease, as distinct as epilepsy and partaking in many ways of its features, a sort of epileptic counterpart in the sympathetic system. Allbutt describes it as a series of symptoms recurring with such remarkable uniformity as to make it proper to attach a name to it, but to claim that it may be due to many pathological changes is to attribute similar effects to dissimilar causes. Osler considers it not a disease, but a syndrome, a symptom group, without constant etiological or anatomical foundations, associated with complex conditions, organic or functional, of the heart or aorta. He applies the term generically to paroxysmal attacks of pain in the chest, but qualifies the varieties by such names as true, false, hysterical and vasomotor. These quotations are sufficiently illustrative of the diversity of opinions or speculations which have been advanced regarding its origin, since one speaks of it unqualifiedly as a special disease, another as a syndrome without constant foundations, while the third, though characterizing it as a series of symptoms, ridicules the possibility of its production by diverse pathological changes.

In discussing the etiology of angina pectoris, it has not always been remembered that the cause of the paroxysm and the cause of death are not necessarily identical. Angina has been found post-mortem in association with arteriosclerosis of the aorta and coronary arteries, with aortic aneurism, acute and chronic pericarditis, acute myocarditis accompanying infectious disease, occasionally with chronic myocarditis without arteriosclerosis and with enlarged mesenteric glands. Of these, arteriosclerosis of the coronary arteries and the aorta are the most common, but none are constant, and in occasional cases there have been no pathological lesions which could be held responsible. No conclusive proof, however, exists that any of the lesions found at autopsy are the primary cause of an attack, though they may act as accessory factors and, by impairing the functional capacity of the heart, increase the tendency to prove fatal. On the other hand, there is considerable evidence opposed to such an assumption. Their variety and inconstancy are against it, and as Hilton Fagge pointed out, the long duration of some of the cases seems inconsistent with the idea that any of them can have existed throughout its entire course. They are also common affections, while angina is relatively rare, especially among hospital patients, who are certainly no less susceptible to degenerative changes than the well-to-do.

No theory of the mechanism of angina, however adequately it may account for the pain, can be accepted which does not also explain the accompanying phenomena. Most of the three score or more explanations which have been suggested are, therefore, easily discarded.

While cardiac pain is one of its chief symptoms, cases without pain, angina *sine dolore*, so-called, have been classified with angina, its absence being attributed to the ensuing dilatation. These attacks may antedate the appearance of the painful paroxysms, they may alternate with them, or entirely supplant them. Some distinguished authors have wondered if the true essence of the condition may not yet be discovered in connection with this minor group, yet it seems more reasonable to ascribe them to an entirely distinct condition which may be described as a myocardial crisis. They seem more closely to resemble in their causation attacks of cardiac asthma, which are admitted to be distinct from angina, though they may alternate with it or even replace it in the downward progress of a case.

Since Boullay, in 1837, described a definite set of symptoms associated with arteriosclerosis in the legs of a horse, and Charcot later recognized a similar condition in man, to which the terms "intermittent claudication" and "angina cruris" have been given, there has been an ever-increasing tendency to ascribe more and more importance to vascular spasm in the production of an attack of angina. This tendency has been emphasized by the discovery that symptoms occurred in various other organs of the body which are analogous to angina cruris in mechanism but differ in their manifestations according to the function of the part affected. Such spasm in the retinal vessels in certain cases of amaurosis is capable of ocular proof. It is a satisfactory explanation of the attacks of brief paralysis, aphasia and unconsciousness which are not uncommon in the people of advanced years, of erythromelalgia, Raynaud's disease and allied conditions, of the sudden attacks of abdominal pain occurring in tabes and lead poisoning, and of the cases of so-called angina abdominis. Such a condition in the vessels of the spinal cord has been described as accompanying a set of symptoms which closely resemble intermittent claudication, but show in addition marked changes in the reflexes. Neurotic and neurasthenic individuals are especially liable, and all observers are now practically agreed that they are to be referred to some lesion in the nervous system, either functional or organic. In this whole group, degenerative changes in the arteries are a common, but, apparently, not an essential, part of the clinical picture, but their presence may be a contributing factor of much importance, either from the diminution in the blood supply in the parts which the affected arteries serve, or from an increased irritability of the vessel walls, which causes a more ready response to disturbed nervous influences, or from both combined. No great effort of the imagination is necessary to discover a close analogy between such phenomena and those which accompany angina pectoris. That a sudden interference with the circulation in the coronaries may be an efficient cause of pain is shown by the symptoms associated with certain cases of coronary emboli which may so closely resemble angina pectoris as to be mistaken for it, while the frequent occurrence of other vasomotor disturbances in an attack of angina favors coronary spasm as the probable immediate cause of the symptoms. The relief usually afforded by nitroglycerin is also confirmatory. One of the strongest objections which has been made against accepting such an explanation has been the doubt as to the existence of vasomotor nerves regulating the coronary arteries, but recent investigations seem to prove their presence. Another objection has been the behavior of the heart, which at times is the " one unmoved spectator of the drama," but there is no necessary relation between the severity of the subjective sensations and the amount of interference with the cardiac function. It is readily conceivable that severe subjective symptoms might arise without the latter being seriously impaired, for the size of the branch of the coronary artery involved in the production of a spasm may vary greatly, and it is possible that that portion of the myocardium, whose supply of blood is interrupted, might be of insufficient size to interfere with the orderly working of the heart. A case reported by Curschmann is an interesting illustration, since he watched the typical anginal paroxysms disappear as the portion of the myocardium, supplied by the gradually narrowing vessel, which was a branch of the coronary artery of the third order, was converted into a scar. Yet the heart maintained its strength and life continued for years with a slow pulse as the only reminder of the storm which had been weathered.

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* Read before a meeting of physicians of the Connecticut Valley at Northfield, Sept. 22, 1908.

As in the cases classed under the general head of intermittent claudication, the essential cause of the paroxysms must be sought in some other condition than in degenerative changes in the arteries, since angina occurs in but a small proportion of such cases, and occasionally without the presence of arteriosclerosis. The latter is not found in the cases of so-called plexus angina, in which inflammatory changes have been found in the nervous system of the heart, and is reported to have been absent in some instances where angina has accompanied the course of tabes. Even when associated with arteriosclerosis, anginal attacks may disappear as the myocardium fails in power, and Musser and others have noted that this may occur when the mitral valves give way and relative incompetence ensues. This has been attributed to a lowering of the intraventricular pressure, but it seems quite as probable, if not more so, that it is due to an alteration, the result of myocardial weakness, in the quality and quantity of the blood supplied to the nervous centers controlling the paroxysms which makes them less responsive to stimuli which had previously been effective.

In the final analysis the essential element in the production of an attack of angina must lie in a disturbance of some nervous center, which might be located anywhere from the cerebral cortex to the heart. As the result of some modification, either functional or organic, which has rendered them hyperesthetic, they react peculiarly easily and in a pathologically exaggerated manner. The greater number of cases seen in private as compared with hospital practice may be explained by a normally greater nervous irritability or instability in patients of the former class, which either makes changes in the central nervous system more readily acquired, or leads to a quicker or more marked reflex response to peripheral irritants. This may be a part of the general hypersensitiveness of the neurotic individual, or the result of a pathological process in the nerve center itself, of which arteriosclerosis may be the possible cause. It may be due to an auto-intoxication of intestinal origin, or to the effect of some poison, like lead or tobacco, introduced from without, or of a toxin manufactured within the body in the course of an infectious disease like influenza or syphilis, or of constitutional diseases like gout, chronic Bright's and diabetes. Many of the pathological lesions which have been described in connection with the condition are so located that they might involve portions of the nervous mechanism of the heart, and thus act as contributing etiological factors by increasing its excitability.

It has been the fate of almost every theory which has been advanced to explain the onset of angina pectoris that the arguments against it have greatly outweighed those in its favor. The objections to regarding it as a vascular colic of reflex origin in some circumscribed area of the heart and, possibly, in its milder manifestations, of the vasovasorum of the ascending aorta, with resultant ischemia in the part supplied, are least numerous and seem also least convincing. This explanation has the merit of finding a counterpart in other organs of the body, and accounts more satisfactorily than any other for the accompanying symptoms.

If this be accepted as the cause of the phenomena observed in angina, the mechanism by which an attack is produced is essentially the same in all its forms, hence a division into a true and false variety must rest on the presence or absence of pathological lesions, on differing clinical symptoms, or on a combination of the two. Certain difficulties are, however, immediately apparent. Death from pseudo-angina is a contradiction in terms, and yet in some fatal cases no pathological cardiac or vascular condition has been found. While it is possible to take refuge here in the well-recognized ease with which myocardial changes escape detection except after the most painstaking examination, it may not be inconceivable that a spasm of sufficient extent and intensity to cause death might occur in healthy vessels and with a normal heart. Even if it be admitted that such an occurrence is beyond the bounds of reasonable probability, the same objection is valid against other theories which have been advanced to account for such cases. It is equally difficult to classify those cases which occur in middle-aged or elderly patients who are the undoubted possessors of some organic vascular or cardiac lesion, and yet who lose their symptoms which may never return. Are they to be classed as instances of pseudo-angina in spite of their organic lesions, or as cases of the true form which have recovered? The latter supposition is only a partial solution. Although recovery may have resulted, as in Curschmann's case, from obliteration of the offending branch of the coronary artery, this will only account for a part of the cases. In the others, the pathological lesions on which a diagnosis of true angina might be based still remain, yet in spite of them the attacks do not recur.

The impossibility of positively determining whether certain cases, called by Gairdner nosological fragments, in which the symptoms are ambiguous, ill-defined or incomplete, should be diagnosed as instances of angina or of some other form of cardiac affection, has already been referred to. It may still be said, as the same author[1] put it nearly thirty years ago, that "no one fact in a typical case of angina pectoris is necessarily other than subjective, with the exception of the awful terminal fact of sudden death. And when this is wanting, or when it is delayed, there is hardly any combination of the remaining symptoms that may not vary in individual cases, or be differently presented by the sufferer, according to the exactness and concentration of his habits of thought, the vividness and power of his imagination, or the degree and kind of his individual sensitiveness to morbid impressions." While certain points in differentiated diagnosis have been designated as characteristic of the true or false form, there are none which are distinctive. The age of the patient has been considered one of the determining factors in diagnosis, but death may follow a paroxysm in the earlier decades, and recovery is not impossible in the later. The true form is reputed to be more common in men, the spurious in women, but it would seem to express more accurately the condition to say that both sexes are susceptible to angina, but that it more often ends fatally in men, since they are more subject to degenerative changes in their heart and blood vessels. Pain in the true form may be beyond the power of language to describe, but it may be slight, and it is not necessarily located over the heart, while that of the false may be intense. The pulse may be small and weak in the false and normal in the true form, and in both the blood pressure may be raised, but it must be admitted that our knowledge of the latter is limited, as, owing to the nature of the case, accurate determinations of it have been few. The symptoms on which most stress have been laid in making a differential diagnosis are the influence of exertion in producing an attack and the behavior of the patients during its continuance. Though breast pang after exercise is most suggestive of a local lesion, the exceptions to the rule are too numerous to make it of great value in diagnosis, since attacks of true angina may occur without apparent cause, and physical effort may precede the false. The other point has no greater value, since "both statuesque immobility and the contortions of intolerable agony are consistent with the true." Huchard's much-quoted table with its parallel columns of contrasting symptoms and physical conditions may be regarded rather as an aid to prognosis than to diagnosis, since it gives on one side those which usually precede death, and, on the other, those from which relief or cure may be expected.

Another difficulty encountered by those who would draw a sharp line between the true and false forms, and who think with Clifford Allbutt that pseudo-angina is no more angina pectoris than colic is appendicitis, is found in the occurrence of cases which are the result of infectious diseases or of various intoxications, notably tobacco. Ordinarily they belong to the so-called false variety, and terminate in recovery, but a transition to the true occasionally takes place, due to the fact, as stated by Anders in a recent valuable paper, "that the chronic lesions met with in angina pectoris may be excited or initiated by the toxic and other causes of pseudo-angina." There is, however, no reason for supposing that a new, or, at all events, an essential, factor in producing a paroxysm has been introduced by the development of lesions which have been grafted on the original condition, even though they determine the fatal outcome.

If the essential element in angina pectoris is some alteration, either functional or organic, the nature of which has so far escaped detection, in a nervous center, and its prognosis chiefly a question of the presence or absence of certain organic lesions, whose association with the attacks does not necessarily imply a causal relation, the use of such terms as pseudo, spurious and false to differentiate the cases is of questionable propriety, since it implies the existence of two separate and distinct morbid entities, one a serious affection, the grim precursor of death, the other a disagreeable but trifling affair, a sort of low comedian among diseases, masquerading in another's clothes and mimicking another's actions.

There is hardly more reason, theoretically, to classify cases of angina according to the presence or absence of cardiac disease than there would be to separate cases of pneumonia on a similar basis, though the condition of the heart may be the determining influence in prognosis. Such a division, though an attempt may be made to justify it on the score of convenience, must remain an artificial one, with the chances against its being proved to be founded on fundamental differences, until our knowledge of the essential causes of the paroxysm becomes more definite. Until then the use of such descriptive terms as true and false must be regarded less as an expression of our knowledge than as a useful cloak for our ignorance.

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[1] Angina Pectoris and Allied States. Reynold's System of Medicine, vol. ii, 1880.

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SPINA BIFIDA OCCULTA.*

BY JAMES WARREN SEVER, M.D., BOSTON,

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INTRODUCTION.

Spina bifida occulta, with or without an accompanying hypertrichosis, is not so uncommon a condition as might be supposed. During the past year I have seen a number of these cases at the Children's Hospital. They were sent to the hospital usually on account of some accompanying condition, such as talipes varus, which was the result of their spinal defect, and which defect had been usually overlooked.

It is with the idea of putting on record such an interesting group of cases that I am led to report them in detail.

DEFINITION.

Spina bifida occulta is a congenital deformity of the spine usually situated in the lumbar or dorsal region, but occasionally in the cervical, and recognized by a vertebral cleft which may be more or less evident, involving one or more vertebræ, and without the existence of a tumor. This condition is usually associated in the dorsal and lumbar regions with a profuse overgrowth of hair which is localized over the defective arches, or may even have a wider distribution. This abnormal hair growth may be the only sign of the defect and is pathognomonic when present. It may exist at birth or may not develop until during puberty.

Accompanying this condition of defective vertebral development, and as a result of it, there may exist dislocation of the hip, club feet, partial paralysis of the lower extremities, changes in tactile and thermal sensations, anesthesia and hyperesthesia and trophic ulcers. These conditions are often the cause of the child being brought to the surgeon, and in examining cases which present any of these conditions the spine should never be forgotten.

ETIOLOGY.

These cases are congenital in origin and are not to be considered as acquired deformities of the spine. They are of a series of congenital malformations which may be due to traction of amniotic bands preventing union of the borders of the medullary groove.

THEORIES.

There are several theories by as many men as to the causes for the defective development.

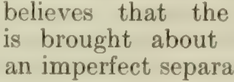
Virchow believes spina bifida occulta to be the consequence of a local inflammatory process which causes an interruption in the normal course of the development before the spine is fully formed; therefore, these disturbances must take place during the third or, at the latest, during the fourth week of embryonic life. The same local stimuli which cause the disturbance in the developmental processes act on the skin and excite the overproduction of hair at that area.

Von Recklinghausen's theory is that there is a disproportionate development between the growth of the canal and the spinal cord. He also believes that the deformity is acquired during the first few weeks of embryonic life. These views are also held by Musketello, who believes that the condition of hypertrichosis is caused by the local hyperplasia. It is probable also that an excess accumulation of fluid occurs in the medullary canal and prevents the fusion of the vertebral arches from increased internal pressure.

Marchand believes that the hindrance of development is brought about by mechanical causes and by an imperfect separation of the skin and medulla in embryonic life.

EMBRYOLOGY.

In the embryo the epiblastic medullary ridges come together to complete the medullary tube and its central canal. The epidermis is then completed across the middle line and is soon separated from the medulla by the extension between these of the mesoblastic tissue which forms the meninges, vertebræ, muscles and fibrous structures. The epidermis always unites if the medullary canal closes, though the mesodermic tissues may present defects. The neural arches of the vertebræ are completed posteriorly by the growing together and fusion in the middle line of the two laminæ, each of which is ossified from a separate center. It has also been shown that the nerve elements of the spinal cord are of ectodermic or epiblastic origin exclusively. The cord is the result of an invagination of the ectoderm or epiblast forming a groove which is widely open at first and gradually closing to form a tube, the



No 2. Transverse Section through the embryo Chick before the closure of the Medullary canal to show the upward and downward reflections of the Blastoderm at end of first day:

1 Notochord –
2. Primitive groove in the Medullary Canal
3. Edge of dorsal lamina
4. Epiblast
5. Mesoblast divided in its inner part.
6. Hypoblast
7. Section of protovertebral plate

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*Read at Hartford, June 16, 1909, before the American Orthopedic Association.

neural tube. The mesoderm or mesoblast supplies the serous, bony and muscular elements which arrange themselves around the neural tube. A malunion or absence of the involuting mesodermic elements which form the vertebral arches and spinous processes will leave a cleft. The defective coalescence of the spinous processes may be either partial or complete. The defect may be confined to one arch or body, but often it involves several and even at different levels. Each vertebra is formed from four primary cartilaginous centers, one for each lamina and its process and two for the body. Ossification of the body of the vertebræ commences in the middle by two processes which rapidly coalesce. Ossification for the laminæ commences where the transverse processes afterwards project, extending forwards towards the body and backwards towards the spinous processes. However, if the centers of ossification of the body fail to develop, we have an explanation of the defect, which allows a ventral projection of the contents of the spinal canal. If there is any arrest of ossification of the centers in the laminæ, we, therefore, get a dorsal projection of the contents of the spinal canal. The first centers of ossification which appear in the lower vertebræ are those which are to form the bodies, while the centers of ossification of the laminæ appear later. The fusion of the centers of ossification commences in the upper dorsal region and extends in both directions. The failure of the center for the laminæ to fuse causes a median posterior defect which is most common in the lower portion of the spine which closes last. This may explain the greater frequency of a lack of development, which is more often seen on the dorsum of the spine than on the ventral aspect, and also why the lack of closure is more frequent in the lower than in the upper spine. Tumors such as lipoma, fibroma, myomata, angiomata and dermoids may be found inside or outside the vertebral canal, or occurring in the bony cleft, due to the overgrowth of the embryonal cells in the formation of the defect.

OCCURRENCE:

Spina bifida occulta occurs not very frequently. It is often overlooked, and often individuals go through life with no knowledge of their condition. The persons who are exhibited in dime museums and at circus side-shows with long growths of hair on the back, resembling and often called a mane, are cases of spina bifida occulta of which this hypertrichosis is but a sign.

In 1875, Ornstein, physician in chief to the Greek army, reported a number of cases of abnormal hair growths in the recruits. Virchow has reported a case of a woman, age twenty-four, who had an abnormal hair growth, 6 to 7 cm. in length, over an area from the second to the fourth lumbar vertebræ. He considers this hairy tail in humans not a sign of atavism, but a pathological symptom.

Other cases have been reported by Alfred Landon of Königsberg, 1897; and Wanjura, Berlin, 1892; George, in a Rœntgenological study, in 1907; by Robert Jones, in 1891; by Kellner, 1901; Sainton, 1891; Jaeger, 1899; Lacayo, 1897; Katzenstein, 1901; Brunner, 1887; Joachimsthal, 1893; Maas, 1897; Reiner, 1901; Ribbert, 1893; Schon, 1894.

SYMPTOMS AND COMPLICATIONS.

There may or may not be any accompanying symptoms, and, as I have said above, patients may go through life without any knowledge of their condition. If, however, a patient presents himself with dislocation of the hip, club foot, paralysis of the legs, sensory disturbances, perforating ulcers of the feet, or other trophic disturbances, it is usually wise to examine the spine carefully. Palpation, inspection and the x-ray usually are enough to give one an adequate diagnosis. If the defect is in the cervical or upper dorsal vertebræ there is a deformity which is at once apparent, and, when once seen, the diagnosis can be made at a glance and is never forgotten. The neck is much shortened and thickened or broadened; in fact, the patient usually gives the appearance of having no neck at all, and the head has the appearance of being set directly on the shoulders. The motion of the head and neck are necessarily limited in all directions. There may be pain associated with a bifid spine which may be constant or intermittent in character. The deformities and affections of the extremities are probably due to a general lack of development, and the pain due to the existence of a firm band of connective tissue, passing through the spinal cleft and connecting the skin over cleft with the cord near its lower end. This connection of the two structures represents an imperfect separation of the two in fetal life, and this result is on account of one structure growing faster than the other. Hence this band pulls and stretches the spinal cord and presses it on the connecting band against the edges of the vertebral cleft. In Jones' case, reported in 1891, of spina bifida occulta with club feet, there was found at operation a firm transverse band of connective tissue which bound down and deeply grooved the cauda equina, and which, undoubtedly, caused the patient's pain, the areas of anesthesia and hyperesthesia in the lower trunk and legs, and lack of control of the bladder and rectum. In about six months after the division of this band the patient had made a very nearly perfect recovery. Other deformities may be the presence of fused, absent or deficient ribs and imperfectly formed vertebræ in other levels of the spine. These deformities may result in severe lateral curvature. There is no hydrocephalus in these cases as is not unusual in cases of spina bifida.

TREATMENT.

For the cases without complications or symptoms, there is, of course, no treatment. As the children grow older, usually some defects become apparent, manifested by the development of trophic ulcers, defect in locomotion, lateral curvature, etc. These defects usually become evident or more marked during the period of rapid growth, i. e., from twelve to seventeen years.

Dislocation of the hips may be reduced successfully. Pain, hyperesthesia and anesthesia, involving bladder and rectum, may be relieved by an operation which divides constricting bands in the vertebral cleft, and relieves the spinal cord or cauda equina from pressure. This is often followed by brilliant results. Club feet should be over-corrected from the start. The treatment is wholly symptomatic. The cavities of the body, that is, thorax and abdomen, should be carefully examined for the existence of a tumor which may be the result of a ventral protusion due to a ventral defect. I have never seen a dorsal and a ventral defect co-existing. These latter cases, that is, ventral defects, are very rare, and those reported, which have been operated upon, have all died.

The diagnosis in these cases may be made definitely only by operation, which discloses the connection of the tumor with the cleft in the spinal column. I question the propriety of classing these cases under my title of Spina Bifida Occulta, but will, as a matter of interest, report several cases which I have gathered from the literature.

Deforest Willard has reported a case of anterior spina bifida occurring in a child of two months. Examination showed a large cyst palpable through the right iliac fossæ. Emmet reports a case of a woman of thirty-six with a large cyst extending down to the pelvis which was aspirated through the rectum and three quarts of fluid withdrawn. The patient died on the seventh day following, and the post-mortem showed a cyst of the meningeal membrane protruding through the sacral foramina.

Robinson reports a case in a child of eleven months with a large cystic tumor occurring in the right side of the abdomen. The patient also had club feet. It was found at operation to be a spina bifida anterior. The child died on the tenth day after operation, and the autopsy showed extensive defects of the right side of the last dorsal and first lumbar vertebræ.

OPERATION.

Long-continued pressure on the cord leads to edema, softening and degeneration at the point of compression, with thickening of the meninges, and also degeneration of the centrifugal and centripetal axones above and below that area. Conductivity of the cord is still present to some extent, however, even after long-continued pressure. Therefore, it should be the duty of the surgeon to relieve this pressure if possible or feasible. Operation, however, should not be undertaken unless clearly indicated, as when manifested by the persistence of pain, or the occurrence of ulcers or paralysis, and not as a rule until the patient has reached the age of puberty, for these conditions do not always develop completely until that time, but become evident with the growth of the child and the increase of pressure and strain on the spinal cord. Strict asepsis is necessary. The skin over the cleft is incised to one side of the median line and turned back. If a band is found attached to the skin it may be divided. Nerves are not found in the skin. If no band is found the canal is explored for the demonstration of any connecting or constricting bands between the walls of the canal, and these are to be divided. A director may be used to explore up and down the canal. The cord is usually fully developed and intact, provided the pressure has not been too great or of too long duration. After thorough exploration, the operation is completed by closing the skin wound by any suitable suture, preferably catgut or horse hair. Considerable return of function may be expected provided the spinal cord is not destroyed or anatomically defective. Speed is essential.

ANALYSIS OF CASES.

Boys,	2
Girls,	9
Location.	
Cervical,	4
Dorso-lumbar,	1
Lumbar,	6
Complications.	
Paralyses,	4
Dislocation of hip,	2
Scoliosis,	2

CASE I. A. Mc., girl, age ten.

Family history negative, no deformities.

Examination shows a well-developed girl with a considerable shortening of neck. Holds the head forward. There is marked limitation of motion of the head in all directions. The right scapula is one inch higher than the left. There is considerable thickening and widening of the cervical spine. Vertebral cleft not definitely felt. No hypertrichosis. There is a left dorsal, right lumbar curve in the spine. There are no other anatomical defects.

See x-ray No. 1.

CASE II. M. P., girl, age four. Cervical bifid spine.

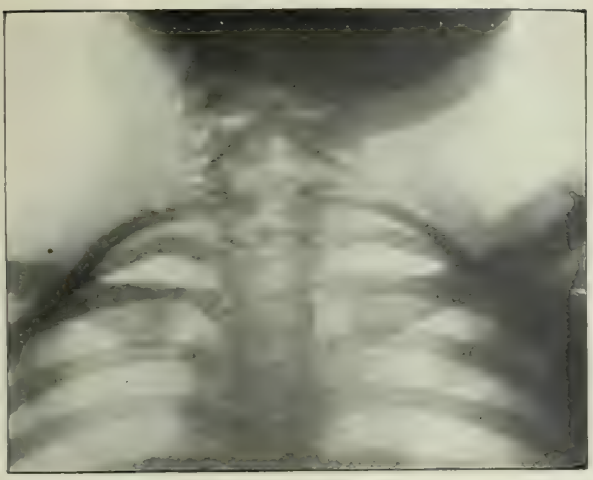
There was no definite history in this case and there had been no congenital deformities in the family.

The child was well developed and nourished and showed a condition locally as follows:

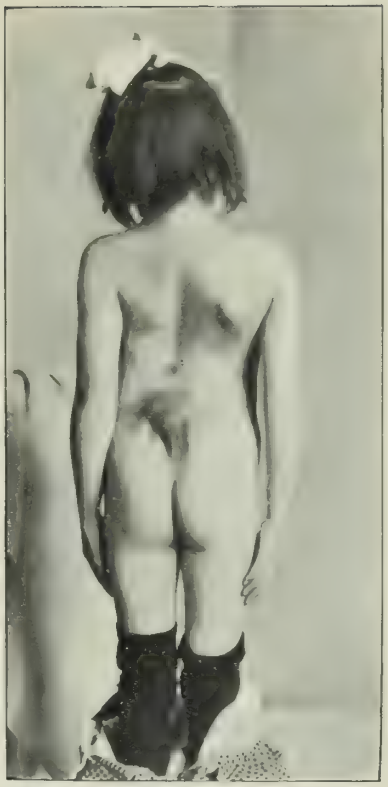
Neck very short and squatty — head seems to be set on the shoulders. In a sitting posture, the point of the chin comes about opposite the episternal notch. Not more than three cervical vertebræ can be counted or felt. There is considerable widening of the neck, but its circumference is smaller than that of a normal child. Clavicles were normal. Several x-rays were taken of this case, but all were poor and, on account of the close approximation of the child's head to its shoulders, we could not show the condition of the cervical spine satisfactorily. There was nothing to do for treatment.

CASE III. C. R., girl, age two and a half.

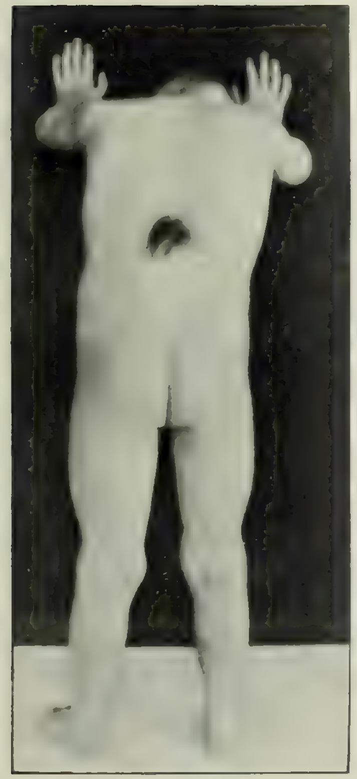
Weakness and turning over of right ankle was the first thing noticed about the child, especially when it began to walk. The physical examination showed a well-developed and nourished child; the right foot held in a position of talipes equino valgus, right leg muscles atrophied. Child walks on toes with foot turned out. On the back, there is a small, hairy area about two inches in diameter over lower lumbar region. Spinous processes of third and fourth lumbar vertebræ and posterior arch of fifth lumbar and upper portion of sacrum seem to be wanting. There is a congenital dislocation of the right hip. There is also a paralysis of the anterior tibial and flexor tendons of the right foot. The hip was reduced and five months later was



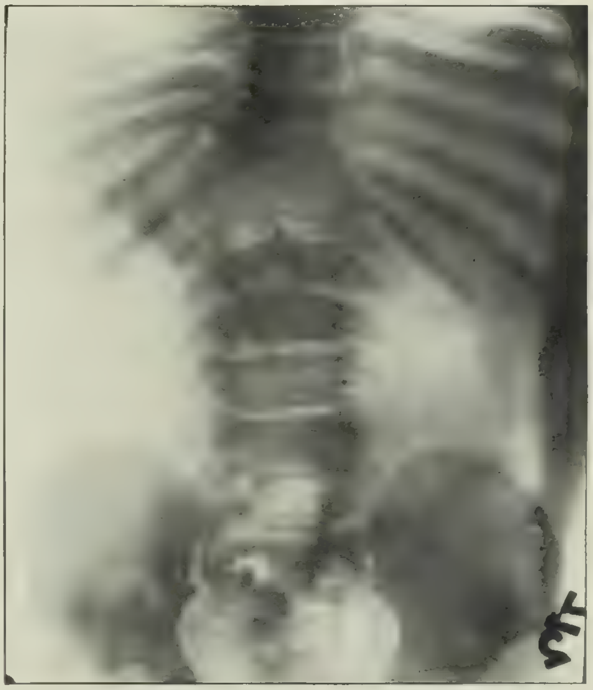
Case I. X-ray No. 1. Shows a cleft in the last cervical and third upper dorsal vertebra, with a marked increase in width and decrease in height of the cervical vertebræ. These inter-vertebral disks are also much thinner than is normal.



Case IV. No. 5. Showing hypertrichosis and lateral curvature.



Case XI. No. 14. Shows back with hypertrichosis.



Case XI. No. 15. Shows rudimentary vertebræ at dorso-lumbar junction, with lack of fusion of laminæ of eleventh and twelfth dorsal vertebræ; also incomplete five-inch lumbar.

still in place. An examination a year later showed the hip had become re-dislocated. There was a tenotomy of the tendo achilles of the right foot done at the time of the first hip reduction to correct the valgus and equinus of the foot. The x-ray shows spinous processes of third and fourth lumbar vertebræ bifid. There is also a cleft to the left of the median line in the sacrum. The bodies of the third, fourth and fifth lumbar vertebræ are wider and thinner than normal, which is characteristic of this condition. The right hip is dislocated and shows the rudimentary acetabulum. The picture was taken about a year and a half after the operation for reduction of the hip.

Case IV. J. S., girl, age five.

Family history negative. Brought to hospital because of deformity of chest which has existed since birth.

Examination shows below left scapula a space which bulges on inspiration. On the left side in front, below nipple, there is a space caused by the fusing of the fifth and sixth ribs, the fourth rib being fused to the fifth and the seventh to the sixth. The back shows a marked hypertrichosis over the lower spine with a bifid condition and consequent depression from the first to the fifth lumbar vertebræ. There is also a right dorsal, left dorso-lumbar curve with marked rotation. There is no paralysis in this case.

She is being treated with jacket to correct her scoliosis.

X-ray shows lumbar spine with the cleft involving the spinous processes of the vertebra, also the fifth lumbar vertebra much flattened and apparently rudimentary. There is also a sacralization shown between the fifth lumbar vertebra and the sacrum on the right.

Case V. V. E., girl.

This is a case where the bifid condition of the spine was found only after an x-ray was taken as a record of her lateral curvature. She had had no symptoms. Whether the bifid spine is the cause of her scoliosis or not cannot be determined. She has no hypertrichosis. The x-ray shows an incomplete fifth lumbar vertebra with lack of fusion of the laminæ, and a rudimentary condition of the last dorsal and first lumbar vertebræ.

Case VI. A. S., girl, six months.

Child was born with a patch of hair on its back. This condition at once attracted the mother's attention.

The physical examination showed a well-developed and nourished child. There was a patch of hair over the lumbar spine about the size of the palm of the hand and about 4 cm. long. A distinct cleft could be felt in the regions of the second and third lumbar vertebræ. The left leg is dislocated at the hip. The right side of the pelvis is much higher than the left, and the bony landmarks are considerably altered. There is no paralysis.

X-ray shows rudimentary pelvis, although from lack of ossification the whole structure cannot be seen. Dislocation of left hip. Cleft of lower spine extending from first lumbar to tip of sacrum. Whole lower spine and sacrum much widened and flattened. The right side of the pelvis is rotated forwards, so that one looks directly at the iliac portion of the sacro-iliac articulation.

Case VII. H. C., girl, age four. Bifid cervical vertebra.

Family history negative. Child was born with a deformity of the neck. Could not turn the head without turning the body, nor could she move the left shoulder well.

Examination shows abdomen, thorax and extremities normal. Shoulders are high, clavicles and scapulæ normal, neck extremely short and very broad. There is no forward curve to the cervical spine. The number of vertebræ seem diminished and the neck is much wider than normal. There are no cervical ribs. Motions of the head greatly restricted in all directions, especially in rotation and bending. Almost no prominence of chin, and back of head very flat. A cleft in the spine felt in the upper cervical portion.

X-ray shows head extended, shows broadened and flattened appearance of the vertebræ. The lack of fusion of the second, third and fourth dorsal vertebræ may be seen.

Case VIII. D. D., boy, age two and a half.

Family history negative. Had had trouble with neck since birth. Mother noticed that he always kept the head bent forward. The back of the neck is very broad and the neck itself is short. A cleft may be felt, but there is no hypertrichosis.

Cervical vertebræ much flattened and wider than normal. Distinct depression felt and seen. This is apparently one of those incomplete cases which have not gone to complete fusion of the spinous processes and the vertebral bodies have not fully developed.

Case IX. M. H., girl, age five and a half months.

There was no history in this case of any deformity in the family.

The child was born with both legs paralyzed. Reflexes were absent. The spine showed a cleft in the lumbar region beginning at the first lumbar vertebra. This case was operated upon with the hope of relieving pressure on the cord at the site of the defect.

Operation. — Small incision at dorso-lumbar junction. Spinous processes which projected were removed. Also the laminæ of these vertebræ removed. Fatty tissue outside of dura opened, followed by the escape of considerable clear fluid. A director was passed up and down the spinal canal to find adhesions. Nerves which were attached to dura freed as far as possible. No constricting bands felt or seen. The wound was then closed and the child made a good recovery. No recession in the paralysis was noted and we have lost track of the case since it left the hospital. It is probable that no good was done.

Case X. C. O'M., girl, age three.

Family history negative.

Child was born with a deformity of the spine and lower legs.

Examination shows a fairly well-developed and nourished child with a short, round back. There is a small swelling in the region of the first lumbar vertebræ.

Legs. The left leg is shorter than the right.

The foot (left) shows a paralytic deformity.

Atrophy in left in length, 1½ inches.

Atrophy of left thigh, ¼ inch.

Atrophy of left calf, 1⅛ inches.

On left, outer toes are drawn up. Foot in position of talipes valgus. No power in muscles, except of slight flexion.

Knee jerks diminished. Child walks with slight deformity.

X-ray shows lumbar vertebræ deficient, rudimentary and flattened. Intervertebral disks thinned out. Cleft extends into sacrum.

Case XI. F. C., boy, age four.

Family history. — Older sister born with an upper dorsal spina bifida which was operated on with a successful result. No history of previous deformities in the family.

This case came to the hospital on account of trouble with the feet. He began to walk when two years of age. When he was born, there was noticed a growth of hair on his back in the lower portion.

Examination shows that he lies with his right leg everted about 50°, 1-inch atrophy of calf and thigh muscles. Right leg ¾ inch shorter than left. Stands with right foot pronated. There is a paralysis of the internal group of right lower leg muscles besides the internal rotators of the thigh.

Back: In the low dorsal region, there is an absence of two or three spinous processes. Over this area there is a clump of long, black hair, extending over an area of about 2½ inches and about 4 inches in length.

CONCLUSIONS.

These cases show the usual varieties of spina bifida occulta. They also show that it may exist in varying degrees, accompanied or not by other severe deformities of greater or less importance. Operation is not indicated in a large number of these cases, especially when not accompanied by pain, anesthesia, hyperesthesia or complete paralysis. In a number of cases, the deformity itself cannot be corrected and one has to devote the attention to the complications.

Hypertrichosis is not constant but is more frequent in the low dorsal and lumbar region. Lateral curvature may or may not exist, and if it does, it is to be treated as such. Prognosis for life is good and in the paralytic cases not a great deal can be done except to attempt to correct the deformity.

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CYSTS OF THE LONG BONES. A REPORT OF THREE CASES.*

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THE following cases represent one of the rarer forms of bone tumors. Cysts are often overlooked, and, at times, mistaken for sarcoma, in which case amputation may be performed, an unnecessary procedure in this condition, as bone cysts are benign tumors and easily cured by a conservative operation.

CASE I. Bone cyst of the head of the humerus with fracture.

J. W., male, six years. Family and previous history not remarkable. No particular trauma of arm received.

Present illness. — On Jan. 10, while playing, tripped and fell, hitting his left shoulder a slight blow. This was followed by considerable pain, swelling and tenderness and was treated by his local physician by a sling and circular bandage. After a few days, the pain subsided, leaving, however, considerable swelling, and he began to use the arm. On Jan. 29, he was brought to the Massachusetts General Hospital.

Examination. — Healthy, well-developed boy. No glandular enlargement or malformation. Teeth, poor. Chest and abdomen, negative. There was a marked bony thickening of the head and upper portion of the left humerus, more pronounced anteriorly. There was no pain, tenderness or abnormal mobility. Abduction and extension were somewhat limited, but the motions of the shoulder were not markedly impaired. The diagnosis of fracture of the neck of the humerus with a large callus was made and the patient sent for an x-ray. The radiograph showed at once the condition present. The epiphyseal end of the diaphysis of the humerus was occupied by a medullary tumor through the center of which a fracture had taken place. (Fig. 1.) The growth extended from the epiphyseal line about two inches into the diaphysis, the whole end of the bone being ballooned out and the cortex extremely thin. There was considerable outward bowing.

The diagnosis of probable bone cyst was made and the patient recommended for operation.

Operation. — The upper end of the humerus was exposed by a two-inch incision over the outer aspect of the shoulder, the deltoid fibers being separated. The periosteum was then stripped back and the thin cortex broken through, revealing a cavity filled with bloody fluid. On sponging this out, it was seen lined with fibrous granulation tissue which bled easily and which nowhere presented any areas resembling cartilage. The cyst was thoroughly curetted, the cavity allowed to fill with blood and the deltoid fibers approximated over the opening with a catgut suture. The skin wound was closed tight with silk-worm gut and a firm dressing applied. The humerus was then refractured and put up with coaptation splints, an axillary pad, etc., in an attempt to obtain better position.

The convalescence was uneventful. The first dressing was done on the seventh day, the wound found clean and the stitches removed. There was some union and, as the radiograph taken after operation showed the deformity had been over-corrected, this was rectified; it was difficult to hold the fragments in position. Twelve days after operation, union was quite firm. Union was solid and the motions of the shoulder good on March 6, and he was allowed to go with only a sling.

Pathological report, 92–32. — Microscopic examination of the curettings showed the lining membrane composed of dense fibrous and granulation tissue. In one place were many spaces, evidently representing crystals, around which were a few foreign-body giant cells. In the other fragments were bone trabeculæ separated by inflammatory connective tissue. Around some of the trabeculæ were many osteoblasts. No cartilage could be demonstrated.

CASE II. Bone cyst, neck of femur, with fracture.

F. F., male, five years of age.

Family and previous history not remarkable.

Present illness. — Eight weeks before admission to the hospital, he fell off the step of a carriage and was unable to rise. He was kept in bed for some time, but for two weeks previous to admission had been walking.

Examination. — Chest and abdomen negative. No malformations. The left leg was one inch shorter than the right and presented a hard, bony tumor over the great trochanter. The movements of the hip were free and not painful. There was no bony prominence above Nélaton's line. The radiograph showed a well-marked cavity about one inch in greatest diameter, with smooth

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* For permission to include Cases II and III in this report, the author wishes to express his thanks to Drs. F. G. Balch, C. L. Scudder and E. A. Codman, in whose services they occurred.

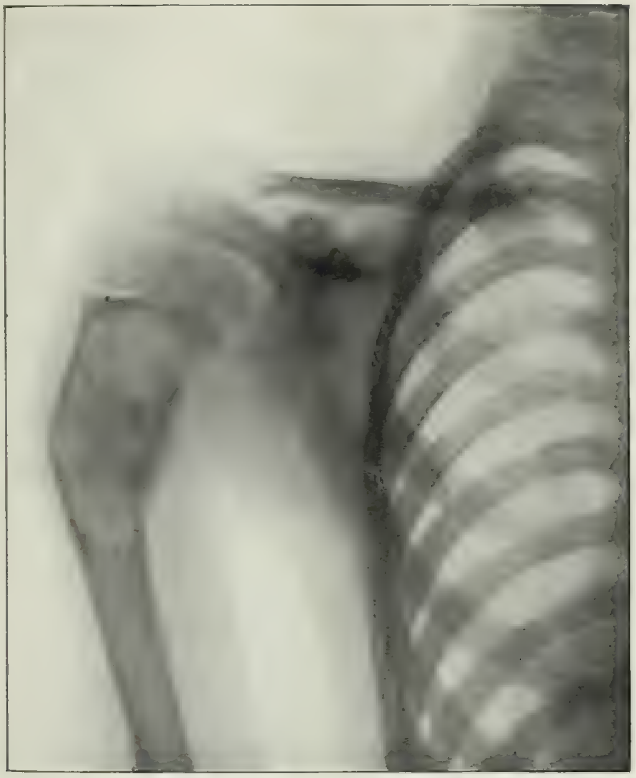

FIG. 1. Bone cyst of the head of the humerus with pathological fracture. The growth occupies the epiphyseal end of the diaphysis and has distended the shaft. The cortex is extremely thin. The deformity is due to a healed pathological fracture.

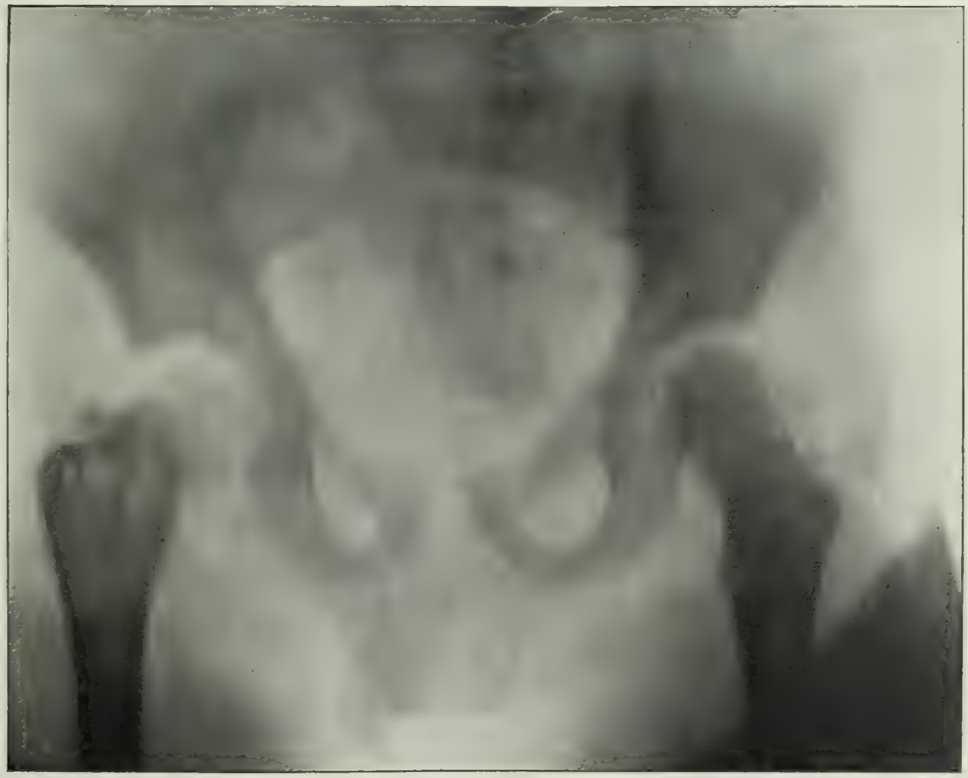

FIG. 2. Bone cyst of the upper end of the femur with pathological fracture. The cyst occupies the upper end of the shaft of the femur. The bone is not markedly distended, but the cortex is thin and on the inner side of the shaft is a slight irregularity showing the point of fracture.

walls, occupying the upper end of the femur. Some displacement representing an old fracture could be seen. (Fig. 2.)

Operation. — Dr. F. G. Balch. An incision two inches long was made over the great trochanter and carried down to the bone. The cortex was removed with a gouge, and a cavity, roughly 2 x 3 cm., filled with bloody fluid, opened. The cavity was thoroughly curetted out and the presence of cartilage in the curettings reported by the pathologist. It was then allowed to fill with blood and the wound closed in layers without drainage.

Recovery was uneventful, the wound healing first intention, and the patient was discharged well in two weeks.

A report from the mother three years and four months after the injury states that the boy is perfectly well and has never had any symptoms referable to his hip.

Pathological report, 519–73. — Microscopic examination showed small trabeculæ of bone in a connective tissue matrix which in places was myxomatous, and in others assumed the character of normal medulla. Along the edges of the trabeculæ were many osteoblasts. In one section were a few giant cells. (A few islands of cartilage were found in the examination made at the time of operation.) (W. F. Whitney.)

Case III. Bone cyst, shaft of femur, with spontaneous fracture.

J. D., female, twenty-eight years of age.

Family and previous history not remarkable.

Present illness. — Two weeks before entrance noticed a dull ache in the left thigh, present only at night. No pain or inconvenience on walking. Four days before entrance, a swelling appeared at the center of the left thigh. One hour before admission to the hospital, she fell while running and was unable to rise.

Physical examination. — Well-developed woman, no malformations. The left leg was rotated outwards and pain, crepitus and abnormal mobility present at the center of the left thigh. The radiograph showed a transverse fracture at the center of the left thigh and the shaft, particularly the lower end of the upper fragment, somewhat enlarged. (Fig. 3.) The presence of a bone cyst was not diagnosed at this time.

The patient was etherized and the fracture put up in the usual manner. Seven weeks after injury, as there was no union, and three fourths of an inch shortening, a series of x-rays were taken and showed the presence of a possible bone cyst.

Operation. — Dr. E. A. Codman. A five-inch incision was made over the fracture on the outer side of the thigh and the ends of the bone exposed. The cortex was thin and the medullary cavity filled with a soft, pulpy granulation tissue which occupied a cavity with sharply marked outlines. This was thoroughly curetted out and the wound closed in layers, a small cigarette drain being left in. The leg was put up in a plaster spica.

Healing was by first intention. Two months from the date of operation, there was some union and the bone stiffened slowly until four months after operation, when she was discharged with crutches.

A letter received from the patient one year later stated that she used crutches for six months after discharge, when she discarded them and after that had no further trouble with the hip, but complained of some pain in the knee.

Microscopic examination of the curettings showed inflammatory fibrous and granulation tissue. There was no cartilage and no evidence of malignant disease.

Cysts of the long bones are due to a variety of causes, and even at present the etiology of certain of the cases is still obscure. In general, they may be divided into various classes as follows:

1. Epithelial cysts, — odontoma, dermoid cysts, cysts of the air cavities.
2. Parasitic cysts, — echinococcus, cysticercus.
3. Cysts occurring in general skeletal diseases,— osteitis deformans, osteomalacia, fragilitas ossium, etc.
4. Cysts in inflammatory conditions, — arthritis deformans, osteomyelitis.
5. Cysts due to trauma followed by hemorrhage and rarefying osteitis.
6. Cysts due to degeneration of pre-existing tumors, — sarcoma, chondroma, growth and softening of embryonic rest of cartilage.

In a few of the reported cases the origin is obscure and there is some question as to whether they belong in one of the above classes or not.

It will be seen that cysts of the bone are not a pathological entity and should, in reality, be considered with the diseases in which they occur, but through general use the term "bone cyst" usually designates the solitary cysts occurring in the long bones.

The first case carefully described was reported by Virchow, in 1876, who discovered at autopsy, in a case of sarcomatosis, a cyst in the head of the humerus containing clear fluid and having cartilage in its wall. From a study of this case he drew the conclusion that bone cysts were due to a growth and degeneration of small foci of cartilage, in all probability representing a segment of epiphyseal cartilage that had been cut off during the growth of the bone. This has been shown to occur in certain cases of rickets, and islands of cartilage may be found in the medulla in multiple chondral exostoses. Koch,[1] in 1902, collected from the literature 22 cases, adding 1 of his own in which cartilage was found, microscopically, in the cyst wall in 17. His conclusions agree with those of Virchow. Since then some observers have said that the cartilage probably represented a retrograde change in the bone, and consider the cyst the result of a rarefying osteitis with absorption of the trabeculæ. Milner,[2] in a comparatively recent article, considers the conclusions drawn by Virchow have not been properly substantiated.

Hemorrhage into the medulla as the result of trauma with absorption of the trabeculæ is another very probable cause of cysts. Schlange [3] reports two cases following trauma, but in both the cyst was subperiosteal and situated in the shaft of the bone. In another case reported by Jones and Morgan [4] the cyst occupied the medullary cavity in the center of the bone as in Case III.

Rarefying osteitis and cyst formation may be seen in certain chronic inflammatory conditions, as in arthritis deformans, where they are situated near the affected joints. These occur usually in the aged, while the common form is seen in children and young adults. The cysts seen in osteomalacia, osteitis deformans and other general skeletal diseases are usually multiple (v. Haberer [5]).

The cysts are usually in the epiphyseal end of the diaphysis and, as they grow, extend into the shaft. Muller,[6] in 1906, collected 50 cases occurring in 43 individuals, of which 76% involved the bones usually affected in sarcoma, namely, the femur, tibia and humerus. They are seen almost invariably in children and young adults, the average age of Muller's cases being 19.4 years.

Pathology. — The portion of the bone involved is distended to a varying degree, and the cortex thin and at times parchment-like. On opening the cyst is usually unilocular, but at times sacculated, and the contents are usually described as clear or hemorrhagic fluid. As pathological fracture as a first symptom is so comparatively common, occurring in all three of these cases, the appearances are apt to be masked by the trauma and the resulting attempts at repair. The lining membrane is described in some cases as being smooth and glistening, and showing pearly areas representing cartilage. When no cartilage is present, the cyst wall is fibrous and this appears as unhealthy granulation tissue. Of the three cases, Case II was the only one in which the presence of cartilage was demonstrated. In Case I, a careful search failed to show any, while in Case III the examination was not very satisfactory, but none was seen. Microscopic examination shows the cyst wall composed of granulation and fibrous tissue in which may be islands of cartilage. In Cases I and II there were spaces where crystals had evidently been and these were surrounded by a few giant cells, characteristic of those seen around a foreign body. The surrounding bone shows atrophy with osteoclasts and in places some attempt at new bone formation. In Case II a few islands of cartilage were seen between the trabeculæ as is commonly described.

Symptoms. — The cardinal symptoms are pain, swelling, impairment of function and spontaneous fracture or fracture occurring after slight trauma, this last symptom being the first intimation the patient has in many cases of the condition. In Cases I and II fracture was the first and only symptom, the cause being discovered accidently by the x-ray, and in Case III the pain and swelling only preceded the fracture by two weeks. These symptoms are, of course, those common to any medullary tumor, but fracture as a first symptom in other tumors is rare and pain and swelling first determine the patient to seek medical advice. The diagnosis rests chiefly on the x-ray and is, in fact, practically impossible without one. In the typical case the appearance is that of a cavity in the head of the bone with well-marked outlines and thin walls resembling somewhat a giant-cell sarcoma, or, in a lesser degree, a bone abscess. In many cases it cannot be absolutely differentiated from the former, but giant-cell sarcoma is extremely rare in childhood, the time of life when most of the cases of bone cyst occur, and in the x-ray the cavity is usually not as sharply marked and is more apt to be traversed by bony trabeculæ. Other medullary sarcomata are not as circumscribed and usually involve the periosteum by the time attention is called to them. When occurring in the center of the bone, the cysts appear simply as cavities. The treatment of giant-cell sarcoma, which is a very low-grade malignant tumor, is practically that of a cyst, and the success of conservative treatment in this class of tumors has lately been emphasized, both abroad and in this country (Bloodgood,[7] Borchard [10]).

Treatment. — Amputation is not necessary nor is resection justifiable, as the growth is essentially benign. Cure is to be expected following incision and thorough curretting of the cavity, care being taken to remove all the lining membrane and small islands of cartilage, if these are present, in the immediate vicinity. The cavity may then be treated in various ways. Some advise packing and allowing the wound to heal by granulation. In Cases I and II the cavity was allowed to fill with blood and the wound closed without drainage, healing in both cases being by first intention. This obviously has great advantages over the other method when successful. In Case III a small wick was inserted and removed in a few days, the sinus soon closing. It would also seem that certain of these cases would be ideal for the use of Mosetig-Moorhoff's bone wax or similar bone plugging material (Mikulicz [11]).

From a review of the literature and the history and findings in these three cases, it seems justifiable to draw the following conclusions:

1. The so-called solitary cysts of the long bones are in most cases due to the degeneration of preexisting tumors, that is, growth and softening of a chondroma arising from a misplaced piece of epiphyseal cartilage. This theory, however, does not account for all the cases.
2. The tumors are essentially benign growths and may be cured by a conservative operation.
3. They are seen almost exclusively in children and young adults.
4. In any case of spontaneous fracture or fracture following slight violence, a radiograph should be taken to determine the presence or absence of a bone cyst as a predisposing cause.
5. A positive diagnosis is impossible without a radiograph, which should be examined by a man conversant with the appearance of bone tumors.

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THE QUEEN ALEXANDRA SANATORIUM for tuberculosis patients will be opened early in the autumn at Davos, Switzerland. This institution, though founded by English charity and considered as national in character, is to be open to all members of the English-speaking races, whether British subjects or citizens of the United States. — *Med. Rec.*

A CASE OF FATTY INFILTRATION OF THE LIVER IN AN INFANT OF THREE MONTHS.*

BY CHARLES A. PRATT, M.D., FALL RIVER, MASS.

Baby D. was born April 26, 1908, after a normal labor of a few hours. She weighed 6 lb. and was well nourished.

She was breast fed for seventeen days, was happy and appeared normal in every respect.

On the seventeenth day, the mother suddenly developed a pulmonary embolus of the left lung, from which she nearly died. The baby was weaned, and thereafter was artificially fed.

The mother survived the embolus and two weeks after had a double phlebitis, with great pain and fever. Two weeks later she had a passive congestion of the right lung and her life was despaired of. She was then the victim of a post-septic insanity which lasted several months, ending in her complete recovery.

The mother's illness was so severe that the nurses had their time fully occupied in caring for her, and as long as the infant seemed thriving it was not disturbed, and any slight changes in its condition would probably have been unnoticed. At any rate, the baby gained fairly regularly until about the middle of July, when it weighed 10 lb., and no one had remarked trouble with it. The writer saw it the middle of June, in Chicago, and while he did not examine it carefully, the baby looked and acted like an especially normal and well-nourished infant. It was good color and slept well, and, as far as he could find out, took its food well.

The child arrived in New Bedford from Chicago the morning of Aug. 7, 1908, after a very hot, exhausting journey. The milk supply taken from Chicago lasted until reaching New York City. This food was the ordinary food on which the baby had been fed, was not pasteurized, but was put in an ice box. In New York, the Chicago supply of food having been exhausted, some commercial cream was obtained at the hotel and diluted according to the formula on which the baby had previously been fed. This food was also not sterilized.

The baby was fed on this new food on the boat from New York to New Bedford. The following history of the previous weeks was obtained from the woman who had the care of the baby for a few days before leaving Chicago, and who had been taught how to prepare the babie's food by the nurse who had charge of the baby till just before starting for the East. The trained nurse who came on with the mother knew nothing about the baby or its food. She said the baby had been fussy since about the middle of July, that it had gradually lost its appetite, so that it only took a few ounces a day for several days before leaving, and sometimes could not be persuaded to take food for often five hours at a time; that it often vomited some of the food it did take. The baby only took about 8 oz. on the train from Chicago to New York, and vomited part of that. On the boat from New York it cried and refused food and vomited several times. When the child left Chicago it was not considered ill, but word was sent that it was not taking its food well and it was thought it was due to the intense hot weather, and it was suggested that the food be changed in New Bedford. The woman gave me the following formula which the baby had been taking before leaving home: Commercial cream, 5 oz.; boiled water, 20 oz.; enough milk-sugar to make a 5% sugar strength and a 10% alkalinity by lime water. This food was not pasteurized.

When the baby arrived in New Bedford, on the morning of Aug. 7, she looked ill but her condition was not especially alarming. It was said she had vomited on the boat, and so a $\frac{1}{4}$ certified milk and $\frac{3}{4}$ boiled water mixture was prescribed. She vomited during the day, and at 4 P.M. was seriously ill, so that the food was changed to barley water and milk sugar of a 5% strength. That evening she was so ill that she had gastric lavage and colonic irrigation of normal salt solution. She had two pretty fair looking discharges during that day.

Physical examination revealed nothing except a distended abdomen and an enlarged liver extending from the anterior superior spine of the right ileum to the umbilicus, and about 2 cm. below the edge of the ribs on the left. The edge was sharp, not tender, and surface seemed smooth; also the superficial veins of the abdomen were moderately prominent. Baby was well nourished but looked sick.

On Saturday, Aug. 8, was still very ill, and was seen by Dr. Talbot owing to Dr. Morse's absence from Boston. During the morning, baby had two rather foul, green stools with some mucus, temperature 100, and still vomiting. She was given small doses calomel and rectal irrigation; also boiled water, 1 dr., as necessary. Later breast milk, 1 dr. every hour, diluted about 4 parts with water.

On Sunday, the 9th, she was much distressed and screamed with every breath, so that the breast milk was stopped, and barley water with 5% milk sugar was substituted. Her distention was great and she was somewhat rigid from distress, eyes were rolled up and hands slightly clinched. She was given 3 oz. of normal salt solution under the skin that afternoon and two or three $\frac{1}{16}$ gr. codeine suppositories to quiet the distress. She was seen by Dr. Wentworth that evening, who gave a very bad prognosis. She secreted no urine for eighteen hours, but finally, on Monday, she brightened up, began to take food again and passed urine. The vomiting ceased and distress was relieved. That afternoon she was given a very weak dilution of breast milk with the almost immediate rise of temperature to 105°. The breast milk was stopped and by night the temperature was 100° again. For the next three days she took only the barley and milk sugar, although we had a wet nurse in the house, if it was considered advisable to feed any more breast milk. She vomited almost none and had one or two greenish stools a day with a little mucus; also had little distress. Then, owing to her loss of flesh and strength, it was decided to try to get her on to a more nourishing diet. She was given $\frac{1}{2}$ oz. of barley water and milk sugar and half whey and barley water in alternate feedings every hour. In a few hours the distress and green stools returned and barley water was again resorted to. Aug. 15 was again on barley water with more or less discomfort, and on the 17th, as the stools were yellow and no mucus, and nourishment was getting to be of vital importance, 10 drops of breast milk were added to every other feeding of $\frac{1}{2}$ oz. of barley water. In a few hours the distress and green discharges returned and the breast milk was stopped. In the meantime she was occasionally having small amounts of salt solution by the rectum to be retained. She was also occasionally vomiting and had the extremely prominent abdomen.

She continued on the barley water until the 22d, gradually getting more and more uncomfortable when she was seen by Dr. J. L. Morse. As the question of nourishment was getting of the gravest importance, it was decided to try condensed milk in the barley water $\frac{1}{24}$ every other feeding at hourly intervals. This was continued until the 24th, when the baby died from exhaustion. She had retained the condensed milk fairly well, but had been distressed at times. The green stools and mucus did not return.

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* Read at a meeting of the New England Pediatric Society, March 20, 1909.

The pathological report was as follows: The lower border of the liver extended from the left costal margin in the anterior axillary line to the crest of the ileum on the right, the notch being 15 mm. to the left and 15 mm. below the umbilicus. On the right it reached as high as the fourth rib. The liver was tense, firm, smooth, edges were rounded with the exception of the lower edge of the right lobe, which was sharp. Color was pale yellow throughout, nowhere mottled. The cut surface was firm, pale yellow and greasy. The lobules were enlarged and their outlines indistinct.

Microscopic. — The liver cells showed marked variation in size and the normal outlines were much distorted. Fat almost entirely replaced the protoplasm of the cells, only an occasional nucleated crescent at the side of the cell remaining. There was no normal liver tissue left in any of the sections taken. The spleen was normal in size and color. The kidneys also appeared normal. The intestines were congested throughout, especially around "Peyer's patches," as seen through the peritoneal covering. No further examination of the organs was made.

Diagnosis. — Fatty infiltration of liver.

It would seem from the history that the baby was healthy at birth and continued to thrive for several weeks after being artificially fed. That somewhere, soon after July 1, it began to lose its appetite, vomit, and nothing special was noticed in its condition until just before leaving Chicago on Aug. 5, when it was thought the change to the seashore would revive it.

What condition could cause such a tremendous enlargement of the liver in an apparently healthy infant I do not know. Excessive fatty foods are said to give a child anorexia, vomiting and, incidentally, fatty liver. What the exact percentage of fat there was in this infant's food I have been unable to find out. On writing the attending physician in Chicago for the food formula, I got a reply that he had entirely forgotten how the food was modified. If the cream obtained in Chicago on which the baby was fed for some time was a very rich centrifugal cream, the diluted food might easily have contained as high as 5% fat, which would be too high for any baby, and might possibly account for the loss of appetite and liver enlargement which had probably been going on for a few weeks before leaving Chicago.

The cream obtained in New York was undoubtedly the cause of the baby's acute toxemia and the beginning of the end, but her liver had undoubtedly been enlarged long before this, as the enlargement of the liver was not especially marked after she was seen by the writer.

It hardly seems conceivable to me that a baby apparently so normal for two and a half months could have carried all this time a congenital liver of this character.

It does not seem to the writer that the acute toxemia would have killed the baby had the condition of the liver been normal, so that the ordinary nulabolic processes of the body could have been normally carried on, nor does it seem probable, had the mother been well and nursed the baby, that it would have developed any such an extreme fatty condition of the liver. So it does seem as though the condition was caused by an external cause, probably something in food, the character of which I have no idea unless it was excessive fat.

The extreme distress which the baby had seemed to be due to abdominal distention and pressure from the large liver, as on opening the abdomen it seemed as though it contained nothing but liver. There was never any jaundice about the infant.

This case is reported on account of the apparent rarity of such large livers in such small infants. Moderate degrees of fatty infiltration in older children, especially if ill-nourished, are very common, and it generally disappears when the child is put under good hygienic conditions and is built up.

It is hoped that others of greater experience will be able to throw some light on the cause in this case.

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THE PEDIATRIC SOCIETY AND THE GENERAL PRACTITIONER.*

BY MICHAEL KELLY, M.D., FALL RIVER, MASS.

Encouragement to write this paper came from the recollection of a fact mentioned in the history of ancient Rome. Every year, at the beginning of the Saturnalia, there was one happy day when the relative positions of the members of the household were reversed: the masters occupied the places of the servants, and the servants played the rôle of masters, to the mutual enjoyment of all.

A medical practitioner for twenty-four years, I will endeavor to state from experience, or to suggest a few, at least, of the advantages which membership in the New England Pediatric Society possesses for a humble worker in the ranks. To present the subject in a manner worthy of it is entirely outside the power of a man of my professional history and training, and could be suitably accomplished only by one of the altruistic benefactors of the profession who conceived, organized and set in motion this much-needed, useful association.

It is needless to say, except for the purpose of argument, that the progress made by hospital and laboratory workers and observers in all departments of pediatrics is amazing and often bewildering to the general practitioner who has the time or the mental bent to read or study. It is quite impossible for the studious practitioner to keep pace with this progress. There is really a superabundance of new and reliable information. A textbook by the time it is four years old needs a thorough weeding, a thorough reconstruction, that it may contain only the cream of what is new. The general practitioner needs a somewhat similar overhauling and readjustment of his knowledge, a process which, for him, must be continual. The general practitioner realizes all this fully, and many of us who are not associated with a children's hospital staff, a medical school or a dispensary admit that we have not the courage to attempt to keep up with the rising tide of new pediatric knowledge. The large number of new words alone, the continually expanding volume of nomenclature, deter many from profitably reading the new textbooks or the finished scientific articles in the magazines and journals. A man of twenty, or ten, or much fewer years in practice, unless he is one of the busy few who always labor to keep abreast of the times, cannot read one of the newer contributions to the literature of pediatrics to-day without referring continually to his medical dictionary; and it does not take many years for even the medical dictionary to grow quite out of date. The old practitioner, and old in this connection does not mean many years, would need a glossary of the newer words at the end of each new work to enable him to read with comfort. Practitioners, subscribers for one or more medical journals, buyers of new medical books, men who studied Latin and Greek and are somewhat skilled in word roots, confess that they seldom attempt to read an article in one of the newer medical publications; it appears to them too much like hard work after a hard and fatiguing day's practice. All general practitioners are not in this class, but, unfortunately, it contains very many.

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* Read at a meeting of the New England Pediatric Society, March 20, 1909.

Because all general practitioners, and especially those who practice much amongst children, do not keep fully abreast of the newer medical knowledge and teachings, this knowledge has no effect upon their patients. The benefits of the most advanced scientific progress are as completely shut out from these children as if it did not exist. The practitioner is out of touch with the true spirit of the best modern practice, and, consequently, his numerous patients must suffer. These physicians may have read of the success of new modes of treatment, may have heard them described and recommended, but have not become familiar enough with them to employ them with confidence.

If there is an adequate remedy for this discouraging state of affairs, if there is a true specific, it should be applied with heroic activity. The remedy is found in membership by the general practitioner in the pediatric society and in regular attendance at its meetings. This remedy springs from direct contact with the original workers, men who are making the new scientific advances, the explorers, the men on the firing line of progress, the untiring pathfinders. We cannot fail to have a live, active interest in subjects which we hear discussed by the authors. This association will be to us a spur, stimulus, an inspiration to study continually; in this way unfamiliar terms will become familiar. Knowledge thus gained makes a deeper impression than that gleaned from books, and the need of the dictionary will be much less pressing.

That an extraordinarily large number of children to-day fail to receive all the benefits of modern medical knowledge is evident from a glance at the work done or left undone by too many medical school examiners. The medical school examiner has more clients than a physician upon a hospital staff or in a dispensary. His field of labor is still comparatively new, and but very imperfectly explored. A school inspector who appreciates the duties and opportunities of his position has a rare chance to make observations which will enlighten the profession and bring invaluable benefits to sick and well children. Yet how many inspectors appreciate their position at its true worth and endeavor to live up to it? Within the past three months statements have been published by persons whose business it was to investigate the methods of public school inspectors in three of the largest cities in New England. We find from these reports that several school teachers, or school principals, had never seen their inspector. Other reports show the methods of inspection as crude, perfunctory, imperfect. The benefits to pupils and community from many of the inspectors are small. This total neglect of serious duty, or clumsy performance of it, has happened, too, in the larger cities, where men are apt to be more careful. Following these statements from interested investigators comes the naïve complaint from the doctors that their salaries are too small. Although a medical man deserves good remuneration for thorough medical school inspection, it is doubtful whether a larger salary would coax many men to do better work. It might simply increase their intellectual inertia. Few resign on account of salaries. They are out of touch with the demands of the position, and the first step obviously for them is association in the pediatric society with men who are seriously interested in studying the growth and development of children. School inspectors who continue to do poor work, or no work, and fail to avail themselves of membership in such an association, need the application of all the resources of psychotherapy.

My purpose in calling attention to the shortcomings of many medical school examiners is not to criticise those in whom these shortcomings exist, but to point out one of the chief reasons why some of them err in this way. Many act thus solely on account of lack of touch with the importance and scope of their work. This branch was not taught in the medical school. It is one of the many additions to a medical education which the graduate by reading and study and hard work must acquire after his course at the school has been finished. Until the inspector has fully mastered this knowledge, and is prepared to labor in full sympathy with the letter and the spirit of the laws which demand the medical inspection of schools, he is not qualified to do his full duty toward conserving and improving the mental and physical efficiency of school children. When good, honest work has been done, and the inspector has demonstrated the value of his office, the question of salary will take care of itself.

The general practitioner, member of a school committee, frequently reflects no more glory on the profession than the medical school examiner. How many practitioners can we recall who have been conspicuous on such committees simply and solely as medical men? Schools built within the last ten or even five years are reported as having seats too large or too small or otherwise hygienically unsuitable for those who are to occupy them; the buildings are badly ventilated, and often without apparent necessity are located in low, damp, crowded or otherwise unsanitary localities. The hygienic defects of these schools pointed out by competent inspectors are many and impressive. Most of these defective schools were planned and accepted by school boards upon which were one or more general practitioners. The medical men failed to come fully up to the scientific needs of the situation when the schools were being constructed and furnished. In a large city many of whose schools present various hygienic defects, I have ascertained that almost continuously since 1872 medical men have been members of the school committee. In that city, criticisms are coming in of schools built and equipped within the last two or three years. The physicians upon that city's various school committees were neither better nor worse than many of their brethren in similar positions throughout New England. Neither were they the graduates of any one or any six medical schools. Occupying public or political positions, these physicians were rather politicians than real scientific, medical men. They impeded rather than facilitated the spread of sound pediatric knowledge.

A hospital for contagious diseases in a neighboring city which need not be named had, a few days ago, no night nurse for nineteen cases of diphtheria. The management say very truly that they do the best they can with the amount of money at their disposal. There is a fault somewhere, and the natural inference is that it rests with the taxpayers as represented by the finance committee or other political civic rulers, who refuse money to pay an adequate supply of nurses. This inference is erroneous, and places the blame where it does not primarily belong.

A hospital for contagious or communicable diseases is quite a modern institution. Intelligent laymen in city governments do not fully appreciate the need and the sanitary and economic advantages of such an institution, and they grudgingly appropriate money for its construction. It is difficult to convince them that any money spent for such a hospital is not money needlessly thrown away. The hazy ideas which many general practitioners, family physicians, have of the utility of contagious hospitals do not enlighten the city fathers and, consequently, many hospital patients ill with diphtheria, scarlet fever or other communicable disease needlessly suffer in various ways, and the real cause is the inertia or the lack of up-to-date medical knowledge of the body of medical practitioners in the locality. I do not accuse the few physicians whose duty it is to manage the hospital, but the entire local body of practitioners who should lead and enlighten the taxpayers.

From experience, I can testify that when citizens know what is best for their sick, and what is really needed to control the spread of disease, and protect the community, the money to pay all the bills will be promptly forthcoming. A clear and emphatic presentation of facts by earnest men who are fully alive to the latest scientific medical teachings will convince the city government and bring all needed supplies; the general practitioners who should be prepared to make this clear exposition of facts, and fail to do it, are the men to blame for scanty hospital supplies in nurses or otherwise.

It is not necessary to go into detail to show that the all-important subject of the milk supply is beset with the same difficulties and is amenable to the same successful treatment as the management of the contagious hospitals. In New England to-day, if the general practitioner cannot secure good cow's milk for his little patients, he has mainly himself to blame.

The daily advantages to the private patients of the member of the pediatric society I will not take time to point out. Neither will I do more than suggest the large amount of post-graduate instruction in the employment of remedies, at least, which many a general practitioner still unwittingly absorbs from the educated and persuasive gentlemen who continue to knock at our doors as representatives of the manufacturing druggist and chemist. These gentlemen are fully up to the times in their lines of business.

In conclusion, I would say that the nature of my subject, and the view of it which I have taken, necessitated that my remarks should be somewhat personal. I hold no brief for the Pediatric Society. I merely give credit to an institution which has helped me. Length of time in practice alone gives me a right to speak. After twelve years in practice I took two post-graduate courses in the Children's Hospital in this city. At the time of my studies in the hospital I realized that I had gone intellectually to sleep. Now, I felicitate myself that I lived long enough to wake up. The experience is pleasant.

Almost annually since then I have attended the meetings of the Pediatric Section of the American Medical Association. I have traveled a distance of fifty miles to every meeting of the New England Pediatric Society since its inception. I have found the trouble worth while. Full value has been received for the sacrifices made. This habit of attendance at meetings has given me a fair idea of the extent of pediatric progress, and also has convinced me that through no fault of the masters in pediatrics many children in New England still do not receive their full share of the benefits of pediatric science. That the fruits of the present advanced stage of medical science may be as far reaching and influential for all the children of New England as they ought to be, a closer alliance between the Pediatric Society and the general practitioner is of prime importance. To be enrolled in the society's list of membership is to be a matriculate in a post-graduate school.

ON THE IMPORTANCE OF DISTINGUISHING SIMPLE ROUND ULCERS OF THE DUODENUM FROM THOSE ULCERS WHICH INVOLVE THE PYLORUS OR ARE ABOVE IT.

BY E. A. CODMAN, M.D., BOSTON,
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(Concluded from No. 11, p. 355.)

5. If the ulcer is in the duodenum there is no reason why the stomach analysis should not be normal. The motility might be somewhat influenced because of the check caused by the pain when the food enters the duodenum. In cases of interference with or stricture of the pylorus we should find stasis well marked. Where the ulcer is in the stomach itself, we should find blood oftener than stasis. In pure duodenal cases the analysis of the stomach contents may be deceptive because the stimulation of the stomach tube may produce regurgitation of the bile and blood through the pylorus, or in acute attacks the reflex interference of the pylorus from the acute inflammation might produce a mild degree of stasis. Where the ulcer is in the stomach, and the pylorus is not involved, if the ulcer is very chronic and indurated, there may be no blood in the washings.

6. Tenderness is a very deceptive symptom. Most patients with duodenal ulcer, for instance, refer the pain to the pit of the stomach, and it is only by repeated and careful questioning that they are able to locate their tenderness to the right. Where there is true pyloric stricture, the pylorus is moved about by the peristalsis. It may wander to a surprising extent. Personally, I have had little experience with ulcers purely in the stomach. Tenderness in these cases should be more often to the left.

7. An ulcer in the duodenum which does not touch the pylorus does not interfere with digestion and absorption, need not progress rapidly, but when it has once produced cicatricial tissue in the pylorus, it interferes so much with an important mechanical structure that starvation and loss of nutrition bring on a vicious circle and the patient gets worse and worse. When the ulcer is in the stomach, the pain and vomiting should be pronounced from the very first. In this sense it is relatively acute, so that unless healing takes place quickly, the patient would die. If, on the other hand, it became indurated or caused a cicatrix and hour-glass stomach, it might be very chronic. The pylorus not being involved, an ulcer in the stomach does not necessarily show steady progress.

8. Since vomiting is not a common symptom in duodenal ulcer, and digestion is carried on perfectly, particularly when resting, the general health need not be at all interfered with, and further, since these patients take extra meals to relieve their pain, they may, as Moynihan points, "become sleek and well conditioned." The reasons for the other deductions under this heading are obvious. When the condition is poor in duodenal cases it may mean that fear restrains their taking proper food. In cases of duodenal ulcer, since patients usually attribute their symptoms to indigestion, they are apt to try one article of diet after another and get prejudiced against each. Their pain being present most of the time, they may rule out one thing after another as disagreeing with them. They become afraid to eat properly and keep taking small amounts of food frequently, rather than hearty meals. This is particularly apt to be the case if they are obliged to work all the time and do not get proper rest. Rest, freedom from care and worry have so good an effect that additional reason is given for thinking the case one of nervous dyspepsia.

9. In duodenal ulcer pain might logically be the only symptom if the pylorus is not affected. The reason that vomiting occurs during exacerbations is probably due to the spread of the acute inflammation on to the pylorus. Where the ulcer is in the stomach itself, the vomiting should occur immediately after the meal, since the direct contact of the food on the ulcer would be likely to stimulate it. Where the pylorus is strictured, the food might be retained in the cardiac end of the stomach and only be vomited in consequence of the failure of repeated peristaltic efforts to overcome the obstruction.

10. It has been generally supposed that bicarbonate of soda or other alkalies relieved pain in stomach cases by neutralizing the acid of the stomach. In a previous paper I questioned this fact and suggested that there may be some other reason than this neutralization which causes the relief; for instance, it may be that the generation of gas which is freed from the soda mechanically causes peristalsis. This flushes out the stomach. Or it may be that the neutralization of the acid temporarily closes the pylorus. Since we know that acid in the stomach opens the pylorus, and that duodenal ulcer cases are more comfortable with food in the stomach, it is reasonable to suppose that the comfort is due to the fact that the pylorus is closed; therefore, it is logical to think that the effect of the soda in closing the pylorus causes the relief. On the other hand, where there is interference with the function of the pylorus, the addition of the gas from the soda would increase the tension in the stomach and cause further distress. Where the ulcer is in the stomach itself, the distention with gas should stretch the ulcer and cause pain or immediate vomiting. As far as my observation goes, it is certainly true that most cases of duodenal ulcer get relief from soda. My experience with cases of ulcer in the stomach is too small to verify the supposition that soda in such cases would cause pain.

11. Since duodenal ulcer cases are not troubled until after the meal is digested, their vomitus is likely not to contain food but mucus. It is apt to occur at the time of the pain when the stomach is empty. Where the ulcer is in the stomach, the food should be vomited immediately and, therefore, be relatively fresh. Where the case is suffering from obstruction of the pylorus, the characteristic delayed vomiting is readily explainable because the food staying in the cardiac end has a chance to putrify.

12. Perforated cases spread to right and resemble appendicitis because the fluid flows down outside the ascending colon. (Weir.) This may be true in stomach ulcers close to the pylorus. Where the ulcer has perforated on the stomach side, or through the pylorus itself, there should always be a previous history.

Of course, it is impossible to draw these lines accurately because we do not know how close an ulcer must be to involve the function of the pyloric sphincter. Probably all do during the exacerbations caused by the acute periods of inflammation.

13. You will ask, Why is gastro-enterostomy irrational?

Gastro-enterostomy was primarily devised for cases of obstruction of the pylorus. Obviously in these cases it may fulfill four objects. It is claimed that:

1. It prevents starvation.
2. It prevents vomiting.
3. It relieves pain.
4. By leaving the stomach at rest it offers better conditions for the healing of the ulcerations present.

Success in the three latter conditions suggested its use in ulcer of the stomach without obstruction at the pylorus. In some of these cases also it fulfilled all four of these functions, for, by allowing early escape of food from the stomach, it shortened the period of mechanical irritation of the ulcer by the presence of the food and thus prevented the pain and vomiting which were interfering with the nutrition, and at the same time offered the ulcer better local conditions for healing.

All this seems rational, but when we consider an ulcer outside the pylorus it seems to me a different matter. There is no obstruction causing starvation, no vomiting to be prevented, no irritation in the stomach from the presence of food. In fact, the only confortable time the patient has is for a while after his meals.

Therefore the good gained by gastro-enterostomy must rest wholly on

1. The evidence that it relieves pain.
2. The evidence that it improves the conditions for healing the ulcer, i. e., prophylaxis of hemorrhage, perforation and extension to pylorus.

Let us take the practical evidence first. What have been the actual results of gastro-enterostomy in pure duodenal ulcers as compared with those in which it has not been done?

As I have stated, no one knows, since surgeons have not yet classified their pure duodenal ulcer cases separately from those that involve the pylorus. Even when this is done it will be fair to assume that only the worst cases, i. e., cases which have had repeated exacerbations, have come to operation, for it is probable that in a much larger number of cases the only symptom of duodenal ulcer is a bearable pain for which the patient frequently does not even consult a doctor.

What are the practical results as regards pain? For the same reasons we do not know this, i. e., surgeons have not classified the results. At any rate, the pain alone in cases where the pylorus is not involved would not justify gastro-enterostomy, for the pain is always bearable and can be relieved by rest, forced feeding and bicarbonate of soda. Therefore, the use of gastro-enterostomy in pure duodenal ulcer must rest entirely on its ability to produce more favorable conditions for the spontaneous healing of the ulcer, or on its ability to remove the primary conditions causing the ulcer and likely to cause new ulcers.

Pending the practical proof, let us see what theoretical *objections* there are as to the likelihood of benefit to a duodenal ulcer from gastro-enterostomy. Some of these mentioned categorically are

1. Cannon and Murphy showed that in animals, if gastro-enterostomy is done, and the pylorus is patent, much of the food will still pass through the pylorus.
2. The results of gastro-enterostomy where the pylorus is normal have been so poor that many writers advise closure of the pylorus as well, to oblige the gastro-enterostomy to stay open.
3. Different articles of diet make little difference to a case of duodenal ulcer; in other words, the food after it passes the pylorus is almost wholly liquid and not mechanically irritating, as in the stomach.
4. Whatever value there may be in the evidence offered for my own theory as to the action of duodenal discharges on the mucous membrane of the first part of the duodenum counts against gastro-enterostomy.
5. The question whether more permanent abdominal damage is not done by the effects of ulcer plus the effects of gastro-enterostomy plus the adhesions consequent upon operation, as compared to the ulcer left alone which may heal and leave no trace.
6. Perforated cases where gastro-enterostomy is not done do just as well as those where it is. (Reference to Ellsworth Eliot.)

There are also rather serious objections due to purely operative risks:

1. The danger attending any operation of the gravity of gastro-enterostomy, e. g., anesthetic risks, hemorrhage, emboli, faulty technic, etc.
2. The danger of the manipulations causing fresh hemorrhage from the ulcer, as in the case I have spoken of.
3. The danger of a vicious circle.
4. The danger of a jejunal ulcer.

In fact, when we have tracked it down logically, there are many reasons both practical and theoretical why gastro-enterostomy should not be performed for pure duodenal ulcer and only one reason why it should, i. e., because the Mayos, Moynihan and others say that it gives good results in very bad cases.

To be sure, they have not published the reports of these individual cases as contrasted with cases operatively proven and let alone, but still their "statement" has much weight. My own cases of perforated ulcer without gastro-enterostomy are too few to have much weight, but Ellsworth Eliot has collected from the literature many cases of perforated duodenal ulcer which have been cured without gastro-enterostomy.

Possibly my position may seem presumptuous in the face of their enormous statistics showing such favorable results, but if I interpret the trend of their writings correctly, I think that before long they will reach the same conclusion, viz., excision for ulcers on either side of the pylorus, and pylorectomy for those that involve it. Finney's operation may be combined with excision of duodenal ulcers close to the pyloric ring. Gastro-enterostomy will be reserved for healed cicatricial stenosis, malignant disease and cases too difficult or too sick to justify excision. Mayo has already spoken of combining excision of the ulcer with Finney's operation.

Since a duodenal ulcer close to the pyloric ring may interfere with its functions, the line which we may draw between true duodenal ulcers to be treated by excision and those which involve the pylorus sufficiently to justify pylorectomy must be left to individual judgment. If a surgeon doubts his ability to safely excise or do pylorectomy in a given case, he is amply justified in doing gastro-enterostomy if the clinical symptoms show interference with the pylorus. But if, as in perforated cases, there have been no previous symptoms except "hunger-pain" it seems to me that gastro-enterostomy is not indicated. The history of repeated exacerbations or the impossibility of sufficient rest and medical care justify radical measures.

It seems to me likely that the good results which follow gastro-enterostomy in duodenal ulcer cases may be explained by the consideration of the fissure theory, which I have previously spoken of. Gastro-enterostomy would be comparable to an artificial anus in the iliac region in the case of fissure in ano. The irritation of the ulcer or fissure would cause sufficient spasm of the pylorus to prevent the food passing by its natural route and it would thus be thrown back to the gastro-enterostomy opening. When the ulcer had healed sufficiently so that the irritation of the pylorus no longer existed, the natural outlet would again become functional and the gastro-enterostomy opening would tend to close. When the surgery of this region is a little older we ought to be able to verify this statement by the results in autopsy cases dying from other causes long after both the gastro-enterostomy and ulcer have healed.

As a matter of fact, most of the cases which are relieved by gastro-enterostomy have probably progressed far enough to involve the pylorus at least during their periods of exacerbation, i. e., when the inflammation about them is active. Many are probably encircling ulcers and the progress of stenosis has already begun.

You will then ask, Why is the usual medical treatment irrational?

By usual medical treatment I mean prolonged rest in bed, with starvation except for rectal feeding. The application of this treatment to ulcers in the stomach seems to me reasonable because it prevents mechanical irritation of the ulcer and thus stops the vomiting and pain which interfere with nutrition.

On the other hand, with duodenal ulcer we have no vomiting to deal with after the acute exacerbation has quieted down, and frequent feeding is the very thing which relieves pain. The nutrition is good or at any rate not very bad. Rest and freedom from work and worry relieve although they do not stop the pain.

In regard to food, it seems to me unnecessary to give a liquid diet because, whatever the meal, it is reduced to practically the same liquid consistency when it passes the pylorus. The size of the meal has more to do with the relief of pain than the quality. It is perhaps well to avoid coarse foods.

If rectal feeding prevents or diminishes the secretion of bile or gastric juice it should be desirable, or if a patient could be assured that practically it would allow a duodenal ulcer to heal, it would be wise to advise it. As a matter of fact, it seems to me that such arrest of symptoms as is obtained in duodenal ulcer by the usual gastric ulcer treatment is more likely to be due to the rest in bed than to the rectal feeding or liquid diet.

In my opinion rest in the recumbent position at the time of day that the pain is expected is rational, for it prevents the drag of the mesentery, which is engorged with blood from the activities of digestion and the vertical position.

The most important thing in the treatment of duodenal ulcer seems to me to oblige the patient to take sufficient rest so that the exacerbations will not occur. It is not enough to rest until the inflammatory condition about the ulcer is healed, but until the crater itself has healed. A study of the microphotographs accompanying this paper shows that an ulcer may exist with practically no inflammatory condition about it. It is the repetition of the inflammatory attacks which produces the stenosis.

In some cases where the pain makes a patient's life miserable an exploratory operation is justifiable merely to establish diagnosis and oblige an active, hard-working man to quit his business and take a prolonged rest. If a definite ulcer is found, Mayo's reported results justify gastro-enterostomy in spite of theoretical considerations.

In a personal communication from Dr. W. J. Mayo, dated April 8, 1909, in answer to the question whether he could give me data in regard to the results of gastro-enterostomy in cases of pure duodenal ulcer separated from those which involve the pylorus, the following statements are made: "Of 121 cases operated for gastric and duodenal ulcer, 30 were in the stomach, not involving the pylorus; 48 were in the duodenum, not involving the pylorus. Of these 48 cases, 7 extended up to the pylorus, but did not involve it. In 3 cases there were distinct ulcers in both the stomach and duodenum, neither of which involved the pylorus. There were 40 cases of ulcer in either the stomach or duodenum which involved the pylorus. Of the ulcers found which involved the pylorus, the majority arose on the duodenal side.

"As to late results, we have traced as far as possible the patients with duodenal ulcer operated upon in 1906–7. Of the 119 patients operated in 1906–7, we have information of 106. Of these, 87, or 82%, were cured; 10, or 9.5%, were improved, and 6, or 5.7%, unimproved, making cured and improved, 91.5%. The operative mortality in the whole number of cases was 2.8%. There were 66 duodenal, of which 18 involved the pylorus. The 22 remaining may have been either duodenal or gastric in origin, but were classed as gastric."

This splendid record is, I think, the most positive statement that Dr. Mayo has thus far made, but still it does not distinctly separate the results of the duodenal cases from the pyloric cases. This distinction is perhaps too much to expect at present.

Before closing let me summarize some of the contentions which I have put before you.

I claim that duodenal ulcer is an extremely common disease, comparable in frequency to appendicitis. That in most cases it heals without leaving a noticeable scar, since the mucous membrane, glands and all, is replaced. That it should be possible to detect these scars by sections of the first inch of the duodenum in patients dying from other causes, particularly in males after the age of forty. That the lesion would show as a cicatricial gap in the muscle layer.

That the apparent discrepancy between the post-mortem statistics on the relative frequency of duodenal and gastric ulcer and the modern surgical findings can be reconciled if it is shown that pyloric ulcers are usually duodenal in origin. That round duodenal ulcers either by lateral invasion or by the coalescence of neighboring small ulcers become first encircling ulcers and then tend to progressively and relatively rapidly spread stomachward, leaving the same lower lip fold at the duodenal edge. That thus the impression is given that they are gastric ulcers since far the larger part of the ulceration is in the stomach and the exact situation of the pylorus is lost.

That it is possible that duodenal ulcers are primary where both gastric and duodenal exist together, and not the reverse, as was formerly supposed.

Now if there is any truth in these contentions which I have made, and duodenal ulcer is a really common disease, there ought to be, at least, a plausible reason for it, just as appendicitis, gallstones and the many other lesions of the body are supposed to be due to partial obstruction of natural exits. As I have previously tried to explain in another paper, a reason may be found in the vertical position of man compared to the horizontal position of quadrupeds. Through the ages during which quadrupeds developed through the different vertebrate stages, the large intestine rotated over the small, so that a crossing place over the duodenum became an essential hereditary condition in all mammals. But not until the horizontal became vertical in man did *compression* come at the crossing place. The result has been to cause a backing up of duodenal juices on to the first part of the duodenum, which was never made resistant to them and was developed from the stomach. During all the quadruped ages this first portion of the duodenum did not need to become resistant to the constant presence of bile and pancreatic juice which swept along into the intestine. But in the hard-working modern man, forced to be in the erect position for hours at a time, the weakness is developed.

Some of our forebears needed the appendix because they were vegetarians and ate large quantities all the time; others who were carnivorous needed gall bladders because they seldom got their meals regularly and must needs eat rapidly to get their share of the kill. Why may we not say that the ambition of the ape-man to become a vertical animal has rendered his descendants liable to ulcers of the duodenum? If vertebrates for countless ages have walked with their mesenteries hanging down, and slept on their bellies, is it unreasonable to suppose that one species, which suddenly becomes vertical in walking and sleeps with his belly up, should have some sort of trouble with his digestion?

I want especially to acknowledge my indebtedness to Dr. J. H. Wright and Dr. Oscar Richardson for their kindness in allowing me to use their autopsy records and for the slides from which most of these microphotographs were taken. It has been my good fortune to be able to make use of these records for this special purpose, and I wish to take this opportunity to say that the records of the last 2,390 cases autopsied at the Massachusetts General Hospital have been so carefully kept, so well catalogued and so thoroughly controlled by the preservation of sections and blocks of specimens that, though the series is small, it forms a library which will always be of great service to any one investigating a subject such as this. To Mr. L. S. Brown of their laboratory I am indebted for the excellent microphotographs which illustrate this paper.

P. S. No. 1. I have recently analyzed the 2,390 autopsies at the Massachusetts General Hospital which have been done since Dr. Wright has been director of the laboratory, that is, from Oct. 16, 1896, to May 13, 1909.

The records of these autopsies have been most carefully kept and the index is, in all probability, almost perfectly accurate. Each autopsy is worked up in such detail that the series forms a particularly significant one, although, compared with the large autopsy statistics obtained by Welch, the numbers are, of course, small.

At first sight I find 25 duodenal ulcers and 40 gastric ulcers. On reading the individual records of the duodenal ulcers I find that the descriptions are practically always the same. They are the typical duodenal ulcers to which I have alluded in this paper. In every case they are described as near the pylorus or just below the pylorus, usually within one or two centimeters. If any measurements are given there is not a single instance of an ulcer more than an inch below the pyloric ring. There is no instance of cancer developing in the region of such ulcer. The only variation in description is as to whether the ulcer is a simple round one or an encircling one. In at least five instances there were two or three ulcers, but these always were in a ring just below the pylorus. In a few instances scars are mentioned in the same situation in relation to the ulcer. Although there is this uniformity in the descriptions of the duodenal ulcers, the 40 gastric ulcers present a much greater variety.

In making the comparison between stomach and duodenal ulcer, certain forms of ulceration found in the stomach should not be compared with the simple typical round duodenal ulcers which I have been speaking of. For instance, in this series of 40 ulcers of the stomach there were 12 cases where the ulcerations were multiple and superficial. These cases were nearly always in patients who had been reduced to a cachectic condition by some other disease. The ulcers were small superficial losses of substance in the mucous membrane similar to aphthous patches in the mouth. From a surgical point of view they could in no way be considered in a matter of comparison. This reduces the number for a proper comparison to 28. Of these I find 5 cases in which the ulceration was almost certainly duodenal. One of these, for instance, had a typical encircling ulcer of the duodenum with one small ulcer just above the pylorus. Another showed a process from a duodenal ulcer extending into the pylorus, etc. These 5 cases should, therefore, be at once removed from the stomach list to that of the duodenal, making the proportion, 30 to 23. Of the remaining 23, perhaps one half the others should be strictly also removed from the stomach list. Two are open to question as to whether they should not be classed as duodenal: One was an hour-glass stomach, one was a case of multiple ulcerations with extensive phlegmon separating the mucus from the muscular coats, a unique case which should not be considered in this same class. At least 2 were so close to the cardiac orifice of the stomach as to suggest the possibility of their relation to the esophageal sphincter being the same as those below to the pylorus. In 4 cases cancer was present and the question might justly be raised whether the cancer was the origin of the ulcer or vice versa. Of the 13 which remain, there are but few which are directly comparable with the typical round ulcer of the duodenum, and these were frequently near the pyloric end.

Statistics can always be distorted to illustrate the point of view which the writer wishes to emphasize. It is possible that I have made this mistake in this brief analysis of these cases, but the proportion of duodenal ulcers to gastric ulcers, as shown by these careful records, cannot be in favor of the ulcers of the stomach, and in my opinion the proportion is as 2 duodenal ulcers to 1 gastric if they are looked at from the point of view of the operating surgeon. The duodenal ulcers are monotonously alike in size and anatomical situation. There are no exceptions to the statement that during contracture of the pyloric sphincter the ulcer would lie in the folds of the mucosa as depicted in Fig. 3. The stomach ulcers, on the other hand, represent a great variety of lesions and but few are in any way characteristic enough to be called simple round ulcers.

It is a noteworthy fact that of these 2,390 successive autopsies of cases dying from all causes, 30, or over 1%, had an active duodenal ulcer. No scars were noticed. This either means that duodenal ulcer rarely heals or its scars are rarely noticed. If the disease is common enough for 1 case in 100 to have active ulcer, and its scars are practically invisible, does my contention that it is as common as acute appendicitis seem absurd? And this, too, without including simple superficial erosions of the mucous membrane.

P. S. No. 2. Abstracts of the histories and autopsies of all the *proved* cases of duodenal ulcer which have occurred at the Massachusetts General Hospital since 1897 will be published in a sequel to this paper entitled "The Diagnosis of Ulcer of the Duodenum."

Medical Progress.

REPORT ON THE PROGRESS IN ORTHOPEDIC SURGERY.

BY E. H. BRADFORD, M.D.

(Concluded from No. 11, p. 369.)

CONGENITAL DISLOCATION OF THE HIP.[21]

DREHMAN has studied the relation of the neck and of the diaphysis in congenital dislocation of the hip, finding what he terms an anti-version. This is not due to a vicious position of the neck upon the head, but a torsion of the diaphysis itself at the level of the upper third. This anti-version should be termed an anti-torsion. When this anti-torsion is not very pronounced it is of little importance, but it may, if very marked, prevent rotation of the head and cause relapse.

Riener has performed osteotomy or a primary osteoclasis in these cases, but the majority of authorities consider that this preliminary intervention is unnecessary.

Spitzy, after an examination of the amount of coxa vara in congenital dislocation, thinks that coxa vara is exceptional among young children, but that it becomes more frequent the older the patients.

Frolich has found that coxa vara persists after the reduction in a certain number of cases: 12 in 120 cases, according to Horworth; 4 in 150 according to Joachimsthall; 6 in 300 according to Frolich, and 2 in 500 according to Redard. This may result from injury at the time of reduction or may develop gradually as the patient begins to walk, due to a lack of resistance of the bone. Steida thinks that a true coxa valga is not proved, although Drehman is of the opinion that this may take place. The condition is certainly rare. Kohler has shown, by a series of radiographs, that the cotyloid cavity is normal, confirming the assertions of Riener and Werndorf upon the same subject.

Lorenz speaks of the technic of reduction as follows: " Reduction can be made on extension, the head passing over the upper posterior border of the cotyloid cavity or over the lower border, the thigh being flexed and abducted. Traction at the knee and pressure of the great trochanter can be combined in order to obtain the entrance of the head into the cavity. The leg should be in abduction of 90° and flexed at 90° in the first apparatus; in the second bandage the leg should be in the position of internal rotation. To obtain this the knee should be flexed at a right angle, without which the internal rotation is imperfect. If there is a marked anti-torsion of the femur the thigh must be placed in mamillary flexion."

If it is impossible to place the limb in the second position Lorenz places the infant in a box, the two legs being brought gradually into abduction and flexion, the patient being put into this position several hours each day.

Joachimsthall thinks that the retention of the head is made possible by bony proliferations which develop rapidly after reduction round the cotyloid cavity, though they are not visible in the radiograph. Lange does not think that osseous proliferations are essential to the retention of the head, but that the ligaments and capsule are sufficient to retain the head in the early stages after reduction. This view is supported by Gocht, but he thinks it is desirable to promote the retraction of the posterior portion of the capsule and, therefore, places the limb in the first position with an abduction and flexion of 90°.

Bade reports 2% of paralyses of the sciatic and crural after reduction. This is most pronounced between the sixth and ninth year, and occurs especially in the movement towards abduction; it is less frequent in extension. Frolich reports a double paralysis following a single reduction which lasted two years. The paralysis usually is recovered from after a few weeks.

Becher thinks that the result following the bloodless treatment of old dislocations rarely is cure, as stiffness usually persists.

Reiner has studied the results of Lorenz's early operations where reduction by incision was employed, there being 40% of cures, and the writer thinks that a blood operation is justified when the bloodless method has failed. He advises Ludloff's method, which consists in an attempt at reduction by the bloodless method and with the limb kept in plaster for several weeks. When the anesthetical symptoms have subsided the joint is opened and the portion of the capsule which interposes is removed.[22]

TREATMENT OF CONGENITAL DISLOCATION OF THE HIP IN OLDER SUBJECTS.[23]

Froelich concludes that a small number of congenital dislocations in adults can be benefited by radical treatment. It should not be attempted if the dislocation causes a greater shortening than 3 cm., if the femoral head is fixed and if the muscles are strong.[24]

OUTDOOR TREATMENT OF BONE TUBERCULOSIS.[25]

Treatment consists in fresh air, good food and rest of the diseased joint with hyperemia.

Coxitis is treated ambulatory; in the acuter stages traction is used.

Spondylitis is treated by the plaster corset or a Calot jacket.

KINEMATOGRAPHIC STUDY OF GAIT.[26]

The writer divides the gait, after his investigations, as follows: The normal gait, that of congenital dislocation of the hip, hip disease, coxa vara and paralysis.

The gait of coxa vara is waddling, as it is in congenital dislocation of the hip, but there is an absence of the muscular weakness and the abductors of the hip are active.

In hip disease there is a dragging gait on one side and a hopping gait on the other side, the tendency being for the weight of the body to rest on the healthy leg.

In paralysis, there is a co-operation of the upper extremities in the attempt to help the trunk and leg muscles.

ANTERIOR METATARSALGIA.[27]

The writer calls attention to the frequency of the association of hallux valgus with this condition, which he considers due to a weakening of the ligaments of the transverse arch.

Treatment should consist of the application of adhesive plaster to the foot at the level of the metatarsus in such a way as to maintain the transverse arch.

SCAPULUM VALGUM.[28]

The writer describes this affection, which is not to be confounded with the congenital high position of the scapula.

CAUSES OF SCOLIOSIS.[29]

The writer divides the causes of scoliosis into two classes: The first, those which destroy the spinal equilibrium, that is, asymmetry of load, muscular actions or a rigidity or resistance and congenital or acquired defects. The second class of causes is a general weakening, or rather, an abnormal transformability of the elements of the spinal column, the modification which the spinal column undergoes during infancy and adolescence, i. e., the development of a particular susceptibility, the condition of rachitis taken in a large sense being the most striking. The combination of these two causes produces the deformity. A considerable asymmetry is necessary to produce a true scoliosis in an adult. A light asymmetry, even one not noticed, may be sufficient in a rachitic adolescent or in one badly nourished or with rapid growth.

Kirmisson supports the views of Monod and considers the affection as comparable to coxa vara or genu valgum.

Monod has examined children in the schools of Lyons in two portions of the city, and he has found vertebral deformities are much more common in the poor quarters, among those badly nourished and poorly housed, than in the schools where the children live under better hygienic conditions.

GONDOLIER SCOLIOSIS.[30]

Schulthess calls attention to what he calls a professional deformity in Venetian gondoliers. These boatmen hold the sweep with the left hand on the upper end, the right hand being some distance lower. The motion of the oar is made not only by an extension of the arm, but by bending the body forward, with the trunk almost horizontal and the arms stretched out forward, the right lower limb being behind and stretched. This position gives an S-curve to the spine, with a lumbar convexity to the right and a dorsal to the left. This spinal curve is increased by the fact that at the moment of the greatest effort of the gondolier, the gondolier, in order not to lose his equilibrium, is obliged to make a movement of the pelvis instinctively.

The gondoliers recognize the fact that they are deformed.

The writer calls attention to the fact that this deformity is contrary to the opinion of some that scoliosis is due entirely to a passive force and not to muscular effort.

SCOLIOSIS IN THE SCHOOL CHILDREN IN MAGDEBURG IN THE YEAR 1906–1907.[31]

One thousand and fifteen were examined, 518 boys and 497 girls, in order to learn the relation of school life to scoliosis.

A distinction is made between fixed scoliosis and habitual faulty attitude, and fixed scoliosis is divided into mild and severe grades.

Twenty-five per cent of the boys and girls had scoliosis; the beginners had 20%, 19% of the boys and 21% of the girls, and this rose to 30% to 40% of the scholars. These figures, however, included habitual curves and fixed scoliosis. Seven and one-half per cent of the beginning scholars had a fixed scoliosis and this rose to 8½%, but the flexible curves increased during the school life from 13% to 21%.

The writer is of the opinion that the milder grades can be treated by school gymnastics; that the middle grades should have special gymnastics and the severer grades should have special orthopedic treatment.

Gerson[32] writes of the importance of energetic and early treatment of scoliosis, and believes that this should be done not only in orthopedic institutes for a short time, but should be carried on by thorough treatment at home.

Eckstein[33] had examined a number of cases of cervical ribs and has come to the conclusion that they have no influence in the development of scoliosis.

Schulthess[34] considers that the method of Klapp has the following disadvantages: That it is not possible to localize, that only the shoulder muscles are exercised, and that the spinal column is not brought into the normal static position and that the results are no better than those obtained by other methods.

THE TREATMENT OF CLUB FOOT BY THE GENERAL PRACTITIONER.[35]

The writer considers it a mistake to treat club foot with the knees extended. The bandage should be applied, the knee bent at right angles, the sole of the foot can be flexed and fixed, with resistance to the anterior portion of the thigh. The writer prefers not to use a plaster bandage, as it is heavy and difficult to remove; he prefers an ordinary body bandage with a resinous mixture.

Treatment should be begun as early as the first day. The correction should be gradual, at first only lasting for five minutes, then the bandage applied to the foot, the outer side of the lower leg and the upper side of the thigh painted with an adhesive mixture, the assistant holding the thigh and the toes. The bandage is first applied around the foot, with the turn of the bandage going from the outer to the inner side of the thigh, then from the outer side of the foot up to the thigh along the fibula and then round towards the inner side of the knee and spirally around the calf to the inner side of the foot. The bandage should be reapplied. The first bandage should be applied for two days, then the second one five days, and after four such applications the foot should remain in a normal position.

The after-treatment consists of massage and the application of an apparatus with an elastic pull.

TREATMENT OF CLUB FOOT IN INFANCY.[36]

The treatment recommended by the writer is essentially a manipulation of the foot as soon as possible after birth, and the maintenance of the correction during the early days by a light flannel bandage, followed by an apparatus with elastic traction. This does not check the movement of the limb nor exert any constriction upon it. The method can be used until the child is three months old; later on, anesthesia and forcible correction is better.

A metal sole of aluminum, which is very pliable, is to be cut and applied to the foot. This is done so as to exert a slight pressure upon the inner side of the foot slightly in front of the middle of the external portion of the foot at the level of the head of the fifth metatarsal and at the termination of the os calcis. A bandage is wound about the thigh, the leg and the foot, the leg being bent slightly at the knee and care being taken that the bandage is applied in such a way that on tension it will lift the outer side of the foot and tend to turn the foot outward as far as possible. Over the flannel bandage is placed the following mixture:

Venice turpentine,	15 gm.
Mastic,	12 ,,
White resin,	8 ,,
Colophane,	25 ,,
Alcohol,	180 ,,

After the correction has been completed the patient should wear the following traction apparatus, which is made of celluloid and can be washed. It consists of three pieces: one for the pelvis, one for the knee and one for the sole of the foot. The first is united to the second, the second to the third, by three rubber bands. The pelvic portion is made of celluloid, the sole is metallic. The thigh of the child is usually slightly flexed upon the pelvis, with abduction and slight external rotation. It is in this position that it is best to apply plaster bandages to make a model for the celluloid apparatus. The abdominal band should not go lower than the posterior superior spine. This abdominal pelvic band should be laced in front at the middle line. The sole plate has already been described.[37]

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Reports of Societies.

NEW ENGLAND PEDIATRIC SOCIETY.

Boston Medical Library, March 20, 1909.

Charles W. Townsend, M.D., in the chair; Fritz B. Talbot, M.D., Secretary.

Dr. M. Kelly read a paper on

THE PEDIATRIC SOCIETY AND THE GENERAL PRACTITIONER.[1]

Dr. P. S. Potter, of North Adams, read a paper on

HIRSCHSPRUNG'S DISEASE, WITH REPORT OF A CASE.

Hirschsprung's disease, or congenital dilatation of the colon, is divided according to its symptomatology into two groups of cases, namely, those which show at birth, or in the first days of life, persistent constipation and dilatation of the abdomen; and secondly, those in which the symptoms begin about the time of accessory feeding.

The first group is represented by failure of spontaneous evacuation of meconium at birth, followed in a short time by a swollen, tense abdomen, and later by symptoms of a chronic intoxication and interference with the respiratory organs.

In the second group of cases, those appearing about the time of accessory feeding, the same set of symptoms appears, namely, persistent constipation and dilatation of the abdomen, followed in turn by a severe cachexia. Some believe it to be a compensatory dilatation, due to obstruction; others that it may be due to an arrest of development resulting from vascular anomalies of the intestine or vascular lesions depending on infections or intoxications transmitted through the placenta.

Hirschsprung and Mya, however, consider it due to some fault in the embryonal development, and that after birth, because of the abnormal caliber of the intestine, the fecal contents are with difficulty moved along, so that little by little dilatation increases and at the same time constipation.

Other causes contributing to this condition are: Simple lengthening of the colon, thickening of the colon, torsion of the pelvic colon, congenital narrowing of the large intestine, a permanent contraction of the lower extremity of the colon, a long mesentery and a simple, habitual constipation.

According to Gaujoux, it is possible to affirm that:

1. The syndrome of Hirschsprung exists, but responds above all to a clinical reality and follows diverse etiological factors.
2. Theoretically possible, the idiopathic dilatation is an anomaly very rare, of which there exists very few facts absolutely demonstrable. It ought, moreover, to concern only nurslings and to manifest itself at birth and pass on rapidly to death.
3. On the other hand, a true Hirschsprung's disease, really congenital, is rare.
4. Before affirming an idiopathic congenital dilatation, it is necessary to eliminate all other causes of constipation, to regulate feeding, to examine the tonicity of the sphincture of the anus, the caliber of the rectum, and to provoke for a certain time regular evacuations.

Dr. Potter then reported a case of dilatation of the colon due to a constriction band across the large intestine. The child died, and the diagnosis was confirmed by autopsy.

Dr. F. P. Denny: I remember a case of Hirschsprung's disease at the Massachusetts General Hospital on Dr. Fitz's service, which Dr. Fitz afterward reported. The child was in the hospital for a good many weeks, and irrigation of the colon was tried, but without much effect.

Dr. Maynard Ladd: I have seen several cases which I supposed were of this class, two of them, I remember distinctly, occurring with the first month of life. Both of these died. One of them showed a stricture of the jejunum and sigmoid, with rupture; and another, stricture at the junction of the sigmoid and descending colon. The sigmoid was tremendously dilated, and also the transverse and descending colon. Toward the end of the fourth week the child had distinctive symptoms of peritonitis and died, and this condition was found at autopsy. Another case which I recall had a stricture going from the splenic flexure of the colon right down to the rectum. The descending colon and the sigmoid were not very much larger than a large-sized English catheter, and the ascending and transverse colons were tremendously dilated. That child died. Then there were two cases which I saw in the out-patient department when they were ten days or two weeks old, the symptoms coming on a day or two following birth. We hoped that something might be done by operation in the way of making an artificial anus and in this way to relieve the distention. Dr. Murphy will recall the cases which were operated on at the Infants' Hospital and which promptly died soon after the operation. I remember a case in an older child which had existed from birth. That child was six or seven years old.

Dr. F. T. Murphy: I recall the cases of which Dr.

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[1] See p. 396.

Ladd speaks. In both of these cases, if my memory serves me right, there was no mechanical obstruction found at the time of the operation between the descending colon and the sigmoid. Both of these cases died, neither being helped in the least by the operation. In the cases where a mechanical operation exists, as in Dr. Potter's case, operation will, I think, give material relief, but this type is, I fear, the exception and not the rule.

Dr. Charles M. Pratt read a paper on

A CASE OF FATTY INFILTRATION OF THE LIVER IN AN INFANT OF THREE MONTHS.[2]

DISCUSSION.

Dr. J. L. Morse: This case was most interesting from many points of view, especially on account of the size of the liver. I find, on looking at my notes, taken when I saw the baby, that I then felt that the enlargement of the liver was almost certainly chronic and that it was probably fatty in character. Another interesting point in this case was the toxic action of milk in any form, whether as modifications of cows' milk, whey from cows' milk, or breast milk. Even the condensed milk, which was given in desperation, had a similar action. This, therefore, was one of the cases in which there was an intolerance to milk in any form. It is, of course, possible that an excess of fat in the food may cause enlargement of the liver. The excess of fat in the food in this case, however, hardly seems a sufficient explanation for the enlargement of the liver, because while an excess of fat is very common, enlargement of the liver is comparatively unusual; for example, a baby whom I saw a few days ago for a cold was taking something like 10% of fat in its food. The baby was perfectly well and the liver was not enlarged. As a rule, an excess of fat in the food causes vomiting and not enlargement of the liver.

It is said that confession is good for the soul; therefore in this connection I wish to report a case which I saw in consultation some years ago in a neighboring city. This baby was two and one-half months old. It was the first child of apparently healthy parents. There was certainly no tuberculous or syphilitic history. It weighed 9 lb. at birth and had been fed by the parents according to the formulæ in Dr. Holt's little book for mothers. It had done very well in every way. According to the parents, it had digested the food very well and had apparently not been ill. The parents were uncertain as to when the enlargement of the abdomen began, but the nurse said that she had noticed it when the baby was a month old. The parents had not thought much of this enlargement of the abdomen because they supposed that all babies had large abdomens and because the baby seemed perfectly well in every way and had no pain. When it was about two months old, that is, two weeks before I saw it, it began to be a little fussy. About four days later it began to vomit and continued to do so for three days. The movements became greenish at the same time, but had been normal for three days. It was restless and fussy, but apparently had no pain. It had never had hematuria. In spite of the enlargement of the abdomen, the baby had gained very well in weight, weighing 14½ lb.

When I saw the baby it was practically an abdomen with the other parts of a baby hitched to it. The baby was rather pale, but the skin was in good condition. There was no jaundice. The superficial veins of the abdomen were considerably enlarged. The umbilicus was level. The liver practically filled the whole abdomen. The spleen was not enlarged. The circumference of the chest at the nipples was 39.5 cm.; that of the abdomen at the lower border of the ribs, 52 cm.; that at the navel, 42 cm. The rest of the physical examination was entirely negative. While I knew that sarcoma of the liver was an extremely rare condition at this age, I did not see any other possible explanation for the enlargement of the liver in this case, and made a positive diagnosis of sarcoma of the liver. I also gave an absolutely bad prognosis, saying that I thought the baby would not live more than three or four weeks.

About ten months afterward I received a picture of a perfectly healthy baby, normal in every way, and a letter from the doctor saying that the enlargement of the abdomen and of the liver had entirely disappeared. The diagnosis of sarcoma must, of course, have been wrong. The only plausible explanation for the enlargement that I can think of is that it was a fatty liver.

In reply to Dr. Townsend's inquiry as to the treatment employed, Dr. Morse said: "I told them to keep on with the same food, and to make the child as comfortable as possible. I presume that this was done. It could not have been the fat in the food which produced the condition in this case, as the fats in all Dr. Holt's formulas are comparatively low."

Dr. Howard F. Swain, Dr. J. M. Jackson and Dr. F. T. Murphy reported

A CASE OF HEMORRHAGIC DISEASE IN THE NEW BORN, WITH DIRECT TRANSFUSION FROM THE TRACHEA.

Dr. Swain: A normal baby, born at 4 o'clock in the afternoon, after an easy primiparous labor, weight 7 lb. 2 oz. at birth, and was a very vigorous, perfectly normal child. At 8 o'clock the following morning it was put to the breast and nursed every four hours during the day. The baby nursed very vigorously for a newborn child. There were no movements from the bowels until 8 o'clock in the evening of the second day, when it had a normal meconium movement which was entirely free from blood. The baby was put down at that time and slept until one o'clock in the morning (it then being thirty-three hours old), when it awoke with a cry which aroused the nurse. She, thinking that the baby needed to be changed, picked it up for that purpose, and in the dim light of the room the baby looked as if it had had an enormous movement of meconium. The size of the movement attracted the nurse's attention, and on closer examination proved to be blood. The lower half of the baby's body was bathed in blood, and the clothing of the baby and the bassinet were soaked in it. I should judge that there was about 8 to 10 oz. The baby's condition was not affected by that free bleeding and the color was not changed. During the time that I was looking at the baby, about one-half hour after the movement was discovered, there was another small movement of fluid blood. This movement was somewhat coagulated, just a little thicker than normal fluid blood. Dr. Jackson, the family physician, and I talked the matter over and decided that the serum treatment should be employed, so we conferred with Dr. Dunn, who procured some serum from the Children's Hospital, and 75 ccm. of fresh rabbits' serum was injected subcutaneously, and then my connection with the case ceased, owing to the fact that I was called to a case in labor.

Dr. Jackson: Before proceeding with the history of the case, I wish to call attention to the fact that the child's paternal grandmother died of pernicious anemia and a cousin died of melena neonatorum on the fourth day after birth.

I saw the child about 8 a.m. with Dr. Dunn, and it was then evident that the end was near. The hemorrhages from the bowel had continued and there had also been some vomiting of blood, and hemorrhagic spots were appearing in the skin. As the rabbit's serum had not stopped the bleeding, we resorted to horse serum, using diphtheria antitoxin. This also failed to control the hemorrhages. At 10 A.M. there was a large movement, composed of 10 oz. of clotted blood. The baby was now *in extremis*. There was no pulse at the wrist and the heart beats were scarcely audible. The rate at the apex was about 180. Respiration was so shallow that it was only by wetting the finger that the rate could be made out. I told the father that there was but one chance of saving the baby left, and that was transfusion. I could offer him but the slightest hope, as it seemed almost impossible for the baby to withstand the shock of an operation. The father was glad to take the chance and offered himself as the donor. I selected Dr. Murphy for the operation on account of his extensive experience in animal experimentation, and he will now describe it to you, but before closing I wish to say that I have never seen a more wonderful exhibition of surgical technic than was displayed at this operation, and I am thoroughly convinced that had it not been for Dr. Murphy's experience in operations on animals the transfusion in this case would not have been a success. I cannot compliment Dr. Murphy too highly on the masterly manner in which he performed this most difficult of surgical procedures.

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[2] See p. 395.

Dr. F. T. Murphy: Dr. Swain and Dr. Jackson have told you of the early history of this case. I saw the baby at about 11.30 on the morning of Feb. 13. The child was white and practically pulseless. In spite of the fresh rabbit serum and the horse serum which had been given, the hemorrhage continued unchecked. The napkin contained a large movement of blood, and immediately after the examination blood was vomited in considerable amount. Except for the evidence of hemorrhage from the gastro-intestinal tract, the examination was negative.

The collapse was so extreme that I should not have advised operation had not Dr. Carrel, of New York, recently told me in detail of the case in which he had transfused a baby under similar conditions.

The radial artery of the father was united to the internal saphenous vein of the baby by means of a Crile canula. On account of the small size of the vein, it was difficult to stretch the walls so that a cuff could be turned back. With the vein fixed on the canula the lumen appeared as a pin point in the center of the translucent membrane. Other than this, and some slight trouble in approximating the thigh of the child and the wrist of the father, the operation was easily done, as the radial was of large size and readily slipped over the everted vein. As the blood within the vessels had been carefully washed away with salt solution and the intima had not been traumatized, there was no thrombus formation.

We were all so delighted at the technical success of the operation that no attention was paid to the rapidity of the arterial flow, which was allowed to go on unchecked for between five and six minutes. At that time the pallor of the child had changed to deep cyanosis and the skin had become soft and plump. By this too rapid inflow there had been caused a marked dilatation of the right side of the heart, the rate of the beat dropping to about fifty per minute. The child was protected with blankets and hot water bottles and placed before the open window, and within twenty minutes had returned to a normal color.

This really ends the case, for after transfusion there was complete cessation of the hemorrhages. After the old blood had been passed from the bowel the stools became normal and have so remained. The incision in the thigh healed by first intention, but the wrist became mildly septic. I think that I can offer no more convincing testimony of the child's general health than the weight chart, which is as follows: At birth, Feb. 11, 7 lb. 2 oz.; Feb. 17, 7 lb. 4 oz.; Feb. 20, 7 lb. 12 oz.; Feb. 24, 7 lb. 15 oz.; Feb. 28, 8 lb.; March 4, 8 lb. 5 oz.; March 11, 9 lb. 2 oz.; March 18, 9 lb. 11 oz.

Of these cases of so-called hemorrhagic disease of the new born, it seems to me that we are far from knowing the whole story of the etiology. There is unquestionably the group due to infection, but this present case, as many others, is not explained by that theory. These two cases of transfusion would seem to prove that the defect is not, as has been held by some, in the vessel walls, but that it is a failure in the blood-producing mechanism which is remedied by some part of the normal blood which is introduced into the circulation.

Work on the cadaver of the infant has convinced me that the vein of choice in these cases is the femoral low down, as it is more accessible than the popliteal, which was used by Dr. Carrel, and much more easily handled than the internal saphenous. In the present case I question whether the child would have stood even the slight additional shock of dissecting out the femoral.

DISCUSSION.

Dr. T. M. Rotch: I remember some years ago having seen a baby who had had so large a hemorrhage that the clothing was absolutely soaked with blood. The hemorrhage stopped in a few hours. I suppose that there are a good many of these cases which are of the infectious type, as shown by the temperature — the way in which it rises and then falls rapidly. In this case the bleeding started again from the lip after a pin prick and was not controlled for twenty-four hours.

About three months later the baby was circumcised and no hemorrhage followed, showing that the case was probably one of infectious and not one of true hemophilia.

Dr. C. W. Townsend: I wish to say a word in regard to the infectious nature of the hemorrhagic disease of the newborn. Several years ago I analyzed fifty cases of this disease. Nearly all of the cases occurred at the Boston Lying-in Hospital, very few in the out-patient department or in private practice. This distribution of the cases is, in itself, suggestive of the infectious nature of the disease. Another fact pointing strongly this way is the self-limited character of the affection, which occurred only during the first few days of life and ends in death or recovery generally within a week. The presence of fever in these cases also points the same way.

I think it is very important to distinguish between this self-limited disease and true hemophilia, an inherited disease, where the tendency to bleed continues through life. Yet it is a common error to speak of these cases of hemorrhagic disease of the newborn as cases of hemophilia, and a very hurtful one from the point of view of prognosis and treatment. The fact is that true hemophilia is rarely seen before the end of the first year of life, it is a disease much more prevalent in males than in females, while in the disease under consideration the numbers in the two sexes are almost the same. After recovery from this disease of the newborn there is no tendency to hemorrhage, and several cases have been reported, one by Dr. Rotch and one that occurred in my practice, where circumcision has been performed later without any untoward effects. The self-limited character of the disease is an encouraging factor and should spur us on to keep the little patient alive during the brief course of the disease.

The readers are certainly to be very much congratulated on the management of this case. Transfusion of blood will from now on be the most important therapeutic weapon to use in these cases, and its value confirms the view of the self-limited character of the disease.

Dr. R. C. Larrabee: Very few of the cases of hemorrhagic disease of the newly born are true hemophilia. Less than forty such had been reported up to 1906. Emphasis should be placed on the fact that if the bleeding can be controlled and the baby kept alive for a few days, recovery will almost always be permanent and no especial tendency to hemorrhage will remain in after years. I am sorry that Dr. Leary is not here to tell us about his work in connection with the use of rabbit serum. Some of the results have been most striking. He advises a much larger dose than that used in the case just reported. Good results cannot be expected from diphtheria antitoxin, as it is never dispensed while fresh enough. My own experience with the serum is too limited to be of much value. Sometimes the results have seemed most excellent, sometimes it has failed where most was expected. Direct transfusion sometimes seems to be the only thing. Our inability to estimate the amount transfused is a serious drawback. I have seen one case (pernicious anemia) in which, first, the donor nearly died on the table from loss of blood, and later the patient was in a very serious condition from having received an excess of it.

Dr. Swain: Regarding the history of hemophilia, I would like to mention a case which I saw in the outpatient department, in a Jewish family, where a child had bled to death as the result of circumcision and a little girl in the same family died from the extraction of a tooth. That is, both were suffering from hemophilia.

Dr. Murphy: The transfusion in adults generally lasts from twenty to fifty minutes. In adult cases, as far as I have seen, the recipient usually needs all the blood he can get. One indication that the donor is becoming weak is the fact that he asks for a glass of water or turns over. If you stop then he will not collapse, but if you give him water and wait two or three minutes more, the chances are that he will collapse. Close watch of the pulse and the general condition will prevent any serious trouble.

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AMERICAN CLIMATOLOGICAL ASSOCIATION.

The Twenty-Sixth Annual Meeting, held at Fortress Monroe, Va., June 4 and 5, 1909.

(Continued from No. 11, p. 375.)

Dr. Babcock: I should like to recommend for your consideration the hypodermic use of musk. I have for some time kept on hand a hypodermic solution of musk. The formula is very simple:

Musk,	1 gm.
Alcohol,	1 ”
Sodium benzoate,	0.5 ”
Water,	15.00 ccm.

The druggist will have to make up quite a large a amount in order properly to filter this solution. It filters through very slowly, since the best Tonquin musk holds such a large amount of impurities. A cubic centimeter of this solution holds approximately 1[illegible]gr. of musk, certainly the active principle of 1 gr. of musk. It is a most powerful cardiac stimulant, and the use of musk in this manner with camphor, alternately or in conjunction, in several cases has helped me pull a pneumonia patient out of collapse in a manner which was truly surprising.

If it will not weary you, I should like to cite a case which I attended in consultation last fall and which illustrated so many points in the prognosis and treatment of pneumonia that it to me was a whole book on the subject. This gentleman of sixty-one had a very bad heart. He had a myocarditis and mitral insufficiency, stiff vessels, bad kidneys, interstitial nephritis, and a palpable and indurated liver. It was, to start with, a very unpromising case. The pneumonia set in rather gradually, being ushered in by a bronchitis of two or three days' duration. When I saw the man there were no definite signs of lobar involvement, but there were certain physical findings which made me satisfied that we had to do with a pneumococcus pneumonia. I had a leucocyte count made as soon as possible, for I am bound to say the degree of leucocytosis has a great deal to do with my hopes and my efforts in a case. I do not mean to say that a low leucocyte count paralyzes me, but when I get a high leucocyte count I feel very decidedly more hopeful that my efforts are going to be perhaps rewarded by success. In this case there was a leucocytosis of only 13,000, and I made an unfavorable prognosis that very day. However, the man, to my great surprise, improved at the end of six or seven days, and it looked on the tenth day as if he really were going to get well, when all at once, in the evening, at seven o'clock, I was telephoned that he was dying. I got the nurse at the telephone, and found that he had a very rapid, feeble pulse, that he was in collapse, in a cold sweat, and breathing with very great difficulty. I ordered at once a hypodermic injection of camphor. In fact, I had taken the precaution, as I do in every case of pneumonia, to have both camphor and musk on hand. I told the nurse to follow that in a few minutes by a hypodermic injection of musk. When I got there, fifteen minutes later, the conditions were practically as she had described. The pulse was running about 140, extremely feeble, the man was breathing with the utmost difficulty, and covered with a cold sweat. To all appearances the man had not long to live. I stayed by his bedside, and we injected musk and camphor at frequent intervals, until, at the end of something more than an hour, he had received nine injections of musk, and I think seven or eight of camphor. In addition to that, we had given him coffee by rectum, and also another thing which I always have on hand with which to combat collapse in pneumonia, and for which suggestion I am indebted to Fraenkel, that is, an emulsion of 75 gr. of asafetida in 100 ccm. of the yolk of eggs. I might interpolate just here that asafetida, that old-fashioned remedy, is a very powerful cardiac as well as nerve stimulant. The patient was also given this enema of asafetida. At the end of an hour he had warmed up, was breathing with less labor, but his pulse was still running at 140. I realized, of course, that I had reached the limit of my stimulation. He had gotten up a cutaneous circulation, which was the thing to be striven for, and something else must be done. I had on hand a digitalis preparation, which I would not like to mention in public because the agents who import it might use it for advertising purposes, and that is not my intention; but this gentlemen was given 1 ccm. of a certain preparation of digitalis intravenously, and inside of two minutes his pulse dropped to 90, and the man was saved on that occasion. He went along satisfactorily for another week, when he had another relapse and practically the same plan of treatment pulled him out of the situation on that occasion.

But I was not satisfied. I knew that the man was not getting the best of his infection, although his lungs had largely cleared up, and there was only a very small patch in the middle lobe of the right lung. The leucocytes had not increased, and I still felt hopeless about the ultimate outcome. My unfavorable prognosis was borne out a week later when a fresh involvement of the lung took place, and the man died, in spite of all efforts to the contrary, inside of thirty-six hours. Now, this case illustrated to me the value of proper medication for a condition of collapse. It also indicated to me the hopelessness, practically, of saving those pneumonia patients whose resistance is so low that they do not furnish a leucocytosis of more than a comparatively few thousand.

Gentlemen, for just a moment I would like to comment on Dr. Rochester's most excellent presentation of the subject of venesection in pneumonia. His opening remarks gave the curative treatment of pneumonia, it seems to me, in a nutshell. The epigrammatic sentence with which he opened, quoting from an English physician, it seems to me is the keynote of the whole situation: " Promote so far as you can elimination through the kidneys and bowels of the toxemia, and in certain cases by venesection." I have seen most gratifying results in just that class of cases. But you must be on hand to relieve the over-dilated and struggling right heart by venesection at the proper time and follow that up by intelligent and vigorous stimulation of the heart muscle by caffein, digitalis, strophanthus, or what not. I use caffein with the greatest possible faith in its power to sustain the heart, and indorse most strongly Dr. Jacobi's statement that it is necessary to begin our efforts at maintaining heart power early in a case of pneumonia. Death in pneumonia occurs in the great majority of cases, if not in all, through death of the circulatory system, either through capillary paralysis and the heart's death secondarily, or through the overwhelming effect of the toxins upon the heart muscle. The tendency is to progressive lowering of blood pressure. I believe, therefore, that the physician who waits until dangerous signs of heart weakness have already set in before he begins to sustain the heart has delayed his efforts too long. He is locking the barn door after the horses have been stolen. So, I believe the heart should be sustained from the beginning, and I pin my faith in the majority of cases on caffein, always on caffein in cases of elderly individuals, since I believe there are certain definite contra-indications to the use of digitalis in persons of that age.

Strychnine in my hands is uncertain, although I use it in moderate doses; but the double salt, sodio-benzoate of caffein, hypodermically, always in doses of 1 or 2 gr., beginning with four to six-hour intervals, and shortening to three or two, and in some cases even to one-hour intervals, supplemented by musk and camphor and asafetida, and in some cases even the use of wine, which stimulates the heart by reason of its ethers and has a low percentage of alcohol,— these are my armamentarium in my fight against pneumonia.

Dr. Guy Hinsdale, of Hot Springs, Va.: It is very important that this association should not overlook, as adjuncts in the treatment of pneumonia, fresh air, outside air and the use of water under certain forms, such as ice and compresses. The treatment by means of outdoor air in outside wards, roof gardens, roof wards, is, of course, as we know, one of the greatest helps in sustaining the patient. And the use of cold compresses over the chest, the use of ice over the lungs, is useful, not only in adults, but also in children. The Priessnitz compress, which has been used for over eighty years, is, of course, a most valuable hydrotherapeutic measure. Dr. Thomas J. Mays, of Philadelphia, a member of this association, some years ago reported a very large series of cases of pneumonia treated by ice, and his observations, and that of others, are very encouraging for the systematic use of cold in pneumonia. The results in the New York hospitals, such as Bellevue, Roosevelt and the Presbyterian, of other institutions where pneumonia is treated by removal of the patient to roof wards, cold air night and day, whatever the weather, are also very gratifying, and as a Climatological Association those measures naturally appeal to us as rational.

Dr. E. L. Shurly, of Detroit: I think there is no doubt about the question of the good effect of fresh air, generally speaking, and the good effects of flushing the system with water, as mentioned by Dr. Hinsdale. I have had some very happy effects from clearing the patient out with distilled water, relying upon the law of osmosis for the dilution of the toxins and for elimination.

Dr. Jacobi said we had to keep in mind the individual. I do not believe there is any form of treatment that is specific. In fact, very many of the cardiac stimulants which we rely upon seem to be absolutely useless in some cases, notwithstanding the drug is all right.

I have not heard mentioned in this connection the lung ferment oxydase, which I believe was discovered by Dr. Prudden, of New York, some fifteen or twenty years ago. I mention it in connection with the use and absorption of oxygen. It has occurred to me that the absence of this ferment oxydase will account for the non-absorption of the exudate in the middle and the latter part of a croupous pneumonia, and also account for the non-absorption, or rather, failure, of the therapeutic result of oxygen administration. Now, for instance, we may have some cases of pneumonia of whatever sort, and we will use oxygen with a very happy result, apparently in four or five perhaps out of ten cases. We have other cases of a similar clinical type, and we may use oxygen with equal assiduity without any effect. It has occurred to me, theoretically, that perhaps in these cases of non-absorption, nature may have ceased to produce oxydase or that some toxin may be neutralizing it entirely.

I can testify that the use of sodium benzoate is very valuable in some of these cases in the later stages. Half a dram to a dram every two hours will sometimes give a very good result. And so will carbonate of ammonia.

As to fresh air: As we all know, it is very grateful and beneficial, and Dr. DeLancey Rochester's father introduced this method of treatment for acute pneumonia at the Buffalo General Hospital when I was an interne there forty years ago. The plan then was to open the window and tack canvas around the head of the bed and window frame, enclosing the patient's head, thus providing fresh, cold air. Dr. Rochester, Sr., enunciated a principle at this time which I have always in my own experience found true: that fresh air, however cold it might be, will never injure a patient with hyperpyrexia. But he cautioned us to watch the temperature and not expose a patient thus with a falling temperature. I think this is true, and almost axiomatic. We do find in several diseases, even in tuberculosis, cases which do not bear well too much fresh, cold air, and I believe this is the consensus of opinion among practitioners in general. There are some individuals who cannot stand the air like others, and I think exposure to cold air in acute or chronic diseases should be adopted with a great deal of caution, and this is true of filling patients with water. However, I am heartily in favor of what Dr. Hinsdale has said about the water treatment, especially for children suffering with pneumonia.

Dr. Charles L. Minor, of Asheville, N. C.: I was glad to hear Dr. Brannan's report of the use of fresh air. It is simply another method of elimination. It provides free elimination from the lungs rather than from the skin, kidneys or bowels. I must confess that I would criticise the designing of his balconies. I do not believe it is necessary to expose our patients to the rain and the winds unnecessarily. If he would have the porches covered in with canvas, I think he would get better results, and I think it is a pity that New York City does not build roof gardens instead of balconies on the front of the buildings exposed to the rain storms.

I have noticed in the hospital at Asheville the remarkable fact that the negro never runs a typical course. These patients are slow in their crises, there is often no definite crisis, and it is followed by a very prolonged period of great subnormal temperature. The convalescence is very much longer and very much more atypical than in the whites.

Dr. W. F. R. Phillips, of Washington, D. C.: I think it has been pretty generally admitted that the so-called fresh-air treatment is a good thing, and admitting that it is a good thing, it seems to me that we should inquire wherein the fresh-air treatment is different from ordinary indoor treatment. As far as we know statistically, the indoor and the outdoor air in the ordinary seasons, that is, during the autumn, winter and spring, differ about as follows: The outside air is always cooler; its temperature lower; its humidity is higher; its amount of motion is greater. The pressure, of course, is the same; there is no variation at any time, no perceptible pressure variation, between the indoor and the outdoor air.

Something that does not exactly belong to the air itself, but which is, of course, a physical agent and has to be considered in the so-called outdoor treatment, no matter what we are treating, is the light. Unquestionably the intensity of the light, whatever may be its physiological effects, is greater out of doors than indoors.

There is another condition of the air of which we know nothing definitely, but in which there may be differences, and that is its so-called electrical state. We have every reason to believe that there will be found a decided difference in the electrical condition of the air indoors and that outside, but concerning the nature of this difference we know nothing at present.

There is another difference between the inside and outside air, and that is the chemical difference. We all know that outside the oxygen is greater, the carbon dioxid less.

Now those are the actual differences we have to deal with. And what do they all mean? It strikes me that if we want to make climatology scientific, we have to go at it scientifically, and, instead of talking about all of these effects as a conglomerate mass, we have to get busy and find out the individual effects of each of these things. Between the outdoor air and the inside air we may say at once that conditions exist outdoors that tend to a more rapid heat loss than indoors. The lower temperature of the outside increases the humidity, and the greater amount of air movement gives us a more rapid loss of heat by all the methods—radiation, convection and conduction — than inside, and on the face of things it seems to me this is the real differential effect the outside air has as compared with the inside air; that is, it increases the loss of heat, and which in turn calls upon the organism to supply a greater amount of heat in order to keep up its body temperature, and this, in some as yet occult way, stimulates metabolism.

(To be continued.)

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THE SITUATION REGARDING POLIOMYELITIS.

It is increasingly apparent that poliomyelitis is manifesting itself in a way to demand renewed attention on the part of the medical profession. Not many years ago, although well recognized, this affection was regarded as one of the rareties, and not a few general practitioners might pass many years without having met such a case. The epidemic character of the disease was slow in gaining recognition, even after the experience of the Rutland outbreak many years ago. At that time, the diagnosis of this outbreak was doubted by certain eminent men in the profession, and it was supposed by some to be an unusual manifestation of epidemic cerebrospinal meningitis. This view subsequent events entirely disproved, and we have, no doubt, in this early epidemic the first well-recognized manifestation of the disease as a possible public menace. Notable also in that outbreak was the fact that the spinal nerves were not alone affected, but that various cerebral symptoms likewise developed, either independently or in conjunction with the more typical spinal form.

Whether our attention has been particularly called in later years to the disease through greater knowledge, or whether it is actually more prevalent, is possibly a matter for discussion, but the fact remains that many more cases are now diagnosticated and that the disease to all appearances is increasing in frequency, and also frequently appearing in epidemic form. Since the Rutland epidemic, many others of more or less severity have been reported by competent persons, both here and abroad. In the fall of 1907, a large number of cases occurred in the neighborhood of certain large cities as well as in the country districts, an experience which is apparently being repeated now. It is evident also that the disease is manifesting itself much as it did in the Rutland epidemic, by no means confining its ravages to the spinal cord. In fact, there is little question that the infection, whatever it may be, has almost an equal predilection for the brain, as amply demonstrated by foreign investigators, and also by our increasing experience in this country. The situation in this regard is not unlike that of meningitis. The older terminology, spinal meningitis, has been practically given up with the recognition that such an inflammation is almost invariably cerebrospinal in character. The curious analogy of poliomyelitis to meningitis lends further weight to the conception of the disease as a widespread infection of the whole central nervous system, working its final destruction perhaps more frequently in the extremities than in the cranial nerves, but nevertheless present throughout the whole cerebrospinal system.

The disease is one of peculiar menace, not so much because of its fatality, which is relatively slight, but through the crippling effects which it almost invariably leaves as its results. It will soon be necessary to rewrite the whole subject, both from a practical and theoretical standpoint. Physicians are increasingly being called upon to determine as to the possibility of contagion, as to the desirability or necessity of disinfection of premises where a case has occurred, and of the conditions in general which seem to favor the development of the disease. In all these matters we are as yet in almost complete ignorance, and it is, therefore, all the more essential that we should act with judgment and discretion in our dealings with the community. It is manifestly unwise to excite undue alarm in a matter of this sort, and it is equally our duty to protect by every legitimate means persons who may be exposed to the disease. In the present state of our knowledge, it is absolutely impossible to lay down any rules of action, and no doubt each physician will be guided in a measure by his temperamental peculiarities in his advice to his patients. One thing should certainly not be forgotten, and that is that undue and unjustifiable alarm is a positive detriment to the community and should under no circumstances be fostered by physicians. However serious the situation may be, there is not the slightest occasion for panic; in fact, were it not for the serious after-effects of the disease, it is probable that the epidemic idea would not be so widely heralded.

TWENTIETH ANNIVERSARY OF CLARK UNIVERSITY.

The twentieth anniversary of the founding of Clark University, in Worcester, Mass., is being fittingly commemorated by a series of exercises and scientific meetings extending over a period of two weeks, beginning Sept. 7. The subjects particularly under discussion are mathematics, physics, chemistry, biology, psychology, pedagogy and history. It is perhaps of more than passing interest that, in a program of this sort, a number of medical men from this country and Europe should be taking part in the discussion. It has for some time been apparent that biology finds some of its most progressive representatives within the ranks of the medical profession, and that psychology is deriving a new interest for the average man from the careful studies now being made of abnormal mental states. It is, in fact, to this latter phase of these meetings that we desire to draw particular attention. Under the auspices of the department of psychology, Dr. Adolph Meyer, of the New York Pathological Institute, and professor-elect of psychiatry in the Johns Hopkins Medical School, spoke on the dynamic factors in dementia precox and allied psychoses. A series of lectures of particular interest to American students was given by Prof. Sigmund Freud, of Vienna, on the subject with which his name of late has become closely identified. In these lectures, Dr. Freud outlined with clearness his psycho-analytic methods in the study of the neuroses, and certainly gave his hearers much food for thought, however they might differ from him in details of interpretation. Hardly less significant than this presentation were a number of lectures by Dr. C. P. Jung, of Zurich, on studies of association and mental hygiene. Dr. Jung stands as a pioneer in the practical application of association tests to facts of pathological mental life. It was a gratification to have an exposition at first hand of this significant work in a highly subtle and elusive field. Although both of these series of lectures were given in German, the method of presentation was such that hearers with ordinary knowledge of the language experienced no difficulty in following the ideas presented. Other physicians, also, are taking part in this notable gathering, which is significant of the increasing recognition of the medical sciences and of the important part which pathological conditions are likely to throw upon biological problems. Clark University is to be congratulated upon this noteworthy meeting.

MEDICAL INSPECTION OF SCHOOLS.

From the pen of a recent correspondent of the Journal, Dr. R. C. Newton, comes an interesting article, reprinted from the *Medical Record*, on "Medical and Sanitary Inspection of Schools." It is gratifying for us locally to note that Boston took the lead in establishing in this country, in 1894, a system of medical inspection of schools similar to that begun in Germany in 1867. This action has been followed in all the large cities and universally in four states. Massachusetts, however, still has the only comprehensive mandatory state law on this subject. From the results of such extensive examinations, valuable and significant facts might be ascertained, but the data have as yet been only imperfectly collated. It appears from what has been determined thus far that in many cases our public schools do considerable damage to the health of the pupils attending them. Those who begin school late, or attend it for half time, are found frequently to surpass the rest mentally and physically. Of course other factors may enter into this difference, but it remains a grave question whether our present school system, with its pregnant possibilities of ill ventilation, contagion, nervous overstimulation and eye-strain, be not radically at fault. These and many other problems might be worked out by more extensive and thorough medical examination of schools and school children, a duty belonging particularly to the medical profession in its capacity as custodian to the public health and leader in reforms looking to the physical betterment of future generations.

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TRANSMISSION OF BACTERIOLOGIC MATERIAL BY MAIL.

An interesting and important question has recently been raised relative to the legality of transmitting cultures, swabs, smears and other bacteriologic material through the mails. Several complaints from different quarters have lately been lodged with the post-office department at Washington, stating that diphtheria swabs and tuberculosis sputum, sent to local health boards for examination, were received with the glass receptacles broken. The law forbids sending by mail any substance dangerous to those who handle or receive it. Living pathogenic bacteria, unless properly protected, surely come in this category. If physicians are to have the convenience of the mails in sending such material, the public and the postal employees should be safeguarded by the use of suitable containing cases. It would be dereliction of duty by the profession to permit the misuse of a privilege, granted for the benefit of the public health, but capable of involving greater danger than it averts.

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MEDICAL NOTES.

Bequest to a Hospital. — James N. Jarvie, of Montclair, N. J., has given the Mountainside Hospital of that town $26,000.

International Congress of Otology. — It is announced that the next meeting of the International Congress of Otology will be held in Boston, under the auspices of Harvard University. Dr. Clarence J. Blake, of this city, has been made president of this congress, which will probably be held the last week of August, 1912.

Early not a Leper. — The statement is made that John R. Early, who has long been regarded as a leper, has been found to be entirely free from the disease, and his name has been taken from the list of lepers in this country. A recent examination in New York revealed no skin eruption or other disability.

Cholera in Holland. — There have recently been a number of cases of Asiatic cholera in Holland, undoubtedly of maritime importation. The consequent quarantine enforcements have considerably interfered with shipping at the principal seaports. At Rotterdam the entire ship's complement of all the Dutch-American liners have been compelled to remain aboard constantly for eight days prior to sailing. This provision was made at the request of the United States health officials to prevent the necessity of long detention of steamers in harbor on arrival in this country.

BOSTON AND NEW ENGLAND.

Acute Infectious Diseases in Boston. — For the week ending at noon, Sept. 14, 1909, there were reported to the Board of Health of Boston the following cases of acute infectious diseases: Diphtheria 29, scarlatina 31, typhoid fever 43, measles 12, smallpox 0, tuberculosis 53.

The death-rate of the reported deaths for the week ending Sept. 14, 1909, was 15.99.

Boston Mortality Statistics. — The total number of deaths reported to the Board of Health for the week ending Saturday, noon, Sept. 11, 1909, was 196, against 223 the corresponding week of last year, showing a decrease of 27 deaths and making the death-rate for the week 16.41. Of this number 98 were males and 98 were females; 193 were white and 3 colored; 137 were born in the United States, 55 in foreign countries and 4 unknown; 45 were of American parentage, 128 of foreign parentage and 23 unknown. The number of cases and deaths from infectious diseases reported this week is as follows: Diphtheria, 34 cases and 2 deaths; scarlatina, 17 cases and 0 deaths; typhoid fever, 35 cases and 3 deaths; measles, 11 cases and 0 deaths; tuberculosis, 44 cases and 19 deaths; smallpox, 0 cases and 0 deaths. The deaths from pneumonia were 6, whooping cough 0, heart disease 16, bronchitis 0 and marasmus 1. There were 12 deaths from violent causes. The number of children who died under one year was 66; the number under five years 81. The number of persons who died over sixty years of age was 39. The deaths in public institutions were 78.

Cerebrospinal meningitis, 3 cases.

Of the above the following were non-residents: Consumption: 3 cases and 1 death.

Deducting deaths of non-residents, the total is 166. The corrected death-rate is then 13.89.

Hospital for Tuberculosis in Waltham, Mass. — The Waltham Board of Health has voted in favor of the establishment of a city hospital for the care of tuberculous patients, and has asked an appropriation of $10,000 for the purchase of a site and the erection of a suitable building. The recommendations of the Board of Health have not as yet been acted upon by the aldermen.

NEW YORK.

Bequests. — Among the charitable bequests in the will of the late Welcome G. Hitchcock, of New York, are the following: $5,000 to the Society for the Suppression of Vice, of which Mr. Hitchcock was president; $2,500 to the White Plains Hospital and $2,000 to the Mary Hitchcock Memorial Hospital of Hanover.

Ruling Adverse to Osteopathy. — On Sept. 8 Justice Crane of the New York Supreme Court, at a sitting in Brooklyn, denied an application for an injunction restraining the City Health Department from enforcing the provisions of the sanitary code affecting osteopaths. It was the claim of the department that osteopaths were not entitled to registration as practitioners of medicine, with the right to sign certificates of death, and this claim has now been sustained.

Last Trip of Floating Hospital. — The last trip of the *Helen C. Juillard*, the floating hospital of the St. John's Guild, was made on Sept. 4. During the season 49 trips were made, on which 11,155 mothers and 27,895 children and babies were carried for a day's outing on the water. In addition, salt water bathing was provided for 2,266 mothers and 10,450 children. The Seaside Hospital of the Guild at New Dock, Staten Island, to which the trips of the *Juillard* were made, will be kept open for some time longer.

Albany County Penitentiary. — A committee appointed to make an inspection of the Albany County Penitentiary has reported to the State Prison Commission a very unsatisfactory condition of affairs at that institution. There is much congestion, so that insufficient air space is allowed to the prisoners, and filth is permitted to accumulate. The report goes on to say: "The management of this institution has made no attempt to conform it industrially to the requirements of the prison law. With two hundred or three hundred idle prisoners, there is absolutely no excuse for not keeping the entire institution, with all its equipment, perfectly clean and free from vermin." The committee then points out that much additional labor might advantageously be expended on the prison farm and with great benefit to the men so employed.

Report of Albany Tuberculosis Pavilion. — The first report of the tuberculosis pavilion at Albany of the Central Federation of Labor, just published, shows that in its five months of operation 29 patients have been treated: 10 incipient cases, 10 moderately advanced cases, and 9 far advanced cases. In the first group no less than 7, and in the second 5 cases have shown material improvement, while in the third group there has been some improvement in 3 of the patients. Most of the money to support the institution is raised by the contribution of one cent a week from each member of the labor unions in Albany. Some financial support is also derived from the Women's Anti-Tuberculosis League, composed of working women, and on Labor Day the League had three hundred girls on the streets of the city selling buttons bearing the double red cross in exchange for contributions to the pavilion.

Medical Preparations for Fulton Celebration. — For emergencies which may arise in connection with the approaching Hudson-Fulton celebration, fifteen hundred trained nurses have already volunteered their services, and with these and the numerous physicians who have either volunteered or been appointed by the celebration commission, it is confidently expected that all cases of accident or illness can be promptly cared for. On the three days of the great land parades, temporary hospital stations will be established every five blocks along the route, with ambulances at ten-block intervals, and special arrangements will also be made at the various public and private general hospitals for the handling of cases. During the two water parades similar precautions will be taken at all points on shore where the greatest congestion is likely to occur, and an innovation will be introduced in the form of ambulance motor launches, with physicians and nurses in attendance, and also policemen selected for their expertness in swimming.

Typhoid Fever. — An unusual number of cases of typhoid fever have recently been reported from a certain limited area of the city, the district between Sixtieth and Seventieth streets and extending from Third Avenue to the East River. The Health Department has been actively at work endeavoring to get at the source of the infection, but as yet without success, so far as reported. The water supply is the same as in other sections, and no milk contamination has been discovered. It is possible, however, that many of the cases may be due to typhoid germs in the East River. The young men and boys of the district bathe in the latter all through the summer, and a number of sewers empty into the river in this portion of the city. There is no general epidemic of typhoid, as the records show that the total number of cases reported in New York is less than at the same season in the last four years. In view of the public attention which this local outbreak of typhoid has attracted, however, Health Commissioner Darlington has taken occasion to renew his application for the construction of a general filtration plant for the water supply of the city, a measure which he has been urging for the past four years. The expense involved in such a work, he says very truly, would be amply compensated for by the economic saving that would be effected by reason of immunity from disease.

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Current Literature.

The Journal of the American Medical Association.
Sept. 4, 1909.

1. *Berzey, D. H. *Preservatives in Food Materials, Their Detection and Effect.*
2. *Harris, F. G. *The Parasitology of Syphilis.*
3. Wiener, M. *Regeneration of the Cornea.*
4. Knapp, A. *The Operative Treatment of Glaucoma by Cyclodialysis.*
5. Moriarta, D. C. *The General Practitioner as an Anesthetist.*
6. Pfahler, G. F. *The Rœntgen Rays in Dentistry.*
7. Sullivan, A. G. *Reconstruction of the Bile Ducts.*
8. Greene, D. W. *Experience in Expression of Cataracts in Capsule by Smith Method.*
9. Würdemann, H. V. *The Expression of Cataract in its Capsule, with Report of Forty Operations.*

1. Berzey makes a plea for the abolition of preservatives in food materials. His reasons are: (1) The use of preservatives permits the use of food substances of inferior grade or that are not fresh. 2. Food preservatives when taken into the body must be eliminated subsequently; this entails extra labor on some special organ, and this, sooner or later, leads to direct injury. 3. Many of the preservatives are direct poisons and their constant use induces chronic poisoning with its concomitant effects. 4. Preservatives have an antifermentative effect on the different digestive ferments, especially on trypsin, and thus retard digestion and interfere with assimilation. 5. Preservatives act on food substances in such a manner as to render them less easily digested or wholly indigestible.

2. Harris considers that the spirocheta pallida is, undoubtedly, the causative agent in syphilis. It is found in the great majority of cases of congenital syphilis and in all organs and tissues in that condition. It is never found in the central nervous system in acquired syphilis, according to some authors, but yet it may be said that it has been found in all the lesions of every stage of syphilis. The more acute the lesion the greater the number of organisms. A remarkable contrast, however, is the vast number of organisms in congenital syphilis and the slight evidence of inflammatory change. Excision of the primary sore, even within twenty-four hours, may not cut short the infection, so virulent it may be. Pathologic changes are probably much more frequent in internal organs than was formerly thought. Aside from the Wassermann reaction the demonstration of the spirocheta is the most reliable means of diagnosis. These two give us absolute control of diagnosis in every stage. The finding of the spirocheta permits of a positive diagnosis earlier than any other symptom. After the primary stage the Wassermann reaction is more reliable. The spirocheta has been found as late as thirteen years after the primary infection.

[E. H. R.]

Archives of Internal Medicine.
August, 1909.

1. *Fontaine, B. W., Haase, M., and Mitchell, R. H. *Systemic Blastomycosis, Report of a Case.*
2. *Burns, J. E. *Glandular Fever; Report of an Epidemic in the Children's Ward of the Union Protestant Infirmary.*
3. *Miller, E. C. L. *The Administration of Tuberculin.*
4. *Schroeder, E. C., and Cotton, W. E. *Tests Concerning Tubercle Bacilli in the Circulating Blood.*
5. *Darling, S. T. *The Relapsing Fever of Panama.*
6. *Barringer, T. B., Jr. *Report of a Case of Stokes-Adams Disease.*

1. The article contains an acount of the careful study of a case of systemic blastomycetes.

2. The author reports nine cases of glandular fever or Pfeiffer's disease occurring in the form of an epidemic.

3. The author points out the fact that in giving tuberculin in the serial dilution on the market as 1: 1,000; 1: 10,000; 1: 100,000; 1: 1,000,000; there is not a progressive series of doses when passing from one dilution to the next. In administering tuberculin each dose should be larger than the preceding by a certain per cent. Plotting of the treatment of each patient as a curve is advocated because of the light it may throw on the treatment of the individual case, and on general tuberculin therapy.

4. By a large series of experiments on known tuberculous cattle, the authors have conclusively proved that the chances of finding tubercle bacilli in the blood of a patient are infinitely small. They examined many smears of blood, and controlled their negative findings by inoculation into guinea pigs.

5. Darling gives a long and interesting discussion of the relapsing fever of Panama. He shows how this form of relapsing fever can be differentiated from the fevers of Africa, Europe and Asia. He shows that between paroxysms of the disease the blood of animals, where spirochetes are apparently absent from the peripheral blood, is infectious, suggesting a valuable means of diagnosis of the fever in man during the afebrile period, by inoculation of susceptible animals with the patient's blood. The mechanism of defense is largely that of phagocytosis by hepatic endothelium. The immunity resulting from the infection by one strain is not potent against another strain of a different source, although of the same species and from the same locality but from a different human host, and, therefore, for the production of preventive and curative sera, polyvalent sera derived from all the strains will probably be necessary. The author goes at length into the reactions of different animals to the spirochete, and the morphology of the spirochete.

6. The case reported by the author brings out very prettily the influence of the vagus nerve upon the conductivity of the auriculo-ventricular bundle.

[W. B. R.]

BULLETIN OF THE JOHNS HOPKINS HOSPITAL.

AUGUST, 1909.

1. *HAMMAN, L., AND WOLMAN, S. *Tuberculin Treatment among Dispensary Patients.*
2. *HAMMAN, L., AND WOLMAN, S. *A Further Report of the Work in the Phipps Dispensary for Tuberculosis of the Johns Hopkins Hospital.*
3. *WOLMAN, S. *Marmorek's Serum in the Treatment of Pulmonary Tuberculosis.*
4. *FORSTER, A. M. *The Employment of Arrested Cases.*

1 and 2. Hamman and Wolman, in a long and careful article, report the result of their work in the treatment with tuberculin of consumptives who have attended the Phipps Dispensary of the Johns Hopkins Hospital. They have had under their control from thirty to fifty patients, whose mode of life has been strictly supervised. In addition to this, they have been treated with tuberculin. This article dwells particularly on this. They believe that tuberculin may be used on a large scale in the dispensary without danger and under the most satisfactory control. They have selected their patients with care. A degree of intelligence and perseverance and a certain amount of home comfort and enough leisure to allow regular attendance at the dispensary are considered necessary. They have treated all stages of the disease. On the whole, the response of the patients has been satisfactory. They have used a blank form giving a large number of questions in regard to various symptoms which might constitute a reaction, which the patient fills out. Tuberculin is not given unless the temperature is normal, except in rare instances. Most of the women have done some work at home, and some of the men have worked more or less constantly throughout the whole period. No routine medication has been used except the tuberculin. They have used all kinds of tuberculin and now use the bouillon filtrate. They describe methods of preparing the dilutions. They use the progressively increasing doses, as advocated by Trudeau and others. In particular, they have noted with these increasing doses the great improvement in the symptoms usually spoken of as toxic. They have tried to avoid reactions, and, after a careful study, regard them as undesirable. Their initial dose has usually been 1-1,000 mgm., and often 1-10,000 mgm. They speak of the importance of a local reaction at the site of the injection and at the site of the disease, as well as constitutional symptoms. Various illustrative charts are given to illustrate these points. Their doses have gone as high as 1 gm. of the crude tuberculin. Their most striking results have been among the early cases. Fever of a mild grade, when other conditions are favorable, need not be a contraindication. Their results, on the whole, have been favorable. These are given in detail by means of various tables. Many pages are given up to lengthy tables and illustrative temperature charts, some of which might have been omitted with advantage to the readability of the paper.

3. Wolman, in a short article, reviews his experience with Marmorek's serum in the treatment of pulmonary tuberculosis. He was unable to ascribe any beneficial effects to this serum.

4. Forster, in an interesting article, describes the farm colony of which he is in control for the future treatment of cases of consumption which have been cured or arrested at the sanatorium or dispensary. He believes that agriculture presents the best form of exercise for these cases, from a therapeutic as well as economic standpoint, and that the farm colony is not only the best possible means for the future care of consumptives, but is also the best agent for encouraging the much-wished-for movement toward the land. These colonies, if properly located and managed, can be made self-supporting, and present the only way for handling tuberculous families. They should be located in close conjunction with a sanatorium and a hospital for advanced cases, and should also be near the large centers of population. This paper is of great practical interest to every one concerned in this most important feature of tuberculosis work. [J. B. H.]

ANNALS OF SURGERY.

AUGUST, 1909.

1. *PATERSON, H. J. *Jejunal and Gastrojejunal Ulcer following Gastrojejunostomy.*
2. POWERS, C. A. *Surgical Procedures Designed for the Relief of Pulmonary Tuberculosis.*
3. MURRAY, F. W. *A Case of Pistol-Shot Wound of the Axillary Artery*
4. LE CONTE, R. G. *The Treatment of Diffuse Septic Peritonitis.*
5. *COLEY, W. B., AND CHAFFEE, I. S. *Volvulus of Giant Sigmoid Colon.*
6. *HOTCHKISS, L. W. *Large Sliding Herniæ of the Sigmoid.*
7. KELLEY, H. A. *The Fat Appendix.*

1. Paterson reports two cases of jejunal ulcer following gastrojejunostomy with analyses of stomach contents and jejunal contents obtained through a fistula in one case. He then presents epitomes of 19 cases of ulcer following gastrojejunostomy in which perforation ensued into the general peritoneal cavity; 28 cases in which, owing to adhesions to abdominal parietes, perforation resulted in inflammatory exudation into the abdominal wall; 5 cases in which the ulcer became adherent to and perforated into the colon; and 10 cases in which the diagnosis of ulcer was suggested, but not proven. From this material he considers jejunal and gastrojejunal ulcers as regards sex, age, type of operation, mortality, symptoms, diagnosis, site of ulcer, probable etiology, medical, surgical and preventive treatment. Fifty-six per cent of the cases showed symptoms of ulcer within a year after gastrojejunostomy and 73% within two years. The symptoms of those cases which did not perforate into the general peritoneal cavity were pain without relation to food (3 cases aggravated immediately by food, 2 one or two hours afterward); melena (1 case), hematemesis (1 case), fecal odor to vomitus or stomach contents (3 of 5 cases with perforation into colon), and an induration or swelling of the abdominal wall at level of the umbilicus (19 cases). This induration or swelling was over the left rectus muscle in 12 cases, over the right rectus in 4, in the median line in 2, and was present in those cases only in which an anterior gastrojejunostomy had been performed. Jejunal ulcers were most frequently found in the efferent limbs, at times opposite the anastomosis, and rarely in the afferent limb. They were often found after gastro-jejunostomy "*en-Y*" and gastrojejunostomy with entero-anastomosis, in which types of operation, owing to the diversion of bile and pancreatic juice, the jejunum is exposed to the acidity of the gastric juice. The amount of free HCl in the stomach contents of ulcer cases was usually increased. Paterson believes the gastrojejunal ulcer is caused by the acid irritation of an anastomosis which has healed by granulation either from non-apposition or injury of gastric and jejunal mucous membranes or to infection of suture material. Closure of gastrojejunal openings he attributes to cicatrization of such ulcers. To avoid gastrojejunal and jejunal ulcers he recommends the avoidance of entero-anastomosis or Y-type of operation, a large opening, an accurate approximation of mucous membrane, the disuse

of mechanical devices, and a post-operative diet without meat for six months. Paterson considers every case of recrudescent pain of constant character after gastrojejunostomy, especially associated with hyperacidity, a case of potential ulcer.

5. The authors have succeeded in relieving obstruction from volvulus in a probable case of giant sigmoid by the use of a simple device worn in a colotomy wound which permits the escape of gas, but not of feces.

6. Hotchkiss presents an ingenious method of reducing large sliding herniæ of the sigmoid by lengthening the sigmoid meso-colon. Having freed the sac and cord, and having opened the sac anteriorly and reduced into the abdomen all the contents which can be reduced, the incision is carried upward to the internal ring, and downward to the lower end of the attachment of the mesocolon to the posterior wall of the sac.

The sac is now easily everted by pulling forward on the adherent sigmoid. The peritoneum of the split sac becomes an elongated mesentery for the sigmoid. The two layers are sutured together and the sigmoid reduced. A somewhat irregular opening into the abdominal cavity results, but is easily closed. [T. W. H.]

SURGERY, GYNECOLOGY AND OBSTETRICS.

AUGUST, 1909.

1. *POZZI, S. *On the Surgical Treatment of a Most Frequent Cause of Dysmenorrhea and Sterility in Women.*
2. *BUNTS, F. E. *A Case of Habitual Dislocation of the Patella; with Operation for its Relief.*
3. *FRANK, J. *Kraurosis; with Report of a Case.*
4. NORRIS, C. C. *Primary Ovarian Pregnancy and the Report of a Case Combined with Intra-Uterine Pregnancy.*
5. WITHERSPOON, T. C. *Obstruction of the Bowels.*
6. CONNELL, F. G. *Some of the Principles of Intestinal Suturing.*
7. VAN HOOK, W. *The Colics of the Vermiform Appendix.*
8. *HESSERT, W. *The Treatment of Tetanus.*
9. BECKMAN, E. H. *Diaphragmatic Hernia, with Report of Three Cases.*
10. STETTEN, D. *The Submucous Lipoma of the Gastro-Intestinal Tract. A Report of Two Successfully Operated Cases and an Analysis of the Literature.*
11. HEINECK, A. P. *Modern Operative Treatment of Fractures of the Patella, Based on the Study of Other Pathological States of this Bone. An Analytical Review of over Eleven Hundred Cases Treated during the Last Ten Years by the Open Operative Method.*

1. Pozzi describes his new operation of stomoplasty for relief of dysmenorrhea and sterility in women with anteflexed, narrowed cervices. The reader is referred to the very excellent plates for a description of the operation.

2. Bunts describes a very simple operation of overlapping the inner side of the capsule of the knee, in a way similar to Mayo's method of radical cure of umbilical hernia, for a very aggravated case of double habitual dislocation of the patella.

3. Frank excised the whole vulva, leaving the urinary meatus and vaginal margin intact for a case of kraurosis or progressive cutaneous shrinkage of the vulva.

8. Hessert's paper on tetanus and its treatment is most thorough and logical. It sums up very concisely and accurately the latest knowledge on this very baffling disease. Important points in his paper are the following: The toxin as shown by Meyer and Ransom enters the end of the motor neuron, where it is not provided with a myelin sheath. The myelin sheath offers an absolutely impervious insulation, impenetrable alike both by the toxin and antitoxin. The motor nerves, not the sensory, are the conductors of toxin to the cord and medulla. Nor does it pass up the lymph spaces about the nerve, but always by way of the axis cylinders. A certain portion of the toxin is taken up by the lymph and blood from the wound, and thus gets into the general circulation. The toxin enters into some sort of a firm combination with the nerve cells and there is no remedy able to break it up or neutralize it. It can be eliminated only gradually by the metabolic changes of the body. Hence the principles of treatment are: (1) Remove the source of further toxin supply by thorough removal of the infected area; (2) neutralize the toxin contained in the tissue juices by massive injections of antitoxin subcutaneously; (3) employ some remedy to allay the reflex excitability of the cord; (4) nourish and stimulate the patient and tide him along till he shall have eliminated the toxin from his system. The antitoxin has been, beyond a doubt, proven to be most valuable as a prophylactic measure. In the treatment of the local wound, avoid cautery, dusting powders or anything that will act as a plug and favor anaërobic conditions. Rubber tissue drains are preferable. Hydrogen peroxide is rational. Balsam of Peru has been proven by the Japanese, in the Russo-Japanese War, to exert a slight specific action on the tetanus bacilli, and should be used in dressings. Hessert believes in the careful use of magnesium sulphate intraspinally, and thinks our greatest success in treating the spasm lies in this method. He advises for dosage 1 ccm. of a 25% sterile solution for every 20 lb. body weight in men, and for women and children, 1 ccm. for every 25 lb. body weight. This is considered safe. None of the many special methods of injecting the antitoxin has proven of value, and some are too dangerous for general use. Subcutaneous injections of the serum in massive doses 1,500 to 3,000 units will yield as good, if not better, results. [E. H. R.]

THE PRACTITIONER.

AUGUST, 1909.

1. *POWER, D'A. *Some Cases of Chronic Ulceration of the Rectum.*
2. *WARRINGTON, W. B. *The Rôle Played by Diet in Bright's Disease.*
3. *MCGAVIN, L., AND WILLIAMS, G. *A Report on Two Hundred and Fifty Cases of Spinal Analgesia by the Use of Stovaine-Glucose Solution.*
4. PRINGLE, J. H. *Remarks on the Treatment of Fractures of Long Bones with Special Reference to the Extension Method.*
5. CONDER, A. F. R. *A Case of Acute Infective Endocarditis Treated with a Vaccine prepared from the Patient's Own Blood, and Ending in Recovery.*
6. LAPAGE, C. P. *The Diagnosis of Permanent Mental Deficiency in Infancy and Childhood.*
7. DUKES, C. *The Medical Inspection and Treatment of School Children.*
8. CHESNEY, L. M. *Use of Thorium and Radium in Some Diseases of the Pharynx and Larynx.*
9. COLEY, F. C. *The Prophylaxis of Aphasia.*
10. WATSON, R. *Adventures with a Curette.*
11. CARGILL, L. *A Review of Recent Ophthalmic Literature.*

1. Power discusses the various forms of ulceration of the rectum, with illustrative cases, and discusses the classification and differential diagnosis and treatment of these conditions.

2. Warrington, in a short article, speaks of the rôle played by diet in Bright's disease. The diets chiefly to be considered in the treatment of renal disease, according to him, are: (1) the amount of fluid; (2) the pure milk diet; (3) the lacto-vegetarian diet; (4) the chloride-poor diet; (5) the nitrogen-poor diet; (6) special articles of diet. These he discusses briefly.

3. McGavin and Williams give a report on 250 cases of spinal analgesia and the use of stovaine. They believe that this method has a definite place in modern surgery and that stovaine is the best anesthetic to use. With proper precautions, the risk of infecting the spinal meninges is very slight. The lateral position is the best. The attempt to push the analgesia to a higher level than the fourth dorsal area is unwise. Their cases are given in table form at the end of the article. [J. B. H.]

EDINBURGH MEDICAL JOURNAL.

AUGUST, 1909.

1. *Editorial: The New Professor of Surgery. The Chair of Anatomy. Special Diplomas. Post-Graduate Courses. Medical Presentation. "Covering" Unqualified Dentists. Royal College of Surgeons of Edinburgh.*
2. FRASER, W. R. *The Promotion Address Delivered to the Medical Graduates of 1909.*

3. Brewis, N. T. *A Clinical Lecture on Retroversion of the Uterus and Its Treatment, with Special Reference to the Operation of Shortening the Round Ligaments.*
4. Young, J. *The Anatomy and Histology of the Pregnant Tube.*
5. *Low, R. C. *From the Skin Department of the Royal Infirmary. The Cutaneous Tuberculin Reaction in Skin Diseases.*

5. Low reports his results in the use of the skin tuberculin tests in various forms of skin disease. He concludes from his investigations:

(1) All tuberculous skin lesions give positive reactions.

(2) The degree of the reaction is no index of the activity of the disease.

(3) A positive result does not necessarily mean that any skin lesion which is present is tuberculous in nature, as the reaction may depend on tuberculosis of some other organ.

(4) A negative result is of more value than a positive result for the same reason just mentioned.

(5) The method is of no assistance in determining whether any tuberculous lesion is active or not, as both active and apparently healed lesions give positive results.

(6) The method gives no aid in determining whether a tuberculosis of the skin is cured or not.

(7) Before deciding what kind of tuberculin to employ in treating a tuberculous skin lesion by injections, it is advisable to apply Pirquet's test with both human and bovine tuberculin. [J. B. H.]

Deutsche Medizinische Wochenschrift. No. 31.

Aug. 5, 1909.

1. *Gaehtgens, W. *Opsonic Investigations in Typhoid Bacilli Carriers.*
2. Richartz, H. L. *The Presence of Isolysins in the Blood Serum in Cases of Malignant Tumors.*
3. Grandauer, K. *The Rest Test in the Diagnosis of Gastric Ulcer and Gastric Catarrh.*
4. Moehring, C. *An Uncommon Symptom Complex in Atrophic Cirrhosis of the Liver.*
5. Sommer. *A Contribution on Hirschsprung's Disease.*
6. Bergel, S. *Practical Experiences with Fibrin and Serum.*
7. Schüler. *Experiences with the Dessauer Deep Rœntgen Irradiation.*
8. Levin, E. *Thyresol in the Treatment of Gonorrhea.*
9. Hirschberg, M. *Rare Symptoms in Acute Morphine Poisoning.*

1. Basing his conclusions on the result of observations of about a dozen or more cases of both varieties, Gaehtgens claims that in persons who have had typhoid fever and who no longer are bacilli carriers, the opsonic index gradually approaches normal, while in persons who are continuous bacilli carriers the index remains considerably elevated.

Agglutinins and opsonins he finds frequently in large numbers in bacilli carriers, and although he suspects the presence of an antibody he finds it more difficult to prove.

By injecting animals with a typhoid filtrate he was able considerably to raise their opsonic index. [C. F., Jr.]

Münchener Medizinische Wochenschrift. No. 33.

Aug. 17, 1909.

1. *v. Hoesslin, R. *The Dependance of Albuminuria on Acid-Content of the Urine.*
2. Auschütz, W. *Treatment of Fractures by Extension with Nails.*
3. v. Franqué, O. *Plastic Use of the Uterus in Operation for Cancer of the Rectum.*
4. *Burkhardt, L. *Intravenous Chloroform Narcosis.*
5. Grüner, O. *The Diminution of the Tuberculin Susceptibility of Tuberculous Patients during Measles.*
6. Schütz, R. *The Knowledge of the Bactericidal Activity of the Intestine.*
7. Schöppner. *The Changes of Blood-Pressure under the Action of Compressed Air.*
8. Salzer. *Expectation-Neuroses of the Eyes (Psychic Asthenopia).*
9. Grünwald, L. *Psychic Phenomena from the Upper Air Passages.*
10. Rothschild, D. *The Diagnosis and Treatment of Pleural Adhesions.*
11. Lossen, H. *Ulcus Nodens Permagnum.*
12. Herxheimer, K. *A New Method of Staining Fibrin.*
13. Löwenstein. *A New Sputum-Bag for Operations on the Mouth, Throat and Nose.*
14. Blumm, R. *Technic of Medico-Legal Autopsies.*

1. v. Hoesslin brings forward the theory that the amount of albumin and casts in the urine may sometimes depend on the degree of acidity. This view is strongly supported by tabulated data from two cases which were carefully followed. Improvement in the urine and in the health of the patients followed the administration of alkalies. After acidulating and boiling the urine, 10 ccm. were centrifugalized in a tube, graduated to tenths of a cubic centimeter. The method gave results very close to those obtained by weight and more accurate than those procured by Esbach's method. The acidity was estimated by Moritz's method. It was found that the high acidity corresponded to large excretions of phosphoric acid.

The writer recommends that in every case of albuminuria the relation of the albuminuria to acidity be determined.

4. The writer, having produced anesthesia in animals by intravenous injections of a saturated solution of chloroform in normal salt solution, reports its use on four human subjects who underwent more or less severe operations under this form of anesthesia. A slight transient hemoglobinuria, due probably to hemolysis, occurred in one case. No other untoward effects were noted. The time required to produce narcosis with loss of reflexes varied in the four cases from seven minutes to eighteen minutes. The longest duration of anesthesia was one and one-quarter hours. The patient was a girl of thirteen. Only 950 ccm. of the solution were used. The advantages claimed for the intravenous method are, that the amount given can be exactly known and regulated; that the minimal quantity can be administered; that the respiratory tract is spared, and that the reflex stoppage of respiration from irritation of the trigeminal nerve is avoided. [G. C. S.]

Berliner Klinische Wochenschrift. No. 34.

Aug. 23, 1909.

1. Schmid, H. *A Case of Traumatic Abdominal Hernia with Unusual Site.*
2. Wimmer, A. *Monoplegic Syringomyelia.*
3. Baumgarten, E. *Pharyngeal and Laryngeal Symptoms in Syringomyelia.*
4. Brückner, M. *Acute Cerebral Ataxia in the Course of Diphtheria.*
5. Richter, E. *Iothion.*
6. Peyser, A. *The Simulation and Exaggeration of Aural Disease in Social Medicine.*
7. Posner, C. *Intravesical Dissolution of Fatty Foreign Bodies.*
8. Klebs, E. *Antagonistic Treatment of Tuberculosis and Reversible Phylogenesis.* (Conclusion.)
9. Thöle. *Vitalism and Teleology in the Natural Sciences.* (Conclusion.)

Deutsche Zeitschrift für Chirurgie. Bd. 99.

Heft. 3–6. July, 1909.

7. Hoffmann, E. *A Case of Congenital Habitual Dislocation of the Patella.*
8. Hoffmann, E. *A Case of Aneurysm of the Axillary Artery after Dislocation of the Shoulder.*
9. Mohr, H. *Epigastric Hernia without Palpable Tumor.*
10. Wildt, A. *Contributions to Extension Treatment.*
11. Wildt, A. *Pelvic Depression and Oblique Position on the Operating Table.*
12. Thiel, A. *New Operative Method in Abnormally Large Congenital Inguinal Herniæ in Childhood.*
13. Castenholz. *The Surgical Treatment of Reducible Inguinal Herniæ in Childhood.*
14. Strohe, H. *Two Mishaps in the Use of Local Anesthesia.*
15. Lossen, W. *Varices of the Anterior Abdominal Wall.*
16. Berghausen, G. *Vertebral Injuries.*
17. Hopmann, E. *Voice and Speech Exercises after Extirpation of the Larynx.*
18. Rondorf. *Operative Gastric Diseases.*
19. Krabbel. *The Treatment of Primary Radial Paralysis in Fractures of the Upper Arm.*
20. Luxembourg, H. *Cases of Penetrating Gunshot Injuries of the Cranium.*
21. Luxembourg, H. *Cases of Rare Epiphyseal Injuries.*

22. ***Sonnenschein.** *Contribution to the Question of Nephropexy.*
23. **Landwehr, H.** *Condyloid Fractures of the Humerus and Their Treatment.*
24. **Lohmüller, F.** *Contributions on Dislocation of the Head of the Radius.*
25. ***Vorschütz.** *The Question of Operative Intervention in Turricephalism.*
26. **Roth, C.** *A Contribution to Freund's Thoracic Operation in Pulmonary Emphysema.*
27. **Cohen, F.** *The Importance of Castration in the Treatment of Mammary Carcinoma.*
28. **Kroh, F.** *Experimental Arthritis Deformans.*
29. **Feinen, J.** *Isolated Fractures of the Greater and the Lesser Trochanter.*
30. ***Jünger, W.** *Congenital Elevation of the Shoulder-Blade.*
31. ***Schrecker.** *The Treatment of Fractures of the Lower Leg.*
32. **Frank, F.** *Resection in Tuberculosis of the Ankle according to Bardenheuer.*
33. ***Jansen.** *Diagnostic Value of the X-Ray in the Field of Otology and Rhinology.*
34. **Lauenstein, C.** *Animal Experiments on the Subject of Strangulated Hernia and Retrograde Intestinal Incarceration.*
35. **Matti, H.** *Rupture of a Right-Sided Parovarian Cyst with the Symptoms of Acute Appendicitis.*
36. **Hagenbach, E.** *A Ganglioneuroma in the Region of the Knee-Joint.*

22. Sonnenschein describes the technic of nephropexy as practised by Bardenheuer, and from a study of 16 cases of floating kidney treated by this method concludes that the essentials of its success are: (1) Mooring the kidney in as high a position as possible; (2) hollowing out thoroughly the new kidney-bed; (3) reefing the fat and fibrous tissue below the hilus; (4) packing the wound to stimulate granulations; (5) supporting the kidney on the quadratus lumborum; (6) requiring six weeks' rest in bed after the operation.

25. Under the name of turricephalism, Vorschütz describes a rare congenital cranial malformation leading to disturbances of vision and sometimes ultimate blindness. He reports a case in which at autopsy, six weeks after decompression for relief of intracranial pressure, was shown the typical deformity, abnormally deep cranial fossæ, backward inclination of the pterygoid processes, depression of the cribriform plate and sella turcica, flattening and oblique position of the orbital plates, and funnel-shaped foramen magnum. Etiologically the condition seems due to premature synostosis of the sagittal and squamous sutures, the coronal and lambdoid sutures remaining normal. In Vorschütz's case there was also abnormal projection of the odontoid into the cranial cavity, prolapse of the cerebellum into the spinal canal, hydrocephalus of the third and fourth ventricles, and hydromyelia. He reviews the scanty literature of the subject and outlines a suggested operation for relief of the eye symptoms by removing bony pressure on the optic tract.

30. Jünger reports three cases of congenital high position of the scapula, known as Sprengel's deformity, which he regards as a malformation originating in primary fetal *anlage*, in which the scapula is associated with the spinal column as a costiform element, the analogue of a rib, a neometamere situated between the trapezius and the rhomboid.

31. From study of 100 assorted fractures of the lower leg, Schrecker reaches the following conclusions relative to their treatment: (*a*) Appropriate x-ray before the beginning of treatment is essential; (*b*) the matter of greatest importance is to prevent dislocation of the fragments; (*c*) excessive callus formation is to be avoided; (*d*) weight-bearing should be allowed only when union is complete; (*e*) secondary operation for correcting deformity is to be avoided, also mobilization of a stiffened joint; (*f*) the method of choice in treatment is Bardenheuer's extension bandage.

33. Jansen discusses the possible diagnostic value of the x-ray in otology and rhinology and presents admirable skiagrams illustrative of various pathologic conditions of the nasal accessory sinuses. [R. M. G.]

Miscellany.

WESTERN ASSOCIATION FOR THE PRESERVATION OF MEDICAL RECORDS.

Up to the present time there has not been a concerted effort made to collect and preserve historical data in regard to the origin, evolution and personnel of our profession in this part of our country. The result of this delinquency has been the total loss of much material that should have been preserved, especially pertaining to medical schools and societies and biographical matter in connection with the practitioners and teachers of medicine of by-gone days. A good deal of material of this character is still obtainable if a systematic effort is made to locate and preserve it. It is in the possession of individuals, families and private libraries and will eventually be lost. The Western Association for the Preservation of Medical Records was organized in May, 1909, for the purpose of collecting the historical and biographical records of the profession of the West and South. We wish to preserve anything and everything pertaining to Western medicine and medical men, and are anxious to enlist the active help and support of every member of the profession who is in sympathy with our aims. We want every one to become associated and identified with the work of our Association. There are no fees or obligations of any kind. We have made arrangements with the Lloyd Library, Cincinnati, Ohio, for the proper housing of the material collected. The latter will be systematically arranged, catalogued and properly preserved so that it can be made available for research work. We are particularly anxious to obtain (1) Medical journals published in the West and South prior to 1880; (2) medical books or pamphlets written or published in the West; (3) manuscripts and autographs of early Western physicians; (4) old diplomas and other documents of a medical character; (5) proceedings of medical societies; (6) reports of hospitals and other medical institutions; (7) catalogues and announcements of Western medical colleges of all "schools"; (8) biographies and portraits of Western physicians; (9) information and material of any kind pertaining to medicine and medical men and affairs in the West; (10) curios of a medico-historical character.

All contributions should be sent in care of the librarian. In view of the fact that we are performing a labor of love and have no funds, our friends and associates will readily understand why all contributions sent by express or freight should be prepaid, so that no expense may accrue to the Association. The necessary expenses of the Association are being met by voluntary contributions of its organizers.

C. A. L. Reed, M.D., *Chairman.*
Otto Juettner, M.D., *Secretary.*

A. G. Drury, M.D., *Librarian,*
710 West Eighth Street, Cincinnati, Ohio.

RECORD OF MORTALITY

FOR THE WEEK ENDING SATURDAY, AUG. 28, 1909.

CITIES.	Reported deaths in each.	Deaths under five years.	CITIES.	Reported deaths in each.	Deaths under five years.
New York	—	—	Waltham	7	2
Chicago	619	271	Pittsfield	13	4
Philadelphia	—	—	Brookline	4	1
St. Louis	—	—	Gloucester	10	2
Baltimore	200	69	North Adams	6	1
Cleveland	—	—	Northampton	4	1
Buffalo	—	—	Chicopee	5	2
Pittsburg	—	—	Medford	4	3
Cincinnati	—	—	Beverly	4	3
Milwaukee	—	—	Leominster	4	2
Washington	—	—	Hyde Park	5	3
Providence	—	—	Melrose	5	2
Boston	201	95	Newburyport	4	—
Worcester	46	21	Revere	3	1
Fall River	49	26	Westfield	[illegible]	4
Cambridge	25	14	Woburn	6	5
Lowell	41	22	Peabody	—	—
New Bedford	44	22	Marlboro	2	2
Lynn	22	11	Attleboro	5	2
Springfield	21	5	Adams	7	7
Lawrence	32	14	Clinton	1	—
Somerville	26	4	Gardner	6	3
Brockton	14	9	Milford	—	—
Holyoke	26	12	Watertown	7	3
Malden	14	6	Plymouth	—	—
Chelsea	2	1	Southbridge	4	2
Newton	10	1	Weymouth	7	3
Salem	19	6	Framingham	—	—
Haverhill	12	6	Wakefield	—	—
Fitchburg	8	5	Webster	—	—
Everett	10	1	Arlington	4	—
Quincy	13	7	Greenfield	0	—
Taunton	14	7			

LIST OF CHANGES OF STATIONS AND DUTIES OF COMMISSIONED AND OTHER OFFICERS OF THE PUBLIC HEALTH AND MARINE-HOSPITAL SERVICE FOR THE SEVEN DAYS ENDED SEPT. 1, 1909.

COFER, L. E., assistant surgeon-general. Directed to proceed to Cape Charles Quarantine Station and Fisherman's Island, Va., upon special temporary duty. Aug. 31, 1909.

ROSENAU, M. J., surgeon. Granted four months' leave of absence from Oct. 1, 1909.

NYDEGGER, J. A., surgeon. Granted one month and seven days' leave of absence from Sept. 10, 1909.

SPRAGUE, E. K., surgeon. Granted one month's leave of absence from Sept. 8, 1909.

WICKES, H. W., passed assistant surgeon. Granted fifteen days' leave of absence from Sept. 1, 1909.

CUMMING, HUGH S., passed assistant surgeon. Leave granted July 8, 1909, amended to read one month from Aug. 9, 1909.

FOSTER, M. H., passed assistant surgeon. Relieved from duty at Ellis Island, N. Y., and detailed to accompany the Agent of the Immigration Board of the Territory of Hawaii to the Madeira and Azores Islands. Aug. 28, 1909.

GWYN, M. K., passed assistant surgeon. Leave granted Aug. 17, 1909, for seven days from Aug. 17, 1909, amended to read five days from Aug. 17, 1909.

WILLE, C. W., passed assistant surgeon. Granted fourteen days' leave of absence from Sept. 12, 1909.

BOGGESS, J. S., passed assistant surgeon. Relieved from duty on Revenue Cutter "Tahoma" and directed to proceed to Chicago, Ill., and report to the Medical Officer in Command for duty and assignment to quarters. Aug. 30, 1909.

STIMSON, A. M., passed assistant surgeon. Granted seven days' leave of absence from Aug. 23, 1909.

SWEET, E. A., passed assistant surgeon. Relieved from duty at Boston, Mass., and directed to proceed to Ellis Island, N. Y., and report to the Chief Medical Officer for duty. Aug. 28, 1909.

WOLLENBERG, R. A. C., assistant surgeon. Directed to proceed to Rotterdam, Holland, upon special temporary duty. Aug. 27, 1909.

ATILLES, PEDRO DEL V., acting assistant surgeon. Leave of absence granted Aug. 4, 1909, amended to read thirty days' leave from Aug. 18, 1909, with pay, and fifteen days from Sept. 17, 1909, without pay.

BROWNE, R. W., acting assistant surgeon. Granted one day's leave of absence, Aug. 31, 1909.

CLEAVES, F. H., acting assistant surgeon. Granted twenty-one days' leave of absence from Sept. 13, 1909.

FABIAN, J. J., acting assistant surgeon. Granted ten days' leave of absence from Aug. 28, 1909.

HORNING, H., acting assistant surgeon. Granted seven days' leave of absence from Aug. 23, 1909, under paragraph 210, Service Regulations.

JACKSON, J. M., JR., acting assistant surgeon. Granted five days' leave of absence from Aug. 20, 1909.

MCLARTY, A. A., acting assistant surgeon. Granted ten days' leave of absence from Aug. 27, 1909.

SPOHN, A. E., acting assistant surgeon. Granted one month's leave of absence from Aug. 1, 1909, with pay, and two months from Sept. 1, 1909, without pay.

GAHN, H., pharmacist. Granted ten days' leave of absence from Sept. 7, 1909.

CARLTON, C. G., pharmacist. Granted thirty days' leave of absence from Aug. 4, 1909.

MORRIS, G. A., pharmacist. Granted seven days' leave of absence from Aug. 21, 1909, under paragraph 210, Service Regulations.

STERNS, C. O., pharmacist. Granted seven days' leave of absence from Aug. 24, 1909, under paragraph 210, Service Regulations.

STERNS, C. O., pharmacist. Granted fourteen days' leave of absence from Sept. 1, 1909.

PROMOTION.

Assistant Surgeon Francis A. Ashford commissioned a Passed Assistant Surgeon (recess), to rank as such from Aug. 11, 1909.

BOARD CONVENED.

Board of medical officers convened to meet at the Marine Hospital office, Galveston, Tex., Aug. 31, 1909, for the purpose of making a physical examination of an officer of the Revenue-Cutter Service. Detail for the board: Passed Assistant Surgeon G. M. Corput, chairman; Acting Assistant Surgeon Wm. H. Gammon, recorder. Aug. 27, 1909.

SOCIETY NOTICE.

AMERICAN HOSPITAL ASSOCIATION. — The eleventh annual conference of the American Hospital Association will be held at the New Willard Hotel, Washington, D. C., Sept. 21, 22, 23 and 24, 1909.

RECENT DEATHS.

HENRY TAYLOR BARSTOW, M.D., M.M.S.S., died in Boston Sept. 7, 1909, aged 51 years.

DR. HUGH T. ADAMS, of Jersey City, N. J., died on Sept. 8, at the age of sixty-three years. He was born in Dublin, Ireland, and educated at Queen's College in that city. He had practised in Jersey City for the past thirty-five years.

DR. JAMES BROWN BURNET, for more than forty years a practising physician in Newark, N. J., died at his home in that city on Sept. 7. He was born in Newark in 1842, and was a direct descendent of Governor Burnet, one of New Jersey's colonial rulers, and a grandson of Halstead Coe, who was with General Anthony at the storming of Stony Point in the Revolutionary War. Dr. Burnet was prominent in the religious world as well as the medical profession, and at the time of his death was president of the Essex County Bible Society.

DR. JOHN B. HAND, of Dias Creek, N. J., was instantly killed on Sept. 8, at Cape May Court House, by a railway train which struck the carriage in which he was driving. He was sixty-five years of age.

BOOKS AND PAMPHLETS RECEIVED.

"Am Steinhof." Hospital and Sanatoria in Vienna for Mental and Nervous Patients of Lower Austria. By L. Vernon Briggs, M.D. Reprint.

American Practice of Surgery. Edited by Joseph D. Bryant, M.D., LL.D., and Albert H. Buck, M.D. Vol. VI. Illustrated. New York: William Wood & Co. 1909.

Tuberculosis. By American authors. Edited by Arnold C. Klebs, M.D. Illustrated. New York and London: D. Appleton & Co. 1909.

Parenthood and Race Culture. By Caleb Williams Saleeby, M.D., Ch.B., F.Z.R. Edin. New York: Moffat, Yard & Co. 1909.

Practical Dietetics, with Special Reference to Diet in Diseases. By W. Gilman Thompson, M.D. Illustrated. New York and London: D. Appleton & Co. 1909.

Original Articles.

PRACTICAL SUGGESTIONS FOR THE LIFE INSURANCE EXAMINER.*

BY WILLIAM EVELYN PORTER, M.D., NEW YORK,
Medical Director of the Mutual Life Insurance Company of New York.

It affords me great pleasure to meet you here this evening, for, located as you are, in the very heart of one of the greatest life insurance sections of the country, you are bound to have an active interest in the subject under consideration. The past decade has marked the greatest advance in the scientific aspect of medical selection in life insurance in its entire history. This, in a large measure, is due to the stimulus afforded through the excellent work being done by the Association of Life Insurance Medical Directors of America. This association is doing a work of equal merit with any scientific medical body in the United States. Its membership is composed of the medical officers of the leading life insurance companies of the United States and Canada, who are devoting their time and best energies to the advance of this branch of medical work. As a result, medical selection in life insurance stands to-day as a distinct specialty, ranking favorably with any. The statistical data being accumulated by the members of this association will, within a few years, surpass in value the accumulated vital statistics collected from any other source and prove of the highest value, not only to the profession, but to the world at large.

The well-equipped selected insurance examiner of to-day may justly be proud of his association with this branch of medical work. It has been my privilege during the past nineteen years as medical examiner to represent at various times ten or more of the leading life insurance companies of the world. Whereas, prior to assuming the duties of medical director of the company with which I am now associated, my time was only partly given up to the work, my interest has steadily increased as I have learned to appreciate the great possibilities for good scientific work which this specialty affords.

As to the future value of the work, the essential factor in accomplishment of results will be the proper selection and organization of the examining force. Without competent and specially trained examiners the results are bound to be faulty. This fact has been firmly impressed upon me during the past three years, during which time I have given the subject most careful study. During this period I have selected from many of the leading cities of the United States and Canada physicians who have received degrees from the leading medical schools of the country and served as hospital internes. These gentlemen have gone to New York and received personal instruction from me in regard to the underlying principles governing the medical aspect of life insurance as well as its practical application. In quizzing them I have been impressed with the necessity for special instruction in this branch of medical work. In the first place, the viewpoint of the examiner for life insurance is diametrically opposite to that of the attending physician. The examiner needs the strongest field glass to detect the flaws which are most carefully concealed by the applicant, whereas the attending physician, to arrive at correct conclusions, should reverse the glass in order to reduce the highly exaggerated and magnified conditions presented by the patient.

There are many well-equipped physicians who can make most brilliant diagnoses with all the facts before them as presented by the patient but who are wholly unable to detect flaws in the applicant for life insurance.

The *examiner* should be not only a competent physician, but also a keen, shrewd man, of quick perception and sound common-sense. He should be tactful and diplomatic and, at the same time, absolutely incorruptible.

There are, in the United States and Canada, approximately forty thousand examiners who receive for their service in life insurance work a grand total of from four to five million dollars annually. Out of this entire number I venture to claim there are not more than two thousand who have had any special training in life insurance. Considering the substantial financial returns to the profession from this source alone, it is most important that the subject should be given more attention by the medical schools, both undergraduate and postgraduate. In addition, the life insurance companies should institute a system of special instruction, the benefits of which could be made to reach even the most remote field worker. It is obviously impossible for the medical officers of a company to instruct all of their examiners, but by proper organization of their forces and personal instruction of their leading representatives much can be done to improve the efficiency of the work.

In starting in with life insurance work it is imperative that the physician acquire at least a rudimentary knowledge of the principles governing the work and of the company's view point.

Longevity is the essential subject to be considered. The paramount question before the examiner is, "How long is the given applicant likely to live?" As a general guide it should be borne in mind that the ordinary expectation of the American table from twenty to seventy years is as follows:

Expectation of Life in Years.

Age.	Exp.
20	42.20
30	35.33
40	28.18
50	20.91
70	8.48

To simplify it still further, consider the table in rough figures, remembering that one should look for an approximate expectancy at the various ages as follows:

20	42 years
30	35 ,,
40	28 ,,
50	21 ,,
60	14 ,,
70	8 ,,

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* Read before the Springfield, Mass., Academy of Medicine, May 11, 1909.

These ages can be readily remembered without reference to a table and will serve as an aid in weighing all evidence coming before the examiner.

As to the influences affecting longevity, one should consider the following: Race, environment, occupation, morals, habits, family history, medical history and the physical condition.

Race is a decided factor in the consideration of longevity, yet from the medical reports received at the home offices, one would judge that the average examiner was wholly unaware of the fact. The frequency with which the question as to race is answered American, French, Scotch and even Irish is simply astounding, for it is impossible to believe that most of those replying in this way are actually ignorant of the meaning of the word "race." Among the Caucasian and Semitic races there are apparently certain factors affecting the mortality rate, but thus far they have not proven of sufficient importance among the residents of this country to necessitate exclusion or change of premium rate.

Deaths from suicide are especially common among Germans, and Hebrews seem susceptible to diabetes. The English, on the other hand, show a decided tendency to gout. None of these factors are sufficient to demand special note as to the nationality or race in this connection.

The susceptibility to tuberculosis and the common history of syphilis among the negroes and Indians, in addition to the factors of moral and general environment, are sufficient to demand special note of race. The Mongolians, moreover, owing to racial customs, unhygienic life and, in the case of the Chinese, to the general use of opium, are distinctly undesirable.

Environment. — The question of environment is one that is rarely considered by the examiner. The sanitary condition and cleanliness of the home or office, the evidence, or lack of evidence, of normal healthy moral surroundings and material prosperity, are factors of great importance. Yet they are often entirely disregarded.

Occupation as a factor in life insurance might well be the subject of a dozen papers to be considered by the examiner; yet here time permits of but passing mention. You will usually find in referring to the average application that the occupation is recorded as, clerk, salesman, manager or merchant, without reference to the actual character of business followed. In such cases the examiner should state specifically the exact nature of the occupation, particularly if, in his judgment, it should be considered as extra hazardous or in any way affecting the applicant's probable longevity. In most companies the physician is expected to note chiefly those occupations where moral hazard, excessive nervous strain and unfavorable sanitary conditions are involved. The fixed rules governing poisoning, accidents, added dangers from police, fire, military and naval service, are sufficiently well defined and need no special mention by the examiner in his report.

Bartenders, saloon and hotel keepers who attend their own bar, employees in breweries, gamblers, brothel keepers and prostitutes are notoriously short lived. Where suspicion exists in the mind of the examiner that a given applicant represents these or similar callings, most careful inquiry and investigation is demand.

In large and active business communities there is a rapidly growing class in which the effects of high-tension business methods and the demands of social life are playing a most important part. To my mind there is no more important factor affecting longevity among those in the insuring class, and yet but brief mention has been made of it in the literature of the subject. Stop and consider the astounding change which has taken place in business methods during the past twenty years, due to active competition, necessitating consolidation of large interests. Consider the tremendous increase in private fortunes, the extravagance in mode of life, the ever increasing social demands, especially in the larger cities, and study the effects on the individual. It is simply appalling. There are thousands of men to-day who have extensive responsibilities connected both with the control of corporate interests and large personal estates who are obliged to work under severe nervous strain during business hours. Upon leaving their offices they go to the club, where business is further considered and high-balls consumed. Then a rush home to prepare for the nightly dinner party, followed by the theater and midnight supper with the usual accompaniment of wine, coffee and tobacco. The demands of the following day necessitate early presence at business, presenting the possibility of a normal period of sleep and rest. The same story day after day, varied with an occasional game of cards with high stakes, a cotillon or a banquet. Is it a wonder that the mortality among this class is increasing?

Neurasthenia or other more serious diseases of the nervous system, digestive disorders, tuberculosis, nephritis, arteriosclerosis, apoplexy, insanity and suicide appear as the causes of death in this class far in advance of the ordinary expectancy.

Whereas the effects of faulty sanitary surroundings are found chiefly in industrial insurance, it is a factor to be borne in mind in all cases. The examiner should note any lack of ordinary cleanliness, light or fresh air, as each is a decided factor in considering the probable expectancy of life.

In both this and the preceding class the possibility of speculative insurance should be borne in mind. The wealthy highroller, realizing the possibility of early death, is likely to insure his life for a large amount to enable his family to live as they have been during his lifetime; or, on the other hand, he may insure to cover the hazard of large speculative business interests. With the class with poor, unsanitary surroundings, we look for the insuring of aged parents or sickly relatives with purely speculative intent.

Morals. — Whereas the question of moral hazard is usually covered through the investigation by the inspection department, the shrewd, observing examiner may often gain valuable information by careful observation and inquiry.

A history of personal injury should demand details as to how received, whether in personal conflict, the result of a quarrel or simple accident. This, in itself, might prove of great value as pointing to a definite moral hazard. History of frequent venereal disease may point to sexual excesses. Personal appearance indicating alcoholic excess is another important factor, regardless of the personal history given by the applicant. The expert examiner can often detect characteristic features of the criminal by close observation of the face and manner of the applicant. Apparent over-insuring where the application is for an amount of insurance evidently in excess of applicant's means, should always arouse suspicion. Without a previous knowledge of the applicant, however, this feature is apt to be misleading and unreliable.

Habits. — In considering the personal habits of the applicant, we refer usually to the use of alcoholic stimulants, tobacco and drugs.

There is no subject connected with life insurance which has a greater influence upon mortality. At the outset you should know that there are two distinct types of hazard represented in this group. One, the steady drinker; the other, the periodical drinker. The first shows the result in organic changes, chiefly in the kidneys and liver. In the other, these changes, as a rule, do not occur so early, but the effect on the nervous system is marked and the added moral and accident hazard is very great.

Neison's table shows the influence of alcohol upon the expectancy at various ages to be as follows:

Age.	Intemperate.	General.
20	15.5	44.2
30	13.8	36.5
40	11.6	28.8
50	10.8	21.2
60	8.9	14.3

From this you will note that the expectancy of the alcoholic is only one third of the general at age twenty; while at sixty, it is nearly two thirds.

The question as to whether a given subject should be classed as intemperate is often a most difficult one. The applicant for insurance will rarely make a strictly truthful statement, usually claiming to take much less than he really does. On the other hand, there are a class of young men who seem to take pride in claiming that they have been drunk on various occasions. It is, therefore, essential that the examiner use care and good judgment in his endeavor to obtain the actual facts, so as to exclude the undesirable risks and not unduly prejudice the favorable ones. In order that he may have an intelligent idea of what constitutes excess from an insurance standpoint, he should be familiar with the amount of various beverages at Anstie's daily limit of 1½ oz. absolute alcohol. Roughly, the equivalent is 3 oz., or three or four drinks, of ardent spirits, such as whiskey or brandy; two wineglassfuls of sherry or strong wine; three glasses of ale or porter; four or five glasses of beer, and a pint of claret or champagne. Whereas this amount proves injurious to one person, another might not be at all affected by its daily consumption. Yet an arbitrary line has to be drawn somewhere and this has been generally accepted. The examiner should question the applicant in regard to his daily habit and record the number of drinks and form of beverage usually taken. He then should ascertain the greatest approximate amount taken in a day; the approximate frequency of actual intoxication and time of last occurrence. Where such history is acknowledged the fact should be brought out as to whether a cure, such as the Keeley Cure, was ever followed; if so, the date and result, and whether a total abstainer since stopping treatment. All of these facts are essential in arriving at an intelligent decision. The examiner should, therefore, carefully avoid recording such answers as, moderate, temperate, occasional drink and the like, which convey no idea of actual facts.

Tobacco as a factor has been eliminated from the inquiry blanks of many companies, owing to the failure to satisfactorily demonstrate through statistics the degree of its injurious effect. In older subjects, or, in fact, in any subject where there is apparent lack of tone to the heart sounds and irregularity of heart action, special inquiry should be made as to habits in regard to tobacco, giving details as recorded.

Drug habit, on the other hand, when acknowledged, should exclude the subject from receiving life insurance at regular rates. Although many morphine habitués seem to live their expectancy, as a class they are undesirable. It should be borne in mind that the history is rarely acknowledged by the applicant and it rests with the examiner to detect the well-known evidences in the case of each drug and bring out the actual facts as nearly as possible by careful questioning.

Family history in life insurance, when correctly given by the applicant and recorded by the examiner, is of great value in showing both the hereditary tendencies and longevity. Both factors should be borne in mind and an honest endeavor made to obtain as accurate and definite information as possible. The applicant is rarely well informed as to the exact cause of death or age of relatives, and will usually endeavor to conceal hereditary tendencies by vague or incorrect replies. Careful cross-questioning and repetition is essential, therefore, in obtaining satisfactory records. Little is known of the exact cause of death of grandparents, and the value of the data as recorded in life insurance reports has been found so questionable that some companies confine their inquiry to the age at death. The facts in regard to the immediate family, that is, father, mother, brothers and sisters, should, however, be fully recorded. A little care and pains on the part of the examiner will often bring out a history of tuberculosis, insanity or cancer, where the original answers have been given as, "Don't know," "decline," "general breakdown," "nervous prostration," "accident," "sudden death" or "tumor." Where one or more deaths are given from hereditary disease, invariably question carefully with a view to bringing out the same cause in other members, as the exact number of cases is of importance in connection with the company's action. Where such deaths are recorded, moreover, ascertain, if possible, whether any living members of the family are similarly affected. With tuberculosis, not only is it necessary to ascertain the age at death, but time of death, in order to aid in clearing up a possible history of infection where the applicant has recently resided in the same house. In fact, special inquiry should always be made as to whether, within the past year or two, the applicant has resided or worked in the same house with any one suffering from the disease, and if so, what precautions were taken to avoid infection.

Inquiry as to the health of the wife, husband or children will furthermore, not infrequently, bring out a concealed history of existing tuberculosis in the household.

Where the condition of a living member of the family is recorded as "fair" or "poor," definite information should, if possible, be obtained and recorded in regard to the exact cause of impairment of health. The duration of illness is often not recorded at all by the examiner, yet it is of the greatest value in detecting false statements as to actual cause of death. For example, it is very common to see recorded, "Pneumonia, ill three months"; "La grippe, eight weeks"; "Childbirth, four months"; "Nervous prostration, six months," etc., etc. In such cases histories of tuberculosis, cancer or insanity are quite likely to be brought out upon further investigation. After filling in all the facts required on the blank, one should always inquire further as to whether there had ever been any suspicion of tuberculosis, cancer, insanity or any other hereditary disease in any member of the family. In endeavoring to obtain the age at time of death, or even age of living members of the family, bear in mind that it is all of importance, and give the approximate age. Where actual age is unknown, use the term "about," which saves the applicant from any legal question in case of discrepancies in statements on different blanks, and gives information of some value at least, whereas the proverbial "Don't know" renders the record valueless.

Medical history and physical conditions of the applicant are the vital points in connection with the duties of the medical examiner. As it will be impossible to consider them exhaustively or in detail at this time, I shall simply refer to some of the more important practical factors relating to them which have direct bearing upon longevity and the insurability of the individual.

First, let us consider the conditions which ordinarily preclude life insurance at standard rates.

The list outlined in our instructions to medical referees at the Mutual Life Insurance Company, covering any past or present history, or present evidence of the impairment mentioned, is comprehensive. It embraces the following: Total blindness, double cataract, epilepsy, paralysis of central origin, apoplexy, insanity, history of insanity in two or more members of immediate family; vertigo, persistent; delirium tremens or chronic alcoholism; intemperate habits, as evidenced by daily consumption of the equivalent of more than 1½ oz. of pure alcohol; drug habit; carcinoma or other malignant tumor; rheumatism, articular, three attacks; pleuritic adhesions, extensive; pulmonary emphysema; any other morbid condition of lungs or bronchial tubes; heart, valvular or other organic lesion of; arteriosclerosis; chronic nephritis; diabetes; prostate gland, hypertrophy or chronic inflammation of; chronic bronchitis; pleurisy, frequent attacks of; curvature of spine, anteroposterior or extreme lateral; hip joint disease; hernia, irreducible; organic disease of any sort.

Total blindness results in an added hazard which prohibits acceptance at ordinary rates. It would seem that simple mention of this fact would be all that was necessary in instructing medical examiners. Unfortunately, however, this is not the case, for it is not uncommon to have the examiner report loss of vision in one eye, making no mention whatever of impairment in the other which is likely to result in total blindness at an early date.

Double cataract, for example, is likely ultimately to cause total blindness; yet, where the cataract is well marked in one eye and scarcely noticeable in the other, mention of the latter is often omitted. The possibility of contemplated operation should be borne in mind and careful inquiry made.

Epilepsy when acknowledged needs no further comment, but it is a well-known fact that the history of its existence is frequently withheld by the applicant. The examiner should inquire with special care for this condition where mention is made of dizziness, trivial "fainting spells," or "fits in early childhood."

Paralysis of *central origin* excludes, yet peripheral paralysis such as "Bell's paralysis" is of little importance. Definite information from the attending physician should, therefore, invariably be requested by the examiner at the time of the examination to avoid the delay of obtaining it from the home office.

Apoplexy needs no comment except that the history may be concealed, and the examiner should observe carefully any abnormal contour of facial lines or impairment of gait which might have been caused by the resulting paralysis some years before.

Insanity is rarely acknowledged by the applicant as such. The history is given as neurasthenia, "nervous prostration," or "nervous breakdown." Here, again, most careful cross-questioning is demanded, and a statement from the attending physician should always be asked for.

Family history of insanity in father, mother, brothers or sisters requires special attention. Often we find one case acknowledged, and one or two additional deaths from nervous breakdown, effects of childbirth, accident, etc. Thorough questioning will often result in acknowledgment of two or three definite cases of insanity or suicide.

Vertigo when persistent or of frequent occurrence is an indication of organic disease of vital importance. On the other hand, there are few persons who have not suffered at times from dizziness. The examiner should make careful inquiry as to the character and severity of the vertigo. Where a physician has been consulted, a statement should be obtained as to the definite cause. The severity of its manifestation should be ascertained by inquiring as to whether the applicant was obliged to steady himself to prevent falling; whether it was accompanied by syncope, loss of consciousness or convulsions, or whether, on the other hand, it was simply a slight blurring of vision and discomfort so often experienced from ocular disturbances or disorders of digestion.

Delirium tremens or *chronic alcoholism* when acknowledged precludes insurance, and it rests with the examiner to bring out the history where alcoholic excess of any character is admitted. Thorough inspection of the risk is, of course, also necessary.

Intemperate habits preclude, and have already been referred to in detail.

Drug habit, as previously stated, should exclude the possibility of acceptance and any suspicion on the part of the examiner of its existence should be mentioned, and careful inspection of the risk ordered.

Carcinoma or *other malignant tumor* when reported, even though removed by operation, is of the most grave importance from a life insurance standpoint. Statistics as to the recurrence of cancer after operation vary greatly as recorded by different operators, dependent upon the character and location of the growth and nature of operation and time when it was performed. Whereas certain localized epitheliomata, when removed at an early stage, might be considered as reasonably free from the probability of recurrence after five or ten years, applicants giving a history of malignant growth, as a class, should be excluded.

Rheumatism as reported by the average life insurance examiner leads to more uncertainty in the mind of the medical directors than almost any other condition. Statements are, as a rule, vague and rarely bring out clearly as to whether the rheumatism is muscular or articular. The examiner should always state the exact type of rheumatism, with number and dates of each attack, and joints, if any, involved.

A history of three attacks of articular rheumatism should ordinarily decline.

Pleuritic adhesions, when extensive, are of importance, and in order that a correct knowledge of the exact condition may be conveyed by the examiner a definite statement should appear as to the character of physical signs found, and size and location of area in which they exist. Such statements as " Slight pleuritic adhesion " or " Few pleuritic friction sounds " convey no definite information of value to the directors, as they may mean a great deal or very little.

Pulmonary emphysema is a condition comparatively rarely found in life insurance examination, but when found should render the applicant unacceptable. Applicants of advanced years and those giving a history of recurrent bronchitis, or shortness of breath, should be examined with special care for this impairment.

Morbid conditions of lungs or *bronchial tubes*, when reported or found to exist, should demand a full history and detailed statement as to physical signs found. *Organic disease of the heart* should decline. Yet here we meet with a subject where more errors occur than probably any other in life insurance work. In the first place, the applicant who has actual organic disease, particularly in its earlier stages, is quite likely to be entirely unaware of the fact; whereas the neurotic subject with trivial functional disturbance is quite sure that he has a serious impairment.

Where a previous history of cardiac disturbance is given, a statement from the attending physician should always be asked for, and the applicant examined with the greatest care. A stethoscope should invariably be used and the possibility of so-called functional and pressure murmurs excluded. Where a murmur is heard continuously through all stages of the respiratory cycle, it is fair to assume that it is due to valvular abnormality. On the other hand, where it can be entirely eliminated, yet with the heart sounds clearly heard at a certain phase of respiration, there is a strong possibility that the sound is produced by intrathoracic pressure, and not by valvular obstruction or leakage. By placing the applicant in the prone position or partly turned to the side, with the arm thrown up and over the end of a lounge, the exact condition may often be determined where uncertainty has previously existed in the mind of the examiner.

Changes in the heart wall, the results of myocarditis or fatty degeneration, are difficult to detect in the ordinary examination, especially when there is no marked cardiac enlargement. Any history pointing to such condition is withheld by the applicant, and the change in the character, clearness and intensity of the heart sounds is practically all that the examiner can detect. In fat subjects, with thick adipose layers in chest wall, it is especially difficult to arrive at correct conclusions. Where the pulse is lacking in force or volume, with irregularity or intermission, and the cardiac area is apparently enlarged, the situation is different and the case can be promptly declined. These, as a rule, represent the class that die suddenly from so-called " heart failure." It is such an important class that the examiner must have it ever in mind, at the same time realizing that where only diminished heart sounds are found, he should not jump at conclusions and decline the risk without most careful inquiry and re-examination.

In determining accurately cardiac and valvular conditions the sphygmomanometer will be found of great help to the life insurance examiner. The Kilborn instrument which I have with me will be found one of the most convenient and practical for the busy examiner and practitioner. It can be readily carried and has an adjustable dial so that error can be readily eliminated.

Arteriosclerosis and *markedly increased arterial* *tension* should decline. In the absence of actual calcareous plates in the vessel walls, or advanced sclerotic thickening, the diagnosis is far from easy. Many a good insurable case is declined because of the report of high-tension pulse, and, conversely, many a bad risk with sclerosis or increased tension is accepted. The personal equation of the examiner is a varying one, and it is a matter of common experience to find marked diversity of opinion among equally capable physicians as to the character of the pulse in a given case. The sphygmomanometer will serve as a great aid in arriving at correct conclusions in this particular.

Chronic nephritis and *diabetes* are among the most common causes of declination in life insurance examining. In their incipiency they may exist without producing any symptoms, so that the applicant not infrequently is first advised of the condition by the examiner. Careful and accurate examination of the urine is, therefore, one of the most important duties of the examiner. Volumes have been written upon the subject, and innumerable tests suggested, but as a result of careful observation and study on the part of the medical directors of the leading companies, four simple tests have been found to give the best results. At the last meeting of the Medical Directors Association the following card containing directions for the application of these tests was drawn up with a view to sending them to the examiners of the various companies. I will pass some of them about for your inspection and, as you will see, they represent the well-known tests. Their chief value lies in the outlining of the details of their application, so that uniform practice may be followed by all examiners.

In testing for albumen, care must be observed in discriminating between serum albumen and nucleo-proteid.

With the microscopic examination, on the other hand, the differentiation between cylindroids and true renal casts is the point of greatest practical importance. In this connection I would remind you that the character of the matrix should be closely observed as well as the general shape and outline of the body.

Prostatic hypertrophy, or *chronic inflammation of the prostate gland*, should be a cause for declination, especially in applicants past fifty years of age. Careful inquiry should be made as to a history of frequent urination and arising at night to urinate. Where such history is brought out, a statement from a specialist should be demanded in regard to the condition of the bladder.

Chronic bronchitis and *recurrent attacks of pleurisy* should decline. With these conditions, in addition to the personal history, definite statements as to the character of physical signs found should be submitted.

Curvature of the spine, when anterio-posterior or extreme lateral, usually declines. In describing this condition the examiner should note the number of inches deviation from the medium vertical line.

Hip-joint disease declines, and in order to aid in confirming the history of such condition, the examiner should observe carefully as to the existence of scars indicative of old abscess or sinuses.

Where statements can be obtained from the attending physician, the possibility of unreduced dislocation of the hip-joint should be eliminated as a cause for rejection.

With either of these conditions the nature and extent of the deformity should be noted with the number of inches of shortening of the affected limb. In this connection, I would call your attention to the fact that with any abnormal deformity of the lower limbs the examiner should invariably state whether the applicant is dependent upon the use of a crutch or cane in walking.

Irreducible hernia should decline, and with reducible hernia the applicant should be required to wear a properly fitting truss.

When no truss is worn, it is the duty of the examiner to endeavor to impress upon the applicant the importance of wearing one for his own interest, independently of the question of insurance.

Umbilical, ventral and post-operative abdominal herniæ should be regarded with disfavor owing to the difficulty in properly supporting them by trusses, bandages or other appliances. In conclusion, it should be understood that the existence of organic disease of any sort should exclude the applicant from life insurance.

We next come to conditions which render the individuals temporarily uninsurable and require postponement and further examination. They may be enumerated as follows: Renal calculus, hepatic calculus, temporary albuminuria, persistent abnormal specific gravity of urine, stricture of urethra, fistula (especially anal), history of past alcoholic excesses, asthma, persistent cough, hemoptysis, intermittent or irregular pulse, pulse rate over 90 or below 50, articular rheumatism, gout, suppurative inflammation of the middle ear, emaciation, recent loss of weight, appendicitis, tape worm, first pregnancy, repeated attacks of erysipelas, recent illness of any sort which may temporarily affect the health but which will not leave permanent results.

History of renal calculus should invariably necessitate careful chemical and microscopic examination of a specimen of urine at the home office. A large percentage of such cases will show an abnormality precluding insurance. If, however, the specimen thus examined is found normal, where a history of but one attack of renal colic is given, the case may be considered within six months to a year of the time of the attack. With two or more attacks, postponement of five years, at least, should be demanded.

Statements should be obtained from attending physicians and careful inquiry made as to any history of surgical treatment.

Hepatic calculus should require postponement for from five to ten years. Here, as with renal calculus, the number of attacks with dates of each should be ascertained, and full statements furnished from attending physician as to character and duration of treatment or exact nature of surgical procedures followed. Sufficient data as to post-operative cases, from an insurance standpoint, have not been accumulated thus far to warrant satisfactory conclusions. Cholecystotomy, however, appears to show the best results, the reports following cholecystectomy being distinctly unfavorable.

Temporary albuminuria and *glycosuria* demand postponement for from three to six months, at least. Before accepting such cases three normal specimens should be obtained and a signed statement furnished by the applicant that he has been under no treatment, dietary or medicinal.

Persistent abnormal specific gravity of urine, that is, above 1,030 or below 1,010, should demand similar requirements.

Stricture of the urethra should pospone, until a statement is presented from a competent physician that a 26 French scale sound or its equivalent can be passed. It should further be understood that no case be accepted until at least six months have elapsed since any operation or treatment, certificate to this effect being obtained from attending surgeon or physician.

Fistula, especially anal, should require postponement for six months after cure and statement from attending surgeon furnished to the effect that there was no suspicion of tuberculosis.

History of past alcoholic excesses requires careful inspection in every instance, with signed statement from applicant as to approximate frequency of excess, with date of last intoxication. Definite information should be obtained in regard to treatment or cure followed for the condition. No case should be considered until two or more years have elapsed from time of last intoxication.

Asthma should require postponement until two years after last attack occurring independently of "hay fever" or "rose cold." Where it only occurs as an accompaniment of these latter conditions the case may be accepted after complete recovery from the attack upon the receipt of satisfactory statement from the attending physician.

Persistent cough should postpone, until six months after recovery, with statement from attending physician that there had been no suspicion of tuberculosis.

Hemoptysis requires postponement of at least ten years, and the company should invariably be given the benefit of the doubt in questionable cases.

Intermittent or irregular pulse should, as a rule, postpone. Occasionally an applicant under forty years of age may be accepted, however, where the heart is found normal and evidence submitted that it is a personal peculiarity of the applicant and has existed for years. Functional cardiac disturbances with applicants over forty should be regarded with disfavor.

Pulse rate over 90 and below 50 should postpone. Careful examination of heart is demanded, especially with tachycardia. The low pulse rates are often a personal or family characteristic, and occasionally may be accepted with reasonable degree of safety.

Articular rheumatism requires postponement, the duration depending upon the number and severity of attacks. One mild uncomplicated attack lasting not more than a week should postpone from three to six months; one or two severe uncomplicated attacks, at least a year, and three attacks should decline. Two attacks should demand a high-priced contract or extra loading, and a history of cardiac complications should, as a rule, decline.

Gout either demands from one to two years' postponement, with single attacks, or declination with multiple attacks, particularly where any remaining gouty deposits are found.

Suppurative inflammation of the middle ear should, as a rule, postpone. In exceptional cases, however, where the condition is unilateral, and a satisfactory statement is obtained from a competent aurist, acceptance is permissable.

Such statements should give the location of the opening in the membrane, the presence or absence of evidence of necrosis, mastoid involvement, granulation tissue or foreign growths. In the absence of such statements postponement of two years from date of last discharge should be demanded.

Emaciation as an evidence of malnutrition or disease postpones indefinitely.

Recent loss of weight beyond a few pounds should postpone until normal weight is regained. In this connection it is important to bear in mind that, where great gain in weight is reported, careful inquiry should be made as to previous loss due to tuberculosis or other serious disease, with forced feeding as a cause for the gain.

Appendicitis without operation should postpone at least two years for one attack and five years for two or more.

Where there has been an operation a report should be obtained from the attending surgeon stating as to whether the appendix was removed, drainage employed, etc. The examiner, furthermore, should examine the scar carefully, noting as to whether there is any hernia or underlying induration or sensitiveness. The period of postponement can then be judged in each case on its merits.

Tapeworm requires postponement until the head has been passed, or several months elapsed since last evidence of presence of the worm noted.

First pregnancy should postpone until two months after delivery.

History of repeated attacks of erysipelas should postpone until a year after last attack.

Finally, any illness which may temporarily affect the health but not leave permanent results should postpone.

Certain conditions may render the individual insurable only on a modified plan for a limited term of years. In this class may be mentioned: Overweights and underweights; applicants with impaired family history; syphilitics; certain rheumatic and gouty subjects; those suffering from goiter.

The examiner should give as accurate a pen picture as possible of OVER AND UNDERWEIGHTS, noting whether they are of long body or short, degree of muscular development, large bones or small, degree and distribution of fatty deposit, etc.

Family characteristic has a certain bearing as well as race and location of residence.

Except in extreme cases the question of acceptance or declination in this class is usually decided by the medical director.

With *questionable family history* the examiner should endeavor to cross-question the applicant with a view to bringing out any possible suspicion of two or more cases of a given impairment, such as tuberculosis, cancer or insanity.

Where *syphilis* is acknowledged, the date of initial lesion, character, dates of secondary manifestations, and date and character of tertiary lesions should be noted, as well as date of last treatment.

Personal *history of rheumatism or gout* should include the number of attacks, with dates of each and joints involved, as well as full particulars as to cardiac or other complications.

The existence of *enlargement of the thyroid gland* necessitates a statement as to whether it is due to simple hypertrophy or hyperplasia or to a cystic condition. Its measurement in inches should be recorded and the facts brought out as to any recent increase in the size, evidence of pressure, exophthalmos or effect on the nervous system.

Whereas, most of the facts here outlined are known to the examiner, an experience of nineteen years in this particular branch of medical work has demonstrated beyond question that many of them are frequently overlooked or ignored. They are presented, therefore, as suggestions, which I trust may prove of value to the active life insurance examiner.

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THE RESPONSIBILITY OF THE GENERAL PRACTITIONER FOR FREEDOM OF MEDICAL RESEARCH.*

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I FIND myself in the unenviable position of a person pointing out to men whose lives are filled with work of great variety, a new responsibility. Fortunately, however, this responsibility is one which does not require more than an interest in the methods of medical progress and a desire to further medical progress in every proper way. It is, therefore, a responsibility which active practitioners of medicine may take upon themselves without any considerable additional demand on their time or their energies.

At a recent large meeting of medical men, Dr. Charles W. Eliot urged the necessity of co-operative work among the members of the medical profession, and pointed out two important problems inviting such co-operation. One of these was the combating of new forms of superstition which are tending to confound vague fancies with the hard-earned results of careful investigation in fields of medical science; the other was the refuting of the ill-founded and unreasonable assertions which have been directed against animal experimentation. It is to this second proposition that I desire to call your attention.

The need for meeting the opposition to medical research is manifest when we consider what that opposition has already done and what it still aims to do. Through agitation by the opponents of animal experimentation there was passed in England, in 1876, a legislative act placing upon medical investigators certain well-defined restrictions. Concerning these restrictions Huxley wrote as follows:

"So it comes about that, in this year of grace 1877, two persons may be charged with cruelty to animals. One has impaled a frog, and suffered the creature to writhe about in that condition for hours; the other has pained the animal no more than one of us would be pained by tying strings round his fingers and keeping him in the position of a hydropathic patient. The first offender says, 'I did it because I find fishing very amusing,' and the magistrate bids him depart in peace; nay, probably wishes him good sport. The second pleads, 'I wanted to impress a scientific truth with a distinctness attainable in no other way on the minds of my scholars,' and the magistrate fines him five pounds.

"I cannot but think," Huxley added, "that this is an anomalous and not wholly creditable state of things."

The English act has now been enforced for thirty-three years, during which time it has in some instances seriously interfered with medical research. Work of the first importance has been stopped in England, and Englishmen have been compelled to go abroad in order to carry on investigations of great practical value. I need only mention the names of Lord Lister and Sir Lauder Brunton as instances of medical men whose investigations have been hindered through the English act.

The English act requires that all experimental work on animals shall be done in specified places and shall be subject to scrutiny by government inspectors. These inspectors have recently reported that during the entire period of inspection they have failed to find any instance of cruelty in the conduct of animal experimentation in Great Britain.

In spite of the enforcement of such drastic legislation as was obtained in England in 1876, there has not been the slightest diminution in agitation against animal experimentation; indeed, England may be regarded as the center of this agitation. There are no less than fifteen antivivisection societies in England, and every one of them stands for the abolition of the use of animals in medical investigation. The English experience is, therefore, highly significant as to the probable future of this agitation. Just as our forefathers had to carry on the long struggle which has resulted in the legalized use of human bodies for medical and surgical instruction, so are we concerned with a similar long struggle for freedom of medical investigation.

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* Read at the annual meeting of The Massachusetts Medical Society, June 16, 1909.

In England about a year and a half ago a society was formed for instructing the public regarding the methods used in animal experimentation, and regarding the practical results to medicine and surgery that have been derived from this method of medical advance. Already in England it is believed that an important change in the attitude of the public has been obtained through this educational campaign.

It may seem to those of you who have not followed the agitation in this country that there is only a remote possibility of any hostile legislation being enacted which would seriously interfere with medical progress. This sense of security is, I believe, to a large extent unjustifiable. At least four active antivivisection societies now exist in this country; one of them publishes a monthly paper, while the others confine themselves to distributing literature. This literature is in the form of pamphlets and leaflets and press articles which are sent widely to newspapers in parts of the country where proposals for legislation are being urged. At least two of the societies are well supplied with money; indeed, one of them received this year, through the will of a Massachusetts woman, $10,000 for antivivisection agitation. Evidently so long as money is readily available for the promotion of a hostile attitude toward animal experimentation we shall have the problem of meeting that agitation. Unless we meet it properly the hostility and misunderstanding which these societies promote will doubtless grow until there is a preponderance of sentiment against the medical investigators, and then the legislative bodies in the various states will feel called upon to interfere with the laboratory procedures.

The conviction has grown in this country, as in England, that the proper method of meeting the attacks of persons opposed to animal experimentation is to enlighten the public regarding the use of animals for purposes of medical advancement and regarding the benefits to man's estate that have come from that use. With this conviction as a basis there was appointed last year by the American Medical Association a Council on the Defense of Medical Research. This council is composed of representatives of various medical sciences, who live in well-separated parts of the country. During the past year the council has been actively investigating the conditions of animal experimentation in laboratories throughout the United States, has taken precautions against the abuse of animal experimentation and against misconceptions of the conditions and purposes of medical research, and has planned a series of papers by experts which will serve to diffuse information regarding laboratory procedures and the results of laboratory study of disease. Some of the information which has been secured by the council I desire to present to you.

In order to learn the conditions of medical research, a circular was sent to all of the most prominent schools. Reports have been returned from more than eighty of these schools. It is stated on high authority that in not more than three of the schools that have not reported are animals used for experimental purposes. The information that has been accumulated is, therefore, quite complete.

In this circular questions were asked as to the approximate number of different kinds of animals used per year; the methods of securing these animals; the number of dogs and cats killed in the city merely to dispose of the excess; the care of animals in the medical school, including the ventilation, warmth, cleanliness and lighting of their rooms; whether operations likely to involve pain were always performed under anesthesia; whether students were permitted to carry on independent investigation or were cautioned against it; whether experimental work was conducted under rules; and whether any public hostility to animal experimentation existed in the community. These questions have been fully answered.

It may interest you to know that in a large number of laboratories dogs and cats are secured from the city pound or the city police, and that in some schools owners contribute animals to be destroyed. In one instance animals are reported as being obtained from officers of the humane society, who had investigated the laboratories and had become convinced that the animals are humanely treated.

The accommodations for experimental animals are reported as being well lighted, well ventilated, properly warmed and clean; in many instances special animal houses have been built, and in five instances a special attendant is provided to care for the rooms and their occupants.

In answer to the question whether any cutting operations on unanesthetized animals are performed, all the schools that use animals have reported "No," with, in a few instances, one or two slight qualifications; such, for example, as cutting the vein in a rabbit's ear to obtain blood for hemolytic work. Of course this operation was most common in general medical practice on human beings seventy-five or one hundred years ago.

The number of schools in which animals are kept alive after operation are very few. From these schools the testimony is uniform that hospital after-care is always given to avoid discomfort.

There is absolutely uniform testimony that students are supervised in any work which they do on animals, and, in fact, are not permitted to perform any experiments, except in a few of the laboratories, on any animals other than frogs. In a majority of the schools students receive explanations of the importance of animal experimentation and their responsibility to medical research and public health in not performing experiments without supervision, a practice which might result in harmful legislation. In other schools this precaution has not been taken because regarded as superfluous.

The experimental animals whose service in medical research rouses the greatest amount of hostile sentiment are the cat and the dog. The investigation conducted by the council reveals the fact that the majority of the dogs used in medical schools are used in courses in surgery for teaching surgical technic. Subtracting the number of dogs thus used from the total number leaves relatively few dogs and cats that are employed for purposes of research. Compared with the number of these animals that are destroyed in various cities of the country, the sacrifice of their lives in laboratories is almost insignificant. Figures have been obtained from about twenty cities, but in many of these the number of cats killed was not reported. In one year there is a record of more than 360,000 dogs and cats being killed in these cities merely to be rid of the excess. In New York City alone during the past fourteen years more than 800,000 cats and more than 400,000 dogs have been thus destroyed. In one year in New York City there are put to death more than ten times the number of dogs and cats that are used for all purposes in all the laboratories in all the medical schools of the country. In the face of these figures, it is ridiculous to speak of the " waste " of animal life in the laboratories of medical research. Surely the animals that go to their death with no benefit save that which comes through reducing their number have their lives " wasted " much more than the animals that are killed in the laboratories in order to increase the body of our knowledge.

The contention may be made, however, that the destruction of animals in the public pound is humane, whereas the use of animals in laboratories is attended by suffering and deep distress. It is urged by those who are little acquainted with the conditions in laboratories that the experience of animals at the hands of experimenters is in all respects horrifying. Indeed, the assumption is commonly made that experiments are performed only behind locked doors and that an attempt to learn the truth regarding the dark insinuations as to the nature of the orgies performed in these secret torture champers would be futile. It is further assumed that those engaged in animal experimentation protest against any sort of regulation of their activities. Indeed, the medical investigators have been accused of contending that it is no one's business what happens to an animal so long as the individual who is handling it can plead that his aim is to increase science. These assumptions and insinuations are not supported by an investigation of the actual conditions of research.

The Council on the Defense of Medical Research has learned that in the larger medical laboratories regulations have been posted, in some instances for many years, stating the conditions and expressing the spirit in which animal experimentation was to be conducted. These regulations have been collected, summarized and revised, and have been sent to all laboratories which have reported that animal experimentation was carried on within their walls. These rules are as follows:

1. Vagrant dogs and cats brought to this laboratory and purchased here shall be held at least as long as at the city pound, and shall be returned to their owners if claimed and identified.

2. Animals in the laboratory shall receive every consideration for their bodily comfort; they shall be kindly treated, properly fed and their surroundings kept in the best possible sanitary condition.

3. No operations on animals shall be made except with the sanction of the director of the laboratory, who holds himself responsible for the importance of the problems studied and for the propriety of the procedures used in the solution of these problems.

4. In any operation likely to cause greater discomfort than that attending anesthetization, the animal shall first be rendered incapable of perceiving pain and shall be maintained in that condition until the operation is ended.

Exceptions to this rule will be made by the director alone, and then only when anesthesia would defeat the object of the experiment. In such cases an anesthetic shall be used so far as possible, and may be discontinued only so long as is absolutely essential for the necessary observations.

5. At the conclusion of the experiment the animal shall be killed painlessly.

Exceptions to this rule will be made only when continuance of the animal's life is necessary to determine the result of the experiment. In that case the same aseptic precautions shall be observed during the operation, and, so far as possible, the same care shall be taken to minimize discomforts during the convalescence as in a hospital for human beings.

By the adoption of these rules in a number of new places, and by the enforcement of similar rules in the older medical schools, the laboratories in which animal experimentation is conducted on a large scale may be said to be regulated by this form of government. Within the coming year these regulations will probably be enforced in all the medical laboratories in the United States. It is the conviction of members of the council that the regulations probably do not change in any respect the already good conditions under which animal experimentation is carried on; they do indicate, however, to newcomers in the laboratories, and to interested and intelligent people, the intent of the investigators and the precautions which they take against suffering.

In spite of the fact that the evidence points to a satisfactory condition of animal experimentation in this country, and in spite of the enforcement of the foregoing regulations in the medical laboratories, there is likely to be continued agitation for legislative interference. What objection is there to such legislation?

The first objection that may be fairly raised is that there is no demonstrated need for the government of laboratory procedures by specific law. So long as the contentions of those opposed to animal experimentation are merely vague suppositions based upon possibilities of carelessness, and are without specific instances of the abuse of animals, it would be reprehensible to burden the statute books with unnecessary legislation.

Another objection to specific law controlling animal experimentation is that it is class legislation. The legislative function of the state is to enact general laws against cruelty to animals. Specific legislation would place scientific men under a peculiar surveillance and limitation. This is unnecessary. The general laws regarding cruelty are quite adequate to cover the cases of infliction of unwarranted pain, no matter by whom inflicted. Only last fall, in a veterinary school, a professor was convicted of cruelty on this basis; whether justly or not is not pertinent to the present discussion, the fact is that the existing law was adequate. Similarly two students of "optometry" in New York were convicted under the general law which provides for punishment for causing in animals "unjustifiable physical pain, suffering or death." It is wise to demand, therefore, that the general laws against cruelty be applied before passing special class legislation.

The third objection to specific legislation is that such legislation merely serves as an entering wedge for securing more stringent laws later. In the *Journal of Zoophily*, March, 1909, is found the following statement: "We believe that in the course of time we shall have total abolition of vivisection, but as we cannot get it now, we think we may be justified in asking for something that will help the poor animals a little. Though we may not get abolition at once, we shall eventually." This is the attitude everywhere taken by the moving spirits among the opponents of animal experimentation. As I have already pointed out, England has had a restrictive law, with registration of buildings, reports of experiments, and laboratory inspection, for thirty-three years, and yet there is no country in which the attack on animal experimentation is more relentless. The passage of specific law would, therefore, not allay agitation. In this connection it is well to note that no other civilized country has followed England's lead; no English dependency has done what the mother country has done! As Sir Michael Foster declared with reference to the English act, "England offers, in this respect at least, an example to be shunned alike by her offspring and by her fellows."

With reference to specific legislation, the question is frequently asked, "What objection is there to government supervision and inspection?" To my mind there would be no definite objection to thorough inspection by *competent* persons. To inspect banks, experts in banking are appointed; to inspect laboratories, experts in experimentation should be specified. Such experts, however, are not satisfactory to those who are opposed to the use of animals for research. They desire their own representatives to act in this capacity. Nothing is more evident, however, in antivivisection literature than the gross errors of judgment which are made by ignorant persons incapable of interpreting scientific description, yet just such persons are intent on securing the right to inspect laboratories and pass judgment on the procedures which they witness.

A further objection to inspectors is that which has been brought out in the course of the recent inquiry in England regarding the working of the English act. Antivivisectionists have declared that they would not believe an investigator under oath, and that they would not trust laboratory procedures to be carried on humanely unless an inspector were continuously in the laboratory during all the operations. The impossibility of providing for this amount of inspection seems to me to necessitate a certain amount of reliance on the good-will and natural humanity of those who are engaged in animal experimentation. The person to whom the community can look for the control of conditions in the laboratories, and to whom the responsibility for those conditions can be most strongly presented, is the director. The director, furthermore, is much more likely to be continuously at hand during work in his department than any outsider. For these reasons I feel convinced that the regulations regarding animals stated above, which place upon the director the responsibility to public interest, is a wise and common-sense solution of the problem of control.

The third activity of the Council on the Defense of Medical Research, aside from investigating the conditions of animal experimentation and taking precautions against its abuse, has been the diffusion of information as to laboratory procedures, and as to the results of investigating disease through laboratory methods. The present paper is an instance of this third class of activities, for I have been informing you of some of the facts coming from the inquiry into the conditions of medical research in this country. Other papers, however, are to be published during the coming year — papers which are to be written by experts and which will deal with the importance of animal experimentation in the development of various phases of medical science and practice. This series of papers will include a consideration of the relations of animal experimentation to our knowledge of the principles of serum therapy, diphtheria and tetanus, meningitis, rabies, smallpox, dysentery and cholera and typhoid fever, plague, tuberculosis, syphilis, tropical protozoan diseases, diseases caused by metazoan parasites, disturbances of internal secretions, the physiology of the circulation, pharmacology, venoms and antivenins, two papers on experimental surgery, surgical technic and aseptic surgery, cancer research, hygiene and sanitary science, including the diagnosis and control of contagious diseases, the economic importance of diseases which have been lessened by animal experimentation, the use of animals in cattle bureaus, the experience of animals in laboratories, the ethics of animal experimentation, the educational value of operations on animals, and the more compex inter-relations of research and practice.

The above series of papers will probably be reprinted in book form or as pamphlets, and either placed on sale or distributed in regions where agitation is active. The purpose of gathering this large body of evidence regarding the conditions of animal experimentation and the results that have been derived from it, is to place before physicians facts with which they can meet criticisms directed against the laboratories and the laboratory workers.

And here I wish to speak again of the new responsibility I mentioned at the beginning. As I there stated, the responsibility is one that involves merely an interest in the methods of medical progress and the desire to further medical progress in every proper way. The literature to be accumulated will show how the facts used daily in medical and surgical practice have had their origin in experimentation. This literature will also make clear the manner in which abolition of animal experimentation, or serious interference with it, will definitely check or disastrously retard the progress of medicine in fields where there is urgent demand for more exact knowledge. Those who are doing their utmost to hamper the activities of medical investigators are sending broadcast literature only too often quite inaccurate and misleading. Nevertheless, the statements of these agitators are regarded as fair statements of the procedures which attend medical investigation, and these agitators are making converts to their point of view because their activities are not met by corresponding activities on the part of medical men, and their statements are not contradicted by the information which medical men are in a position to offer. In some respects, unfortunately, laboratory workers are unable to meet these attacks with convincing power. One reason for this is that these workers are not naturally engaged in public affairs, but are primarily students. Furthermore, even when they do speak, their motives are questioned; they are declared to be under the necessity of advocating the practice which provides them with a livelihood. The only persons who are in a strong strategic position to defend research and preserve to it that freedom which is necessary for the unrestricted advance of our knowledge of disease and its control, are you, the practising physicians and surgeons. You are in a position, through your special training, to speak with authority concerning the benefits derived from animal experimentation, for you are employing information thus derived in the daily treatment of the sick. You are also in a position to know the methods employed in medical laboratories to advance our knowledge of disease. On the other hand, you meet in the course of your duties persons whose feelings have been harrowed by the tales of torture that the antivivisectionists put forth, persons of humane temper seeking for the facts. The laboratory workers must depend upon you to be interpreters of their work and the spirit in which that work is performed.

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THE first general hospital to be established in the Province of Quebec under the management of the Victorian Order of Nurses was opened at Lachine a few days ago.—*Med. Record.*

THE SERUM DIAGNOSIS OF SYPHILIS.*

BY FREDERICK P. GAY, M.D., BOSTON.

WE know that animals react to the injection of various foreign protein substances, such as bacteria and red blood cells, by producing substances known as antibodies which may be detected in their blood serum by certain appropriate methods. Following the injection of red blood cells, the antibodies or hemolysins which are formed endow the treated animal's serum with the property of destroying the red blood cells that have been used for injection. The properties of the antibodies that result from infection or immunization with bacteria vary, depending on the species of bacterium that is employed. We know, from the work of Pfeiffer, Gordet and others, that animals that have been given injections of cholera vibrios produce substances in their blood (bacteriolytic immune bodies), which, in the fresh serum, have the property of destroying the cholera vibrio, as is shown by a granular change in the organisms and their failure to grow on culture media. It is unfortunate that not all the sera resulting from the injection of bacteria are endowed with such destructive properties, for, as we know, the majority of such antibacterial sera do not have the property of destroying the causative organism. This failure to destroy is due primarily to a resistance of the organism in question rather to the failure of the animal that has been immunized to produce an antibody. We know, indeed, from the work of Bordet and Gengou, that antibacterial sera in general, although they produce no morphological change in the organism that has given rise to them, do, however, give a characteristic reaction with the organism concerned. They form a complex with the organism which is never formed with the serum of untreated normal animals. This complex is endowed with a property of fixing the alexin (complement) of fresh normal serum, that ferment-like substance, which in the case of the destruction of the cholera vibrio is the essential destroying element, but which, however, acts only in the presence of the suitable specific immune body.

This reaction between an antibacterial serum and the causative bacterium which leads to alexin fixation, and gives the reaction of fixation as it is called, has led to the modern serum diagnosis of syphilis. In 1906, Wassermann, Neisser and Bruck described a new reaction which occurred between the serum of syphilitics and a watery emulsion of fetal syphilitic liver. This fetal liver causes a reaction of fixation for alexin in the presence of syphilitic serum, but produces no such reaction with the serum of normal individuals or those suffering from other diseases. It was at first supposed that the liver emulsion acted as an antigen because it contained large numbers of the spirocheta pallida, which, of course, could not be obtained in pure culture, and the reaction was reasonably supposed to be due to a combination between antigen and antibody in the manner that has already been described. As we shall later see, the present conception of the reaction is not precisely the one which was originally thought of by Wassermann, but its utility has been convincingly proved and its accuracy determined in thousands of cases.

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* Read at the annual meeting of The Massachusetts Medical Society, June 15, 1909.

In an article by Jones which attempted to cover all the literature that has appeared on this serum reaction for syphilis for the past three years, 220 articles were collected, but it is certain that this by no means includes all the contributions to the subject. Many thousands of cases of syphilis have been tested by this method, as well as a large number of control cases, for the purpose of determining the accuracy of the diagnosis. I may mention off-hand a compilation of estimates made by some dozen observers which I have chosen at random whose observations cover from four to five thousand cases of syphilis. The individual variations in a technic which is as complicated as is this reaction must of necessity be considerable, and yet it is surprising to find how great the uniformity of opinion is as regards the accuracy of this means of diagnosis. These dozen observers to whom I refer have given estimates of the diagnosis in the various types of syphilis in the following percentages:

Primary syphilis: Highest estimate of positive percentage of reaction, 100%; lowest estimate, 48%; average estimate, 70%.

Secondary syphilis with symptoms: Highest estimate, 98% positive; lowest, 79%; average, 90%.

Secondary syphilis without symptoms: Highest percentage, 80%; lowest, 60%; average, 70%.

Tertiary syphilis: Average percentage, 71%.

General paralysis: Highest estimate, 100%; lowest, 63%; average, 81%.

Tabes dorsalis: Highest estimate, 77%; lowest, 56%; average, 67%.

These observers have likewise examined about six hundred control cases from normal individuals and from those suffering from other diseases, and, with the exception of two diseases, scarlet fever and leprosy, all other cases have uniformly given a negative reaction.

A consideration of these results, which, to repeat, represent only a fraction of the data that have been accumulated and have been chosen at random, shows how highly accurate this method of diagnosis is. It also shows that the reaction, although not absolutely specific, inasmuch as it occurs in leprosy and scarlet fever, is certainly of great clinical diagnostic value. Putting aside these two diseases, scarlet fever and leprosy, and possibly certain other infections which are rare in this country, as trypanosomiasis, we may feel sure that when we obtain a positive Wassermann reaction we are dealing with syphilis and with no other disease. A negative reaction is, however, of less significance from an absolute diagnostic standpoint.

The diagnosis of syphilis is not, as a general thing, difficult, but there are always certain doubtful cases in which a corroboration by means of this test would be highly important. I believe, however, that the future utility of the test will be largely as indicative of the continuation or suspension of treatment in the disease. It has, indeed, been shown by all observers who have studied the reaction carefully that cases of syphilis that have been vigorously treated with mercury gave a reaction in a much smaller percentage of cases than do the untreated cases. Citron, for example, obtained 81% of positive results in his cases of untreated syphilis, whereas only 65% of treated cases gave the reaction. Bruck and Stern obtained 81% in untreated cases, and only 28% in treated cases. Other observers have found that cases that gave a positive reaction, after vigorous treatment for a time fail to give the reaction, and in certain instances when the treatment was suspended again give it. In other words, the degree of positiveness in the reaction is a direct indication of the acuteness of the infection. It has also been shown to vary directly with the duration of the disease and with the number of its symptomatic recurrences.

This leads us to consider the exact nature of the reaction itself as we now regard it. As I have already mentioned, it was at first supposed by Wassermann, and, indeed, by most others, to be due to a reaction of fixation, purely speaking; that is to say, to a reaction between antigen, that is, the syphilitic virus in the fetal liver, and antibody (serum of the syphilitic). Such a reaction would imply the absolute specificity not only of the antibody, which, with the exceptions mentioned, would seem to have been determined by subsequent investigation, but also of the antigen. It was found, however, that a similar watery or even an alcoholic suspension of *normal* liver would serve as well for the diagnosis as the original watery suspension of syphilitic liver employed by Wassermann. It was later shown that various lipoid substances, and particularly lecithin, could be employed instead of liver extract. These substances obviously have no specific relation to spirocheta pallida, the cause of syphilis, and our present standpoint in the matter is, as Wassermann himself expressed it, that the reaction is due probably to a combination of a toxin produced by syphilis and lecithin, which forms a colloid that has the property of absorbing alexin. We know from work on the known colloids that these substances frequently have such properties. Citron has suggested "*luesreagin*" as a name for this toxin formed by the process of syphilis in the body. It has been shown by certain observers that the serum of syphilitics has an increased lipolytic power, and Peritz has shown that there is an increased output of lecithin during certain forms of syphilis. It would seem then quite probable that the syphilis toxin splits off lecithin from the organs and leads to its elimination from the body.

Numerous tests in the nature of precipitin tests and the like have been suggested for syphilis, but none of them have shown the accuracy and specificity of the Wassermann test and certain of its modifications, which have led to a simplification in its necessarily complex technic. Whereas, these other tests do not seem to have proved themselves as of greater diagnostic value, the work of Klausner and of Noguchi, which has proved the marked increase of the globulins in syphilis, is, in itself, of great theoretical interest.

In conclusion, we may say that we have in the Wassermann serum test for syphilis a biological reaction which is at least as accurate in point of view of diagnosis as is the Widal test for typhoid fever, and which may in the future prove to be of far greater value in prognosis and as an indication for treatment.

DISCUSSION.

DR. WILLIAM P. BOARDMAN, of Boston: In my short series of one hundred and eighty-two cases examined, I have used practically no modification of the original technic of Wassermann except in regard to the antigen or extract employed. Except in a few of the earlier cases, I have used an alcoholic extract of normal human liver; guinea-pig's heart and liver were used in a few cases, but the amount obtained of the extract from these small organs was so small that I soon gave them up, although they seemed to work very well. Human heart (alcoholic extract) also was tried, but it is a little more difficult to prepare. Lecithin (Merck's) did not prove satisfactory in my hands. The percentages obtained with an alcoholic extract of normal liver, as will be seen from my figures, do not vary materially from those obtained by other authors with fetal syphilitic liver extracts, except that they are a trifle lower in the number of positive reactions. The validity of a positive reaction seems to be in no way impaired.

The patient's blood was obtained, in almost all the cases, by puncturing the ear. In a very few cases it was obtained by venous puncture. One and a half cubic centimeters of blood is needed for the test. In five cases the cerebrospinal fluid was used.

Following the suggestion of Gross and Volk [1] to the effect that it is not necessary to heat the patient's blood for one-half hour to destroy the complement, I tried the unheated blood in 40 cases. The results of the unheated and heated blood coincided in 29 of these cases. In the other 11 cases, 10 reacted positive with the unheated blood and negative with the heated, including cases of epilepsy, typhoid, rheumatism, sepsis, tabes and questionable tertiary syphilis, and 1 case was negative with the unheated and positive with the heated (tertiary syphilis). As several of the cases with a positive reaction with the unheated blood showed nothing in the history to suggest syphilis, it seems to me that the above author's suggestion is of no value. I found that the blood exhibited no change for twenty-four to thirty-six hours if kept near the freezing point, but results taken from blood older than this showed that some positive ones became negative, and the reverse was also occasionally true.

The complement in the guinea-pig's blood lasted for about six days if kept at a nearly freezing temperature, but diminished after that, slowly at first, and soon entirely disappeared. I, therefore, never used it after five days.

Of the amboceptor from immune rabbit's serum I used continually three times the unit dose found necessary by titration to cause hemolysis in one-half hour. This is much preferable to a smaller dose, as it prevents the occurrence, in a large measure, of the "doubtful" reactions.[2]

In regard to the interpretation of results, I have tabulated all, without qualification as to degree, as positive or negative. By a positive result I mean a marked absence of hemolysis shown by absolute cloudiness on withdrawing from the incubator and a well-marked sediment of blood corpuscles macroscopically, if the tubes remain standing at a cold temperature over night. Slight fixation of the complement has been regarded as negative. This naturally lowers the percentage of positive results, but, so far as I am aware, I have not reported a positive result in any non-syphilitic case.

Of the 182 cases examined, there were 49 showing no syphilis in the history or physical examination. These included typhoid, tubercular arthritis, tubercular meningitis, leukemia, pernicious anemia, delirium tremens, chancroid, furunculosis, senile dementia, epilepsy, septicemia, gas poisoning, carcinoma, cerebral hemorrhage, gastric ulcer, scarlet fever, acute pharyngitis and other disease, as well as normal blood from a healthy individual. In regard to scarlet fever, about which there has been considerable discussion, following the positive reaction by Muck and Eilenberg,[3] in 40% of scarlet fever patients, I examined 9 cases. Some of these showed a very slight positive reaction; but, according to my methods of classification, all are tabulated as negative. All the rest of the above list of non-syphilitics were also negative.

There were 31 cases in which the diagnosis, clinically, was doubtful, and which were not later cleared up by the course of the disease or by autopsy. Some of them showed a positive reaction, but mostly negative. No conclusions can, however, be taken from these cases.

Of syphilitic cases, including tabes and latent cases, 101 individuals' blood was examined. Among these there were 13 primary lesions, 6 reacting positive and 7 negative, making 46% of the cases positive. Other authors' percentages vary from 100% (Butler) to 38.6% (Hoehne). This great variation seems to be due to the duration of the primary lesion at the time the blood was taken. Of my 6 positive cases, all were of three weeks' duration or over, and of the 7 negative, all were of three weeks' duration or less. This accords with the generally accepted view that the reaction appears generally at about two or three weeks after the first appearance of the chancre. It is interesting to note that, in primary lesions, the spirocheta pallida was not found in several cases where the Wassermann reaction was positive in a series published by Hoehne.[4] Exceptionally the reaction may appear very early, even before the appearance of the primary lesion;[5] I have found no such cases, however.

Of the secondary cases there were 26 tested, 20 positive and 6 negative, or 77% positive. Of the 6 negative, all but 1 had received more or less recent treatment, varying from five weeks to one year, and in all these the rash was already fading or entirely gone, the active disease being represented by a few mucous patches. The other case was an early one, being only six weeks after the first appearance of the chancre.

Of the tertiary cases, there were 32; positive, 30, negative 2, or 94% positive. Both the 2 negative cases had received considerable treatment just prior to the time the blood was taken for examination. Among the positive cases, two deserve especial mention. In one the diagnosis of carcinoma was definitely made on account of the large nodular tumor of the liver, marked cachexia and loss of weight, typical secondary anemia, etc. As the serum reaction was markedly positive, mixed treatment was begun and was followed by almost complete disappearance of the tumor, and the patient, when last seen, was apparently in perfect health, good flesh and free from pain.

The other case, for which I am indebted to Dr. J. W. Dewis, was operated upon in one of the hospitals in this city for a large abdominal tumor. A large, inoperable, retroperitoneal tumor mass was found and the probable diagnosis of sarcoma made. The serum test was tried and found markedly positive, and following this the tumor, under mixed treatment, has entirely disappeared. I might mention here another case in which the reaction was not tried, and in which the diagnosis of malignant disease of the testicle was made. Castration was done and the pathological diagnosis of gumma was established. It is in the light of such cases as these three that I would urge the more frequent resort to this test in supposed malignant disease, even though the diagnosis may seem quite certain, as I have found only six cases, reported by Weil[6] and by Salomon[7] of non-syphilitic tumors reported as giving a positive reaction when there was no sign or history of syphilis, and the technic of these investigators has been questioned of late. On the other hand, a progressing tertiary syphilitic lesion will, with quite a fair degree of certainty, give a positive result, as shown by most all authors as well as by my own meager figures.

Of "latent" cases, meaning by latent those cases giving a good syphilitic history, but at the time of examination showing no active signs or symptoms of the disease, I have examined 18 cases, 9 positive and 9 negative, or 50% positive. These may be divided into early latent, or those of syphilis of less than three years' duration, and late latent, or those of three years or more duration. Of the early ones there were 8 cases, 25%, positive; and of the late cases 10, 70% positive. The low percentage in the earlier ones, most of which had just received or were still taking treatment, supports the view of Purckhauer,[8] Fischer,[9] Citron,[10] and others that treatment often, in the earlier stages of the disease, is much more effective in making a positive reaction become negative than later in the disease.

Of congenital cases, I have examined only 2 cases, both of which showed a very marked positive reaction, as has been found by almost all observers, whether the cases have received treatment or not.

Of tabetics, I examined only 8 cases, 3 positive and 5 negative, or 38% positive. They were nearly all advanced cases. This is lower than the percentages usually reported, but Lesser[11] has shown that the percentage is much higher in early than late cases, due possibly to the very chronic course of locomotor ataxia, which makes the late stages of it much further removed from the original syphilitic infection than is the case in dementia paralytica, where the late stages show a very high percentage of positive results.[12] I have not had the opportunity of testing the blood of any sure case of dementia paralytica.

In regard to the effect of treatment, I have not had the opportunity of following any cases through their treatment by repeated tests, but the negative cases in the secondary stage, and in the early latent cases, seem to show a marked effect of treatment on the reaction in the earlier stages of the disease. But as an exception to this I may mention one case which showed a marked positive reaction just after a prolonged, energetic course of treatment, which had caused all manifestations of the disease to disappear. In such cases as this the reaction sometimes becomes negative after a month or two without further treatment, as shown by Blaschko,[13] Blumenthal and Roscher[14] and others. In the late cases of syphilis, treatment seemed to have less effect, for several of my positive reactions were obtained in cases that just previously had been having a rather extended course of treatment. In one case there had been several recurrences of the disease, which had all been well treated for a fair length of time; and now, with the appearance on the scrotum of a limited syphilitic rash, forty years after the primary infection, the reaction is strongly positive.

This leads me to say that, with fresh outbreaks of the disease in any form, the reaction is most always positive, whether negative previously or not.

Finally, as regards the significance of a positive reaction: most investigators admit that a positive reaction in a latent case probably does not necessarily mean that an active syphilitic lesion is going on at the time, for these occur too frequently to be explained in this manner, as Fischer[15] has shown. But observations of others[16] seem to prove that a positive reaction means a present active syphilis going on at the time. The fact that some of the latent cases still showed a positive reaction after prolonged antisyphilitic treatment would seem to mean that the reaction is not affected by treatment for some reasons which prevail in cases of intractable syphilis where specific treatment avails little or nothing. It seems, therefore, that a positive reaction is a direct indication for treatment, to be persisted in until the reaction becomes negative. Citron suggests that in this way only, combined with a careful surveillance of the case for visible signs and symptoms, can the more severe later lesions, often starting so insidiously, be warded off, and the cases of intractable syphilis be, for practical purposes, cured.

In regard to a negative reaction, although there are a few exceptions, it seems as if this, occurring directly after the earlier symptoms have subsided, if repeated at long intervals and still found negative, is another point of prognostic value as regards the questions of marriage, life insurance, heredity, or, in other words, of complete cure.

In conclusion, I wish to extend my thanks to Dr. Mallory for the use of the City Hospital laboratory, and to the Boston Board of Health laboratory for their continued courtesy and for the use of certain pieces of apparatus, without which my work would have been impossible. I also wish to thank Drs. Post and Smith, of the Boston Dispensary, and, collectively, the staff of the Boston City Hospital, and numerous physicians, for their kind co-operation in permitting me to utilize the material in their clinics and private practice.

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LABORATORY WORK BY THE COUNTRY PHYSICIAN.*

BY M. A. CUMMINGS, M.D., WINCHESTER, MASS.

THIS paper was suggested by a consultant who spoke of the laboratory work we were doing in Winchester as unusual in his experience.

The advantage of many of these laboratory examinations has been proven, and it is to these I wish to direct the attention of those who, like myself, have to pick up the methods in the course of an active practice.

Thorough observation and careful weighing of symptoms and signs are necessary for a proper recognition of a condition that presents itself in a person consulting a physician. The color of the skin, the attitude, the expression, the history, family and personal, the account of pain or insomnia, and all of the data that we usually take note of in our patients, are of the first importance.

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* Read at the annual meeting of The Massachusetts Medical Society, June 15, 1909.

A careful physical examination should, of course, be insisted on. Neglect of this may bring humiliation or disaster. A woman had pain in her shoulder for a week following a fall, thought to be due to a sprain. After the reduction of a partial dislocation there was immediate relief. Another woman was treated for two weeks for ovarian inflammation. Examination, not previously made, showed a mass the size of two fists, which proved to be pelvic abscesses.

In addition to the ordinary examination of a patient by inspection, palpation, auscultation and percussion, we may be able to confirm or establish a diagnosis by means of a critical examination of the tissues or fluids of the body, or its secretions and excretions, chemically or microscopically. In infections the offending germ may often be grown on culture media and its identity more easily determined.

The graduating class of twenty-two years ago had instructions in the use of the microscope, but so far as personal recollection goes, few of them knew more about its use than was necessary to recognize urinary sediments, and, to a slight extent, the character of new growths.

The examination of sputum was tedious, as was the examination of the blood for plasmodium malariæ. Very little had been done at that time in bacteriology or examination of the blood.

Having been brought into professional contact with recent graduates and consultants, and through them become acquainted with some of the methods and the value of these examinations, it has seemed worth while to remind the older practitioner not in touch with the city laboratory how much assistance he may have at a slight outlay of time, money or effort, and how much satisfaction he may derive from a personal solution of perplexing cases.

The state has provided for the examination of sputum in tuberculosis, of the deposits in suspected diphtheria, and of the blood in suspected malaria or typhoid, and we often avail ourselves of this privilege. But the physician away from the city or state laboratory can often make his own diagnosis in a short time, after a little practice, and repeat his examinations at his pleasure.

Every practitioner should own or have access to a microscope with oil immersion lens, and as he uses this from time to time he will find his facility increasing, and with that facility a greater satisfaction in his ability to do better work.

If the question of the presence of the tubercle bacillus arises, having the carbol fuchsin and acid blue stains, in a very few minutes one can determine the presence or absence of these bacilli in the specimen.

It is not, perhaps, necessary to examine sputum from every case of cough, but it can do no harm at least, and may save future self-questioning and humiliation.

Some three years ago, two children, five and three years of age, had a pretty severe attack of pertussis. It seemed best that they should be taken to the seashore for the summer. While there the nursemaid, while making a hurried visit to her home in a neighboring town, came in to my office having a temperature, cough, rapid pulse and râles. Treatment for bronchitis was given, and direction to report if not better in two or three days. I heard nothing more from the maid, but some three months later both children, having recovered from the pertussis, died of tubercular meningitis. Later inquiry showed that the maid was sick all that fall with a cough and that some members of her family were tuberculous. Of course there is no way of proving that the children were infected from the nurse, but I cannot help wondering if an early discovery of her condition might not have prevented their death by tuberculosis.

Occasionally the physician sees a patient having a moderate temperature, pulse elevated over 100, with nausea and vomiting and complaining of sore throat. Examination shows some swelling, and a deposit on the tonsils, velum and pharynx that is not easily removed. Only a bacteriological examination can determine whether the condition is diphtheria. If it is, the sooner antitoxin is given the better, and most of us would give it on a chance. A severe urticaria lasting for some months, and an attack of eczema following its use in my personal experience, also the report of unfavorable symptoms occurring in some cases after its use in patients with asthmatic tendencies, has led to its use in my own practice only in those cases where the necessity was evident.

By keeping on hand a few culture tubes, which may be obtained at small expense from some of the medical supply houses, also sterile swabs, one can take a culture from such a suspected throat, and after keeping it in a warm place for twelve to eighteen hours, there will be sufficient growth to make a smear on a slide. This may be stained with Loeffler's blue, and on examination through the oil immersion lens will show the presence or absence of bacilli. If only the cocci are found in the culture, the case does not demand antitoxin. Recently a woman forty-six years old had what appeared to be a false membrane over tonsils, velum and posterior pharyngeal wall. The next morning the tube showed only staphylococci and streptococci in quantity, but no bacilli. Following the use of an alkaline salt solution and argyrol the throat cleared quickly.

After a physician has had a case of nasal diphtheria that has shown no throat signs and no other symptoms than of an ordinary cold in the head, except progressive pallor and weakness, it is a comfort to be able to determine what the infection is. Last summer an infant six months old had, in addition to the signs of a cold in the head, a yellowish excoriating discharge from the nostrils. Culture showed this to be due to an almost pure growth of staphylococcus pyogenes aureus.

Within ten days four other members of the same household had various forms of pharyngitis, and one developed a peri-arthritic rheumatism that lasted six weeks.

In the matter of examination of the blood, one does not need to be specially expert to determine roughly the hemoglobin by the Tallquist scale, or the contour and relative size of the red corpuscles and presence of white corpuscles in unusual number by means of the Leishman-Wright stain, all of which may be done in ten minutes.

The same stain will bring out the plasmodium malariæ if present.

The determination of the character of tissue changes and of the chemical and bacterial content of fluids, as well as the preparation of sera and vaccines, must be left to the expert.

I have not spoken especially of urinary examination because all of us are qualified to do this to the degree necessary for ordinary conditions.

Colon infection of the bladder or kidneys, as shown by fever and pain, with perhaps ulceration of bladder wall and cloudy urine, with or without pus, should be referred to the specialist. The bladder ulcerations and painful micturition due to colon bacilli are certainly relieved by the use of autogenous colon vaccine. Dr. J. Lovett Morse has recently described cases of colon infection of the urinary tract in infants causing hitherto unexplained fever, and, when looked for, the condition will probably be found to be not uncommon. In these cases, however, the colon vaccine did not prove so helpful as an alkaline diuretic.

The proof of the presence or absence of the gonococcus in a discharge may occasionally be of the greatest importance. Mallory and Wright, in their "Pathological Technic," describe a convenient method of staining.

The same authors also describe the different methods of staining the spirochete pallida in syphilitic conditions.

This textbook of Mallory and Wright will be found very helpful, as its directions are explicit, concise and easily understood.

The examination of meningeal, gastric and intestinal fluids, and of tumors, will probably continue to be the work of those especially trained for this work.

The use of vaccines prepared from killed cultures of bacteria has been found of great advantage in certain cases. In some of the so-called grippe infections a vaccine prepared from the nasal or throat secretions, and given with due regard to the opsonic reaction of the blood, has proven of value. Vaccines prepared from staphylococci or streptococci, either autogenous or stock, have proved helpful in certain skin infections, especially furunculosis.

Not every town has an electric lighting current, but where it can be had, an x-ray outfit, to be obtained at a comparatively small expense, is a desideratum.

In addition to its use as a therapeutic measure, the x-ray from the ordinary coil will provide us with a skiagraph of the bones, in limbs or chest or jaw, and so confirm a diagnosis in many doubtful surgical cases.

A suspicious sprain may be proven to be a fracture, or a fracture supposed to have been reduced may show the bones not in proper position. The skiagraphing of the lumbar spine, pelvis and abdominal contents as to renal calculi or enteroptosis, demanding powerful and costly apparatus, and, especially, trained interpretation, must be made by an expert.

A patient had pain, swelling and tenderness of the dorsum of the foot. A photograph showed a swollen periosteum of the third metatarsal.

Another patient fell on her left hand. Three days later she presented herself with hand and arm tense with effused blood, but apparently no deformity. Ordinary manipulation was out of the question; an x-ray photograph showed a fracture of the end of the radius, with a slight displacement of the fragment outwards.

The plates may be obtained from any photographic supply house and may be developed by any one accustomed to that work.

Not every one of us can afford to possess all the instruments of diagnosis or precision, nor can any one be adept in the use of them all and keep up his practice. But few are so separated from neighboring practitioners as not to be able to avail ourselves of his special knowledge or apparatus.

Incidentally, such use of each other's facilities tends to increase the solidarity of our profession, as it promotes both social and educational activity.

Every one of us needs the special knowledge or experience his brother has acquired, and that brother's support in his everyday work. And it is to the credit of our profession that whatever of value any one may find, he gladly imparts to his brother practitioners.

DISCUSSION.

Dr. Channing Frothingham, Jr., of Boston: Within the last few years laboratory tests as aids to diagnosis have improved very much in efficiency. In the large cities, where there are always several well-equipped laboratories, a practitioner of to-day has no excuse if he does not avail himself of these opportunities. For the practitioner who is distant from these facilities, it has always been more difficult to keep up with the laboratory advances. The result has been that this latter class of physicians have rather neglected the whole question of laboratory tests except under special circumstances.

Dr. Cummings' interesting paper has shown very clearly that a great many of the most useful laboratory tests can be easily and accurately done by physicians at their homes. He makes it clear that in the future distance from clinical laboratories will be no excuse for unscientific medicine.

Dr. Cummings very wisely differentiates between those tests which are possible in a small closet laboratory and those which are not.

In addition to the laboratory tests which he mentions, I think that there should be the white blood corpuscle count. This is of great value in differentiating fever caused by the pyogenic bacteria from typhoid fever, tuberculosis and malaria. Also the leucocyte count is of great assistance in the diagnosis of the leukemias. Of course, along with the leucocyte count, an examination of the stained specimen of blood should be made.

The red blood count can also be readily done by physicians away from the laboratory, and though a longer process, the technic is as simple as that of the white count.

Another laboratory test which is much neglected and which is simple is the microscopic examination of the stools. By this method embryos and adult parasites are readily recognized, and eggs of parasites are quite readily distinguished, even by those who do not see them frequently. Another test of value for the practitioner who cannot keep a live culture of typhoid bacilli always at hand is the macroscopic Widal test. This test seems to be nearly as accurate as the microscopic Widal test.

The amount of equipment necessary to do all these tests mentioned by Dr. Cummings and myself is by no means large. A dozen re-agents will cover all the needs in that line, and in addition there must be a little preliminary outlay in blood counters, Bunsen burners, centrifugal machine, platinum loop, etc. Space sufficient for a small shelf in a closet, a sink and a table for a microscope are all that is necessary.

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SUPPURATIVE PERICYSTITIS.

BY ARTHUR L. CHUTE, M.D., BOSTON.

In April, 1908, I removed two calculi, presumably phosphatic, from the left kidney of a man thirty-seven years old. He had been refused life insurance five years before because of the condition of his urine. More recently he had had attacks of vomiting that had been unattended with edema. He had never had any venereal trouble.

When I saw this man he was very pale and pasty, and looked "renal." He was passing about 50 oz. of pale, turbid urine, having a specific gravity of 1008. This urine contained a large trace of albumin and was deficient in urea (.76%). The sediment, which was abundant, was mostly pus, but contained a few casts; it also contained two different varieties of organisms, a large bacillus and a small coccus, the latter in small numbers. Tubercle bacilli could not be demonstrated either in stained specimens of the sediment or by means of guinea pig inoculations.

Examination of his bladder showed a chronic cystitis. The right ureter gave on catherization a non-infected urine that contained a few leucocytes; the left, a urine that contained much pus and many organisms. A radiograph showed the presence of calculi in the left kidney.

After his nephrolithotomy this patient made a slow recovery. He had occasional attacks of vomiting and his urine continued turbid; it was at times very foul. During his convalescence he developed a bronchitis and also a mild pleurisy, but, in spite of these complications, his lumbar wound closed about the thirtieth day. Four or five days later (May 16) he was allowed to go home. Between the time his sinus closed and the time he went home his evening temperature, which had been normal, went to 100° on two occasions. During these days he also complained of bladder irritability, but I could see no definite cause for this, and considered it some unimportant recrudescence of his cystitis.

On May 20, four days after he reached home, his loin sinus opened and discharged a little urine. He complained of painful and frequent, as well as of difficult, urination, though his urine was less foul than it had been. He complained of some pain over his bladder and of considerable pain in his rectum. There was suprapubic tenderness and his prostate seemed larger and more tender than normal. He had a moderate temperature. I believed this man had a lighting up of his cystitis accompanied by an acute prostatitis, and advised palliative treatment. The patient's condition kept on much as above, the temperature varying from 100.5° to 103° until May 23. I had the feeling that I had to deal with what would prove to be a prostatic abscess and would probably open spontaneously into the urethra or rectum. On May 23, in addition to his frequent and painful urination, rectal pain, temperature and suprapubic tenderness, he developed hiccough that was difficult to control. Beside suprapubic tenderness he now showed a definite mass above the pubes that corresponded in contour and location with a distended bladder. A catheter showed that his bladder was not full, though micturition was incessant, difficult and painful. There was by rectum a tender mass that I still believed to be prostate.

The next two days were attended with less pain, and his general condition seemed to improve somewhat. Up to this time the patient did not have the appearance of being a particularly sick man, and I had entertained no question as to the outcome of his trouble.

On the 26th of May this man had the appearance of being decidedly ill. An examination under ether, at which time Dr. F. B. Lund saw the patient with me, showed two fluctuant points that proved to be not in the prostate, but above and below it, the prostate itself being uninvolved. The bladder was indurated and had the feeling of being much thickened and distended. It was not until this time that the true significance of the condition became evident. Before this I had supposed that I had to do with two coexisting conditions, a developing prostatic abscess and a very acute lighting up of a chronic cystitis.

The fluctuating points were opened and a considerable amount of foul pus evacuated. Tubes were inserted into the abscess cavities, and though there was considerable drainage through these tubes, the mass above the pubes was unaffected. The patient failed steadily and died thirty-six hours after operation. There was no autopsy.

This case illustrates one of the rather unusual types of bladder disease, unusual enough to be commonly overlooked at first, and to be considered either as an inflammation of the prostate or a very acute cystitis.

Englisch, in 1889, took up the question of suppurative pericystitis in a classic monograph that he wrote on inflammation of the space of Retzius. He treated the subject with such thoroughness that I think no really new facts have been contributed since that time. In this type of disease an infection followed by suppuration takes place in the zone of loose tissue surrounding the bladder. This condition has been called by various names. Suppurative pericystitis, suppuration of the prevesical space and phlegmon of the space of Retzius are the names most commonly used. This type of disease is much more common in males than in females. It has been noticed from infancy to old age, but is relatively rare in the young.

As has been said, these suppurations follow an infection of the loose pericystic tissue. Most instances of infection and infiltration of the pericystic tissue do not terminate in suppuration, but in resolution. Examples of these infiltrations of the space of Retzius that do not go on to suppuration are reported by Englisch, Hitchcock, Necker, Bierhoff, Thiem and others. The proportion of cases in fact in which suppuration takes place in infections of the prevesical space is probably small. I have only recently had under my care a man who, following prostatectomy, developed what I believed to be an infection and infiltration of the space of Retzius. The process did not go on to suppuration, but slowly resolved, and that, I believe, is the rule with these infections.

There are a certain number of infections of the pericystic tissue that are tuberculous. They are less common than the non-tuberculous infections, and have been well described by Misiewicz. They do not come into consideration in connection with the reported case, and I shall make no further mention of them.

The non-tuberculous infections of the prevesical space may come about in a variety of ways. There are infections that take their origin from lesions of the urinary tract, either by direct extension (Hallé), or by way of the lymphatics (Imbert). There are other cases in which some traumatism seems to play a part in bringing about the infection (Englisch). In some cases the infection extends by continuity or by the lymphatics from foci of disease situated in the vicinity of the bladder; sometimes in the abdominal cavity, sometimes in the pelvis (Michels, Brun, Blondel). In a considerable proportion of these cases of suppurative pericystitis the infection is presumably brought by the blood stream (Englisch and Pauzat). In some of these blood-stream infections the focus from which the infection comes is perfectly evident; in others it is not.

The numerous causes of suppurative pericystitis have led some writers, notably Englisch, to divide the cases into a considerable number of classes. Thus in the article just mentioned, the inflammations of the prevesical space are divided into the idiopathic, traumatic, metastatic and symptomatic. I do not see that such an elaborate classification is of any particular advantage and would suggest that a division into the processes of urinary origin and those of non-urinary origin would be much simpler and probably quite as valuable. Hallé has suggested that the cases of pericystitis as a whole, not the suppurative type particularly, be divided into the " true " and the " false "; that one base this division on whether the bladder was or was not the source of the infection.

The pericystic infections that are of urinary origin naturally have the greatest interest for us. It is said of these urinary infections that the prognosis is worse than in the cases in which the infection is brought by the blood stream. The reasons given for this are these: there is usually a large supply of infecting organisms; the patient's resistance is often reduced owing to a long and debilitating illness; not infrequently there may be a co-existing pyelonephritis, due also to extension from an infected bladder.

Infection of practically any part of the lower genito-urinary tract may lead to this infection of the prevesical space. It has even followed an ulcerated wart on the glans (Imbert). It has followed various sorts of lesions of the urethra, but more particularly urethritis and stricture (Englisch, Meignant). According to Imbert, the glands in the prevesical space are in intimate connection with the lymphatics that drain the lower urinary tract. It is said, but I believe that it is based largely on theoretical grounds, that a focus in the prostate is less likely to lead to an infection of the space of Retzius than a suppuration in the other parts of the lower urinary tract. The reason given for this is the dense fibrous coverings of the prostate.

The bladder has been rather the favorite starting point for these infections. It has been suggested that infections of the surface of the bladder have two ways of getting into the prevesical space: By the lymphatics at times (Imbert), but most often simply by the infection extending directly through the bladder wall into the loose pericystic layer (Hallé).

These suppurations seem to begin by preference in the prevesical space just behind the pubes. The prevesical space, or space of Retzius, is a layer of loose tissue that almost surrounds the bladder. Its function is to allow the increase and diminution in size of the bladder. It is a potential or possible space, and becomes a real space only under pathological conditions, when the loose tissue is destroyed by suppuration and the cavity filled with pus.

This beginning just behind the pubes seems to be the rule in the cases in which the infection is by means of the lymphatics; also in those in which the infection is by the blood stream. When, on the other hand, the infection extends through the bladder wall directly, it may reach the pericystic layer of tissue at any point. Even in this last condition, the extension to the region behind the pubes is usually rapid. Occasionally, as in the case I have reported, the suppurative process may appear to be most marked and most advanced at the bladder base.

When a suppuration beginning behind the pubes goes on to involve the loose tissue at the base of the bladder, it is probable that the extension takes place along the anterior wall of the bladder rather than along the posterior wall. Englisch believes that in those instances where the suppuration reaches the bladder base it extends between the bladder and the pubes, passing on either side of the prostate. It is his opinion that what he calls the ligamenta vesicoumbilicalia offers a considerable opposition to the spread of the suppuration posteriorly. I have nothing to offer either to substantiate or refute this view.

In cases where the suppuration is extensive the bladder may be nearly surrounded by a sac of pus that has replaced the prevesical areolar tissue. In more extreme instances the suppuration may involve the whole iliac fossa (Pauzat) and even dissect up behind the peritoneum as far as the kidneys (Englisch).

The symptoms of this condition depend to a considerable degree upon the cause of the suppuration. All cases practically present a temperature and the other signs of an infection. Usually the signs are those of an infection of moderate severity, but sometimes the signs are those of a pretty marked sepsis, as shown by chills, sweats, diarrhea and delirium. There is suprapubic pain that varies much in degree, and also tenderness over the pubes. There is usually marked disturbance of urination, and in cases of urinary origin the urine itself shows changes. In the cases that are of non-urinary origin, urination is usually disturbed though the urine itself may shown no changes. Rarely, both the urine and the function of urination are normal.

In cases such as Michels and Brun have reported, cases in which the suppuration spreads to the prevesical space from a neighboring intra-abdominal focus, the early symptoms have naturally been those of the original trouble and have differed materially from the symptoms shown by cases that have been of urinary origin.

The hematogenous infections are often puzzling. For a time they may present simply suprapubic pain and tenderness, with frequent and painful urination, and sometimes with a normal urine. When the urine is perfectly normal, as has been the case in some of these blood-stream infections, it is almost impossible to make a diagnosis before the appearance of the mass above the pubes. Suprapubic pain and tenderness are usually the first local signs of a pericystic inflammation. The suprapubic mass makes its appearance shortly after, though at times this may come only after an interval of some days. The more acute the process, the earlier this mass appears. This mass can usually be felt very plainly above the pubes, but bimanual palpation may show it even more distinctly.

The appearance of a mass above the pubes is practically the point upon which one depends in nearly all cases for establishing his diagnosis. It should, perhaps, be possible in some of the cases that begin in the pericystic tissue at the side or near the base of the bladder to recognize the condition from the areas of induration or fluctuation that are to be felt by rectum. There will usually, however, be an uncertainty about the significance of these masses that does not exist with the suprapubic mass. The mass felt above the pubes has the feeling, if palpated casually, of a distended bladder. When examined more carefully, it may show a slightly uneven surface, due to the slightly lobulated condition of the tissue of the prevesical space. It will be seen also that the mass broadens, or tends to broaden, just above the pubes, in a way that a distended bladder does not do. The passage of a catheter and the finding that emptying the bladder makes no change in the mass is the crucial test in distinguishing between a full bladder and a pericystitic infiltration. Some writers have likened the mass felt in these prevesical indurations to that of a pregnant uterus.

When a suppurative pericystitis is of urinary origin it should be possible to recognize it more readily than when it is not of this origin. It may be possible, perhaps, to recognize it even before there is a marked suprapubic induration. It has been said that when a temperature appears without evident cause in a chronic bladder infection we may feel sure that one of two things has taken place: either the infection has extended to a kidney pelvis, or to the prevesical space.

While a suprapubic mass, such as I have described, is pathognomonic of a pericystic infiltration, it is not necessarily so of a pericystic suppuration. Where there is an extension from the main suprapubic mass up toward the umbilicus, along the course of the obliterated hypogastric vessels and urachus, it is pretty definite proof that suppuration has taken place. The presence of suppuration is evident when there is fluctuation, but fluctuation, though sometimes seen, is not common in this condition. When the skin is red and adherent, one is of course sure that suppuration exists. The presence of a considerable leucocytosis should be a help in differentiating between an infiltration and suppuration of the prevesical tissues, as should chills or an irregular temperature. In some cases, as in mine, there may be fluctuant points to be felt by rectum; in others one may have to use an exploring needle to determine the presence or absence of pus. It is probably better to make an incision into the prevesical space in cases where doubt exists rather than to wait an unduly long time to demonstrate definitely the presence of pus.

Beside the definite points of infiltration that one may feel by rectum, there may be masses of infiltrated tissue or a thickening of the bladder base. It has been a common mistake to consider the infiltrations and fluctuant points that are felt by rectum as having to do with the prostate rather than with the pericystic tissue. I believe this error is avoidable if one bears in mind the possibility of these pericystic inflammations giving rise to masses that may be felt by rectum.

In arriving at a diagnosis, one may have to consider a considerable number of conditions, some of which I will mention briefly. Suppurations in the sheath of the rectus muscle are usually confined to one side, which is not the case in suppurative pericystitis. Suppuration of the pyramidalis muscle is ordinarily of bony origin and usually confined to the sheath of the muscle. Suppuration of the subperitoneal tissue is more superficial and more diffuse than what we see in the pericystic suppurations.

Cases of pelvic peritonitis may usually be distinguished by the history and the fact that the pain and tenderness are not localized just above the pubes. In some instances, however, a suppurative pericystitis has followed upon a pelvic inflammation. Retention of urine is ruled out by the fact that the mass above the pubes does not disappear when the bladder has been emptied by a catheter. It may be difficult to rule out acute prostatitis at the onset, but it should be easy to do so as soon as the suprapubic mass makes its appearance.

New growths do not, as a rule, have a temperature. A diverticulum on the anterior bladder wall can be easily ruled out by a cystoscopic examination.

The prognosis in the cases of urinary origin is, as I have said, supposed to be somewhat less good than the prognosis in the cases that are not of urinary origin. This better prognosis of the non-urinary cases applies only, I believe, to the cases in which the infection is by the blood-stream. The prognosis of the cases that are secondary to some neighboring abdominal lesion naturally depends largely on the nature of the primary process, and will be very grave in a considerable proportion of cases. Thus, in one case cited by Michels, a cancerous coil of intestine adhering to the bladder had caused the pericystic suppuration; in one, Brun cited an appendix abscess had infected the prevesical tissue. Both of these cases were fatal.

There have been a considerable number of cases in which recovery has come about without any surgical intervention. In such cases the pus collection has opened spontaneously. Above the pubes, and in the region of the umbilicus, have been the favorite places, while in other instances the pus has been discharged into the bladder, rectum or vagina.

Because induration of the prevesical space very closely resembles suppuration, as shown by the number of instances in which an incision has shown no pus, it is impossible to be sure that pus was present except in cases in which it was either demonstrated by operation or by spontaneous rupture.

In the cases that terminate fatally the fatal outcome in a considerable proportion of the cases is the result of pus breaking into the peritoneal cavity and setting up a generalized peritonitis. In a lesser number it is due to septic absorption from the abscess cavity.

In the matter of treatment I believe but one thing can be advised, that the collection of pus be drained, and as early as possible. The incision should by preference be just above the pubes and be carried well down into the pericystic tissue. Should there be fluctuant areas to be felt by rectum, they should be drained. In a case such as the one I have reported, where there were foci to be felt by rectum, it is a question whether in addition to opening these, one should not also make a suprapubic opening. Though in the reported case drainage was profuse, it is doubtful if it was adequate. Though Meignant, Pauzat, Lang, Pasteau and many others report cases that have recovered after operation, yet the number of reported cases is too small to allow one to compile useful statistics.

CONCLUSIONS.

Suppurative pericystitis is a somewhat uncommon condition in which suppuration takes place in the zone of loose tissue above the bladder, and in which either a part or the whole of the space of Retzius becomes a veritable abscess cavity.

In a large proportion of cases the infection is secondary to some disease of the lower urinary tract. The infection of the prevesical space takes place by direct extension, or through the lymphatics. In a considerable number of cases of suppurative pericystitis the infection is through the blood stream and may come from a focus existing in practically any part of the body. In some instances the disease is an extension from a neighboring intra-abdominal or intra-pelvic lesion.

The characteristic thing diagnostically is the presence of a mass above the pubes that more or less closely resembles a full bladder but that is unaffected by passing a catheter.

The disease is one that will probably always have a considerable mortality. The disease is of a secondary character and its mortality will depend largely upon the nature of the disease that it is secondary to. The treatment should be free drainage of the pus collection.

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Reports of Societies.

AMERICAN CLIMATOLOGICAL ASSOCIATION.

The Twenty-Sixth Annual Meeting, held at Fortress Monroe, Va., June 4 and 5, 1909.

(Concluded from No. 12, p. 411.)

Dr. John H. Lowman, of Cleveland, Ohio: I think one of the growing hopes in the treatment of pneumonia is the gradual recognition of the fact of where the strain lies. Now it can be deduced from much that has been said here to-day that the strain lies upon the right heart, and that venesection and the use of veratum viride are based upon that fact; whereas, from other remarks we have heard, and the facts Dr. Babcock had so clearly pointed out as to the use of camphor, asafetida, caffein, etc., the deduction would be that the strain is upon the left heart. Now do you see a dilatation of the right heart in pneumonia? But it is not difficult for the right heart to cope with a solidified lung on one side. We all know that from where the pleural sinus is filled with water. The sinus may be filled with water on one side, and half the other lung involved, and yet it is easy for the heart to cope with that. So that the dilatation of the right heart is not due to the fact that it is difficult for the right heart to pump the blood through the solidified lungs; the difficulty is in the impairment of the left heart. The left heart becoming weak, it is impossible for it to pump out as much blood into the systemic circulation. Consequently, less blood comes from the lung; the suction brings less back, and in consequence of that, dilatation of the right heart takes place. It is a toxic myocarditis which is the cause of the weakening of the heart, and the real treatment is to be directed towards that. Now that, it seems to me, should be recognized early. One of the chief points in the successful diagnosis of the condition of the cardiac circulation is in listening to the base of the heart for accentuation of the pulmonic second sound. When the pulmonic second begins to grow louder, the interruption from that is that the left heart is beginning to fail, and that is the time for the introduction of this treatment. Now I think if we will recognize that this is the beginning of the end, as Dr. Babcock has said, the last picture of a pneumonia is a picture of cardiac failure and not a picture of lung disease. It must be recognized that the beginning of pulmonic accentuation is the first sign of weakening of the left heart, and then is the time to begin our cardiac stimulation.

Weakening of the left heart is the cause of the very low blood pressure in pneumonia. We formerly thought the blood pressure in pneumonia was a high one. After the first experiments at the Johns Hopkins Hospital on the blood pressure machine they published a series with high pressure, and the next series with low pressure, 105, 110 mm., never high, except in arteriosclerosis or some accidental condition. If it were entirely a right heart affair, with increased pressure in the smaller circulation, and, secondarily, a damming back upon the left heart, there would be a high blood pressure. I think one can deduce from the fact that there is a low pressure, and from the fact that there is a diminution in the strength of the left heart, that the left heart is where the strain lies, and, consequently, the left heart has to be sustained. That is the fundamental principle. Now, there may be certain circumstances where venesection would be justified, but they would be very rare.

Another point in line with what Dr. Stone has said is that if the left heart is failing, and not the pulmonic and portal circulation, as it must be, how are you, by an intravenous injection of a milligram of strophanthin, which has its whole effect on the left heart, going to overcome that condition? It would be impossible if the picture were due to congestion of the portal and pulmonic circulation, and that were due to weakening of the right heart and damming back of the venous blood. If that were the trouble, it would be impossible, without relieving that, to relieve the whole condition, yet you will relieve it in five minutes. What Dr. Stone has said is true. The paper I have to read is simply an enumeration of five cases where the whole picture instantly disappeared. Such a thing as that in pneumonia with a milligram of strophanthin would be an impossiblity as a logical deduction of what we hear here.

In regard to fresh air: No hospital is perfect nowadays without its cold wards. All pneumonias with us are treated that way. That method is particularly good in children.

I do not believe that the mortality is as high as it used to be. I believe that it is diminishing. I believe it is due to the fact that we have gotten away from depressants and away from the idea that it is the right heart which is at fault, and have recognized that it is the left heart which bears the burden.

DR. HERBERT B. WHITNEY, of Denver: There seems to be a great deal of apprehension as to the course of pneumonia in high altitudes. I merely want to say that in my own experience in Denver, about a mile above the level of the sea, there is, in the main, no difference in the course of pneumonia as compared with sea level. I do not know what it may be at Leadville; certainly in Denver I have never seen anything greater than a mortality of 25%, which occurred on one occasion in the course of 54 cases in the course of an epidemic of influenza. In subsequent experience it has been about the same as in eastern and low altitudes.

I dislike very much to sadden the heart of Dr. Babcock, and I do not know whether it would be any comfort to Dr. Taylor to know that there is another unintelligent member of this association, but I am very fond of carbonate of creosote in pneumonia. I have used it for three or four years in doses of 3 drams in twenty-four hours. I am sure it does no harm. Whether it has any value or not, I do not know; I can merely register my impression to that effect. I do not think a remedy which does no harm should necessarily be condemned simply because we have no scientific evidence that it is of value.

DR. SANGER BROWN, of Chicago: I believe that it is entirely possible and practicable to ventilate a room in such a way that the air, in both temperature and purity, will be essentially the same as outdoor air. To have such rooms in close connection with pavilions or other spaces to be used in the outdoor treatment of various diseases is very essential; it will often be found that there will be days together when the patient will be much better off in a room in which the air is artificially maintained just the same in every particular as to temperature and purity as it would be out of doors. The essential difference between indoor air and outdoor air, as it affects the health, is that indoor air is rendered deleterious in consequence of emanations from the skin and lungs and other parts of the system, emanations from the people who occupy the room.

DR. HORACE D. ARNOLD, of Boston: I should like to say a word on this question of which side of the heart is affected, but shall try not to take sides in the discussion. I was interested in what Dr. Lowman said about the importance of the left side of the heart, and that its weakening is dependent on the toxemia. I think he is right. The whole effect on the heart is essentially a question of toxemia, but it seems to me that it affects the right side of the heart as well as the left. I also think that those drugs which act to help the left side of the heart act also to help the right side. Now it may be that the first changes which we detect are due to the effect of the toxemia on the left side of the heart, yet we have a low blood pressure which really lessens the work of that side of the heart. On the other hand, when the left side of the heart weakens and we have an increased pulmonic second, the work of the right side of the heart is by that process increased, and we are then calling on the right side of the heart, which is the weaker side and is also affected by the toxemia, to carry an additional burden. Then we come to the point of danger. Every one agrees that this condition is relieved mechanically at times by venesection. It is, therefore, a question of determining where the immediate stress or danger lies and treating one side of the heart or the other according to the conditions, but both sides are affected.

Dr. Stone, in closing: The preparation of Boehringer's strophanthin is graduated so that 1 mgm. is supposed to kill 20 frogs of a given size, and according to the proper time of the year. The Merck preparation, so far as my experience goes, does exactly what the Boehringer preparation does. Strophanthin is a very stable preparation, but Dr. Babcock's warning must be carefully verified. We ran out of the Boehringer preparation and were obliged to use Merck's. This particular bottle had been in the hospital for ten years, and this old preparation gave just as good results as some new strophanthin that we obtained shortly after that.

Intravenous medication, I think, has come to stay.

To those who are especially interested in strophanthin, I may say that it is cheaper than digitalis preparations used in the same way. An important thing that struck me in these pneumonia cases was the extreme diuresis produced. Diuresis usually occurs at the crisis of pneumonia. I have looked through a number of hospital cases and found that it ordinarily occurs to a much less extent than in those cases where strophanthin was given.

Dr. Taylor said, in closing: Let me call attention to the fact that I am presenting only a subsidiary phase of a great subject, viz., the action of drugs in modifying the processes of pneumonia, according to the interpretations of a man who has given the whole subject of pharmacodynamics the most careful study; these being based, moreover, on a thorough and painstaking review of physiology.

I am glad my friend Dr. Babcock is the one to criticise, since this enables me to reply to him directly. No man is more competent to judge of all phases of disease in the circulation and the lungs than he. If he felt a disappointment at my meager presentation it is nothing to my disappointment that he has not taken the trouble to inform himself of these exceedingly important interpretations and discoveries of Dr. Sajous. When he has done so he will have learned much to gratify him, especially the original and practical light thrown on the physiology of the circulation. If he, or any other, will undertake to point out any errors in these findings, I shall be glad to publish them in the *Monthly Cyclopedia of Practical Medicine*, because what Dr. Sajous desires above all things is to get all the light he can in his search for fundamental truths. I am also disappointed in observing that in the statements of the others there is so little evidence of a full comprehension of certain important points in the modern physiology of the circulation. I alluded to some of these, and the whole subject will be found set forth in the second volume of "Internal Secretions."

The crux of the whole subject of the treatment of pneumonia depends on how the critical period is managed.

On or about the third day, the reaction of the organism in its efforts to overcome the enormous quantity of toxins (infections and other) results in the production of an even greater amount of auto-antitoxin to destroy them. This excess of protective substances becomes in itself a source of danger because of the large amount of adrenal secretion present. An enormous rise of blood pressure follows in the congested lungs, which thus become overwhelmingly engorged. Hence the special danger of death by asphyxiation, a fatality which so often occurs at this stage. In the selection of remedies these pathologic points are paramount.

Creosote carbonate counteracts the congestion by causing dilatation of the arterioles throughout the entire body. The bromides also prove useful to assist in lowering blood pressure and to counteract congestion, yet without diminishing the antitoxic properties of the blood.

Hypodermoclysis at this time is particularly useful and often proves life saving by diluting the body fluids, enhancing osmosis and facilitating adrenal action of elimination of toxins.

Dr. Rochester, in closing: In regard to Dr. Lowman's position, I think everybody recognizes that this is not a disease of the lungs, but a general toxemia, involving both sides of the heart, the nervous system and everything else, and we treat it according to that idea, that it is a toxemia. I stated that the eliminative treatment and stimulating treatment is the main treatment. I simply touched on certain indications which I hold are good for venesection. I do not advocate venesection as a treatment for pneumonia. In 1894 I reported 257 cases before the American Medical Association with a death-rate of 10%, including all cases, and, excluding those over sixty years and those who died within twenty-four hours after coming under observation, the death-rate was reduced to 4%. I have had about four hundred cases in all. I have bled in twenty. Eight were early in the disease.

Many of you have spoken about getting rid of poisons. Not one of you has touched on the main thing to be done in accomplishing this, that is, sweating your patients by means of hot mustard foot baths given in bed. I cause sweating in that way. They recover by sweating; sometimes by a diarrhea. The indications are clear: to open up the bowels and the skin. The kidneys are secondary, because they are often involved in the disease process, and we should be careful about stimulating diseased kidneys.

Dr. Babcock: I alluded in some passing remarks to the effect of the toxemia upon the vascular circulation when I spoke of capillary paralysis. I do not think that any of us lose sight of the fact that the peripheral circulation is a matter of the utmost importance in maintaining the work of the heart. It is only a question of how we do it. I would take issue with Dr. Taylor as to his manner of doing it. I believe that the cold which we use in pneumonia, a matter which I could not touch upon, is of the utmost importance in maintaining the capillary and vascular tone, and I believe also that fresh air is an important factor in maintaining it through its influence upon the nervous system; that the caffein and the musk and the camphor and all those things, while they sustain the heart muscle, do so largely through their influence in overcoming capillary paralysis.

Dr. Boardman Reed, of Alhambra, Cal., read a paper on

THE HYGIENIC AND CLIMATIC TREATMENT OF ARTERIOSCLEROSIS.

The cases amenable to this form of treatment are those dependent on physical, mental or emotional overstrain. They require rest, sometimes even a rest cure in bed. When the heart and kidneys begin to fail, their work should be lightened; the food should be restricted to the actual needs of the system; all kinds of food and drink which unduly tax the digestive and eliminating functions or introduce poisons. Among the hygienic measures advised were massage and Swedish movements, general faradization and sponging with hot salt water, or even very hot and short tub baths or salt rubs followed by prolonged brisk toweling so as to keep the skin active and lower blood pressure. Nauheim baths and resisted movements. Dr. Reed has a high opinion of the artificial Nauheim baths. In the more severe cases, digitalis or German digitalin may be needed. Little water or liquid should be used if there is much dilatation or atony of the stomach or intestines. Carbohydrates should be restricted in these cases since they are prone to ferment and produce flatulence, and thereby raise the blood pressure and impair sleep. The majority of writers condemn flesh foods, alcohol and tea and coffee in arteriosclerosis, but Dr. Reed said that an excessive quantity of food and drink taken regularly day after day is more harmful in this respect than a moderate amount of some one or more of the incriminated articles mentioned. That such an excess tends to produce hypertension is certain, and prolonged hypertension is at least one cause of arteriosclerosis. Cases were cited to illustrate this. Dr. Reed advises a moderately warm and dry climate so as to promote the action of the skin. Southern California in the lower levels affords suitable stations. There are no violent storms, cold waves or extreme changes of temperature. Sanatorium treatment in a good climate offers, in some cases, the best possible remedy.

DISCUSSION.

DR. DELANCEY ROCHESTER, of Buffalo: I think when we come to consider the subject we must always bear in mind the fact that the physiologists tell us that the normal change begins in our arteries at about thirty-seven years of age, and that from that time on we have more or less sclerotic arteries. Dr. Reed took up the subject of the treatment of the different periods of arteriosclerosis, referring to the first period in which there was slight evidence of the disease. He spoke of the treatment of that stage as being easy, because we only had to suggest a diet and a certain mode of life, and the patients would get along all right. That is certainly true, but it is the most difficult thing in the world to get patients in that stage to follow out rules. I have written out careful directions as to how much and when they should eat, and they have done it and they have improved, and after some six months they have come back to me with the same symptoms, and I have asked them if they followed out the directions, and they say they had followed them until they felt better and had then stopped, whereas I had laid out a rule of life for them and they did not persist in it.

Dr. Reed spoke of elimination by the bowel, the skin, the kidney, etc. This I think is fully as important as the diet; and the most important thing in the diet, I agree with him, is the regulation of the amount. I think the tables shown us yesterday by Dr. Arnold will help us to regulate the diet according to scientific data. The regular use of salts is very important in these cases. It helps to keep the tension down better than castor oil, for instance. Then the hot-air bath, I think, is of great importance, either in the cabinet or in bed, according to the case, and the use of alkaline drinks. I do not give distilled water, but always alkaline drinks, which I think help to eliminate better than the ordinary water. Massage and exercises and the Nauheim baths are valuable if used with proper precautions. One thing that he did not mention is important: I think that fresh air is of just as much use in the treatment of this disease as in tuberculosis or pneumonia or other diseases. I insist on my patients with arteriosclerosis and hypertrophy of the heart having just as much fresh air as tuberculous cases and pneumonia cases. As far as climate is concerned, I have found a warm, equable climate the most useful. I either send them to Florida, or southern California in the neighborhood of San Diego.

In regard to the diet in those cases where we have an acute dilatation, especially in connection with the arteriosclerotic changes, I put them to bed and on an absolute milk diet, — buttermilk and predigested milk, — small amounts, not more than 4 oz. at a time, at three-hour intervals. They improve rapidly under that, in conjunction with elimination by means of sweats, etc.

Of course, I shall not touch upon the medicinal treatment except in one thing; that I do not find in the books, and that I find useful. In some cases of angina I have often found relief from the tincture of aconite in five to ten drop doses. It will often relieve angina much more quickly than nitroglycerin or amyl nitrite.

DR. BABCOCK: Just a word in reference to the management of cases of arteriosclerosis with chronic myocarditis in the stage of beginning cardiac inadequacy, particularly those cases characterized by a corpulent habit, abdominal corpulence. Dr. Reed spoke of resistance exercises. They are unquestionably of benefit in cases of grave cardiac asthenia, but I have used, with the greatest possible improvement, in the last three or four years or more, certain exercises which are different from the resistance exercises, and concerning which I have previously said something in print. These exercises are carried out by a medical gymnast in Chicago who is thoroughly competent to carry them out. They consist essentially of properly conducted breathing exercises, diaphragmatic respiration, the patients being made to breathe deeply and synchronously with movements of the extremities. Resistance is not applied. As a matter of fact, in the more serious cases, the movements of the extremities and trunk are practically passive on the part of the patient, the medical gymnast moving the extremities and trunk, while, at the same time, carefully supervising the respiration and compelling the patient to breathe deeply and synchronously with appropriate movements. It is found that this course of exercises slows and strengthens the pulse, reduces the area of cardiac dullness, increases the intensity and purity of the bones, relieves the dyspnea, and reduces the abdominal girth; whereas, if the respiration is not properly carried out, precisely the opposite effect is produced. So gratifying have been my results with this line of very simple mechanotherapy that nowadays, whenever a person with a chronic myocarditis and more or less stiff arteries, perhaps only of the intra-abdominal arteries, comes to me, I invariably send such person to this man for treatment, and the patient is thereby enabled to get along with very few if any drugs. I may add that quite a number of cases of ordinary angina pectoris have been greatly relieved by this plan of treatment.

DR. J. MADISON TAYLOR, of Philadelphia: I am particularly familiar with that particular grouping of movements which Dr. Babcock has endorsed. I have pursued them myself for a number of years, and have reduced it to one point, which I think is the essential one. All movements should be accompanied by forceful expiratory acts, which practically means contraction of the abdominal muscles and compression of the lower girdle. This relieves the pressure in the splanchnic vessels, and also aids in correcting the degenerative conditions which follow after hypertension is relieved and a secondary weakening needs to be corrected.

DR. A. JACOBI, of New York: I should like to ask Dr. Reed if I understood him correctly to say that enlargement of the heart developed early in these cases.

DR. REED: No, not early; later on.

DR. JACOBI: I find enlargement of the heart comparatively seldom, and for a very good reason. The changes of sclerosis are many, and they will not develop in the same arteries at the same time, nor to the same extent. When they begin in the small arteries of the kidneys we have an early Bright's disease. When they begin early in the brain we have early tendencies to apoplexy, so that it is possible for a man of forty-five or forty-eight, without any history of alcoholism or syphilis, to die of apoplexy. If the sclerotic process begins in the coronary artery the patient will develop angina very early, and perhaps may have very few symptoms anywhere else. Now in those cases in which there is sclerosis, particularly arterial, there may be a secondary enlargement of the heart on account of the increased peripheral resistance; but in the large majority of cases I do not find it at all. On the contrary, it has struck me for many, many years that such hearts are very frequently not enlarged at all. Again, I find that when I have to deal with a congenitally small heart, and we find such hearts, that they are not infrequently connected with early sclerosis. It was only a few days ago that I saw a man of fifty-five who has developed angina to such an extent that he has had twenty or twenty-five attacks of severe, excruciating pain daily and has to this very moment a very small heart. I have not the slightest doubt that his heart was always so small, that is, congenitally small. I have come to the conclusion that persons with congenitally small hearts are predisposed to sclerosis of the heart and sclerosis in general. Hot bathing, particularly outside the house, such as Turkish baths and so on, in all conditions where the heart is affected, are very dangerous. I warn my patients not to go outside the house if they want a warm bath. I have warned a few in my life not to go, to prevent their being carried out feet forwards, and I have seen two such cases that I had warned beforehand carried out that way from a Turkish bath establishment. If there is anything that is dangerous in most cases of arteriosclerosis — heart and artery sclerosis — it is digitalis. Digitalis, and very probably strophanthus also, contract the heart and arteries at one and the same time. If you deal with these remedies you contract the arteries, and the heart has a great deal more labor to perform. I look upon digitalis, when given for any length of time in large doses, as a very dangerous article. As far as digitalin is concerned, I have given that up long ago. It is not an alkaloid. It comes from the manufacturers in different shapes and characters. The only well-known alkaloid in digitalis is digitoxin. I use it very rarely. I have been acquainted with digitalin a long lime. The first preparation we had here was Garnier Lamoureux's granules, imported fifty years ago, $\frac{1}{60}$ gr. each. It was considered to be a very powerful drug. I gave doses of $\frac{1}{60}$, and after a year $\frac{1}{30}$, $\frac{1}{20}$ and $\frac{1}{10}$ of a grain, and when I found it was unreliable I gave it up altogether. I have rather relied on our common American fluid extracts. The newer preparations, digalen, for instance, I do not quite believe in. I doubt them because of the over-zealous general approval with which they have been received, as in the case of everything commercial now, and the eulogy that has been bestowed upon them. A few friends of mine who have a large hospital service and are careful observers tell me they do not see any effect from digalen. If there are any gentlemen here who are in the habit of using digalen extensively, they may probably know better. I have no reason to believe in it yet.

As far as aconite is concerned, I owe my knowledge of aconite to Dr. William H. Thomson, who spoke of it very often many years ago. Doses of five to eight drops of aconite for adults, as recommended heretofore, are no longer sufficient, in view of the fact that we have now a 10%, while formerly we had a 35%, tincture.

Dr. W. L. Dunn, of Asheville, read a paper on

TUBERCULIN THERAPY.

He directed attention to the dangers of the promiscuous use of the remedy by those who are not fitted to use it either by training or by personality.

When we speak of small doses of tuberculin, we must always remember to take into consideration what form of tuberculin we are using. A dosage of 1 mm. of bouillon filtrate is quite a different thing from 1 mm. of old tuberculin. In fact, when we stop to consider, the initial dosage of old tuberculin is not less than $\frac{1}{100}$ mgm., while that of bouillon filtrate is 1-100,000 or even 1-1,000,000 mgm.

His experience with the tuberculin patient is that there is more difficulty in keeping these patients living a proper life continuously than in case of other patients. The tuberculin patient is always ready during the first twenty-four or thirty-six hours after the injection to live right up to the line, but the next three or four days he is very apt to be lax.

DISCUSSION.

Dr. Edward R. Baldwin, of Saranac Lake, N. Y.: Dr. Dunn's paper is very conservative and sane with reference to tuberculin.

He spoke of the neglect of hygienic and dietetic measures which naturally occur after the beginning of tuberculin treatment by the physician, and the two types of physicians which he very nicely differentiated: those who are familiar with tuberculosis, familiar with the patient who is the victim; and those who are simply familiar with the disease as it appears in the books and who think that by giving a dose of tuberculin now and then they will be able to cure the disease. I believe that that is a very strong point. On the other hand, the value of tuberculin therapy, of which I am not a powerful advocate anyway, depends somewhat on the interest which the patient has in having something tangible done for him. Too often in these days the medicinal treatment of tuberculosis is a neglected matter. Offhand advice is about all that the patient gets. Just as soon as the patient gets interested in the fact that he is taking something specific he becomes easier to manage. A large number of them do know a good deal about it and they read about it. It is the business of the country just now to educate everybody about tuberculosis, and we find, unfortunately, the patients more often asking for the tuberculin treatment. But just as soon as they get under that treatment they become careful and see the physician oftener. That is an advantage obviously. Personally I cannot see any more than Dr. Dunn does how these very minute doses which are not increased have any tangible effect, as many physicians are now giving them. But if there is any one object that we are sure of in these days as to what we should try to attain in the treatment of tuberculosis, it is to diminish the sensitiveness of the patient to the poison. At least, that is the only fair theory we have to go on, but I feel it should be confessed that empiricism still prevails in the tuberculin treatment. And that brings us back to practically all forms of medication in tuberculosis in the past. The indications for tuberculin treatment of tuberculosis are capable of being interpreted in various ways. Some time ago I had occasion to write a paper in regard to the indications for tuberculin treatment in connection with diminishing the sensitiveness to tuberculin on the one hand, and increasing it on the other, the two things being contrasted. I feel that we must study tuberculin therapy along that line before we can really come to any valuable conclusion in regard to it.

Dr. C. L. Minor: I am very glad that Dr. Dunn brought out the fact that the use of tuberculin tends to make the doctor careless in watching his patient. I use tuberculin in a moderate number of cases, and I find that same tendency, and have to keep a sharp eye on myself all the time lest I relax that close watching of the case which is so important.

As to the question which Dr. Pottenger brought up as to the frequency of the visits, I think that is very important. I see my patients twice a week until I can trust them; then once a week. Certain patients I see every two weeks, and every time I regret it. I lose touch with them, and I find that my two-week patients do not get from me as much good control and management as my once-a-week or twice-a-week patients. This, I think, is very important. You are so afraid that a patient is going to accuse you of coming just to make money out of it. We ought to see them often enough to put our personality into the patients so that they will finally be able to take care of themselves.

At the business session, on June 5, a memorial of the late Dr. Frederick I. Knight, of Boston, was read. Dr. Knight was an ex-president of the association and its representative on the Executive Committee of the Congress of American Physicians and Surgeons. Dr. Knight's loss was keenly felt by the members of the association, and memorial notices by Dr. A. Coolidge, Dr. E. O. Otis and Dr. S. A. Fisk will be published later.

The following officers were elected:

President, Dr. Edward R. Baldwin, Saranac Lake, N. Y. Vice-Presidents, Dr. James M. Anders, Philadelphia; Dr. H. L. Taylor, St. Paul. Secretary and Treasurer, Dr. Guy Hinsdale, Hot Springs, Va. Representative on the Executive Committee of the Congress of the American Physicians and Surgeons, Dr. Roland G. Curtin, Philadelphia; Alternate, Dr. Thomas Darlington, New York. Member of Council, Dr. Charles E. Quimby, New York.

The association will meet in the Congress of American Physicians and Surgeons in Washington, D. C., May 3, 4, and 5, 1910.

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Book Reviews.

Green's Encyclopedia and Dictionary of Medicine and Surgery. Vol. X. Chicago: W. T. Keener & Co. 1909.

The tenth volume of this encyclopedia takes in topics between the letters T and Z, and is the last one of the series. In commenting on the various preceding volumes, we have noted the orderly arrangement of the topics and the care in their preparation. The complete work now before us in ten volumes contains nearly all the articles which originally appeared in the thirteen volumes of the Encyclopedia Medica. To these have been added many new articles on a wide diversity of topics. The contributors to this volume are a further testimony to the general excellence of the work as a whole, and we have no hesitation in recommending this dictionary and encyclopedia, well indexed, with numerous cross references, to the attention of the medical profession and those interested in the medical sciences.

Myomata of the Uterus. By Howard A. Kelly, Professor of Gynecology in the Johns Hopkins University; Gynecologist-in-chief to the Johns Hopkins Hospital; and Thomas S. Cullen, Associate Professor of Gynecology, Johns Hopkins University; Associate Gynecologist to the Johns Hopkins Hospital. Illustrated by August Horn and Hermann Becker. Philadelphia and London: W. B. Saunders Company. 1909.

This monograph of seven hundred and twenty-three large pages represents the results of the study of 1,674 cases of myomata of the uterus by the members of the gynecological staff of the Johns Hopkins Hospital during the twenty years since the opening of that hospital in 1889.

The cases were studied by means of the card catalogue system; every history and every pathological description was read and each point of importance was underscored. Then a card having on it the case number and the pathological number was made for each point, several thousand cards being used. In this manner, few important data were lost, and similar cases were grouped for analysis.

Several tons of pathological specimens of fibroids were preserved by the hospital management so that a second histological examination could be made subsequent to the date of operation, a practice that proved to be immensely valuable, notably in those cases in which sarcoma had been overlooked at the first routine examination, or in those cases in which, following a hysterectomy for a supposedly simple myoma, a sarcoma developed in the stump.

The autopsy findings are included, and much stress has been laid on the mistakes and mishaps of the operative treatment because of the useful lessons learned from failures.

The subject-matter is divided into thirty-five chapters, and there are indexes of the cases according to their gynecological numbers, their pathological numbers and their autopsy numbers, and finally, a full general index. Space will not permit of an enumeration of all of the chapters. Here are some of them to indicate the scope of the work: Parasitic uterine myomata, cervical myomata, submucous myomata, dilatation of the uterine lymphatics associated with myomata, adenomyoma of the uterus, conditions of the tubes and ovaries when uterine myomata are present, the bladder and ureters in cases of uterine myomata, the symptoms associated with uterine myomata, the effect of removal of the ovaries on uterine myomata, the different operations on uterine myomata, and the complications and results of operations.

The illustrations, three hundred and eighty-eight in number, are beautifully executed and add much to the value of the work, those illustrating the technic of myomectomy and hysteromyomectomy being especially admirable. They are mostly by August Horn and H. Becker; a few, however, are by Brödel.

The treatise is a valuable one because it represents a painstaking investigation of ample material during a series of years, combining the findings of both the pathological laboratory and the operating room in the case of a very common uterine disease.

THE BOSTON

Medical and Surgical Journal.

THURSDAY, SEPTEMBER 23, 1909

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THE LESSON OF THE FOURTH OF JULY.

The current issue of the *Journal of the American Medical Association* presents its seventh annual compilation of statistics relative to injuries received throughout the country during the celebration of the Fourth of July. This article, with the three editorials commenting upon it, makes impressive and sober reading. There have occurred this year 215 deaths directly due to injuries from various explosives on the Fourth, besides 5,091 injuries not fatal to life, but in many cases resulting in more or less seriously crippling permanent mutilation. If to this be added the economic loss from death and disability, and the incidental destruction of property by fire, the personal physical and mental suffering of the victims, and the anguish and remorse of their families not appraisable in dollars and cents, some estimate may be made of the servile tax paid annually by this country in celebration of its day of independence. Other lessons may be drawn from these figures. Of the 215 deaths, 125 were caused by tetanus. There were 150 cases of tetanus altogether, of which 130 were due to blank cartridge wounds. This means that tetanus is by far the most frequent and certain cause of Fourth of July deaths, and that the blank cartridge is by far the most frequent cause of tetanus. Probably a large amount even of this fatality might be prevented by the more systematic and persistent prophylactic use of antitetanic serum.

Obviously these facts represent a condition of things which calls for remedial action, a not inconsiderable portion of the absolutely needless and preventable human suffering which as has recently been well said, it is one of the peculiar duties and privileges of the medical profession to combat. Something has already been done in this direction; much more remains to do. Our contemporary editorially iterates three valuable suggestions: First, the progressive restriction by municipal statute of the use of explosives and the substitution of pageants, parades, athletic games and other safer, saner, more genuinely patriotic modes of public celebration; second, the absolute prohibition of the sale and use of blank-cartridge pistols; third, the routine use by physicians of tetanus antitoxin, in addition to radical surgical procedure, as a preventive as well as curative, in all cases of blank-cartridge or punctured wounds. To these we would add that fundamental element in all reform, popular education, by direct presentation to parents in public lecture courses and to children, among whom most of the casualties occur, as part of their school teaching, of the facts relative to the criminally foolish annual destruction of life, limb, property and happiness by our present methods of celebrating the Fourth of July.

AMERICAN NERVES.

What Prof. Hugo Münsterberg writes is usually worth reading; his recent article in the *Metropolitan Magazine* regarding American nerves is particularly sane and encouraging. He points out that, after all, our nerves are in pretty good shape. What is at fault is our control of them. We worry ourselves into a state of neurasthenophobia, and then the bugaboo of nervous prostration pounces upon us. If we would only eat and sleep and do the day's work, the worst would probably never happen. It is the self-controlled life that we need, rather than the simple life. Especially interesting, also, are his remarks about physical exercise and the large amount of it some people think they require. He says that exercise in moderation is a beneficial and valuable stimulus, but that taken in excess it becomes a stimulant and leads to the formation of a habit, precisely like the use of alcohol or coffee. Many enthusiasts acquire such a craving for physical exercise that they become unfit for anything else. In this connection, it is worth while to compare some of the remarks made by eminent English physicians at the meeting of the British Medical Association last July in regard to athleticism in schools. All agree in regarding athletic games as an important factor in the physical and moral education of youth, but emphasize at the same time the great care that must be taken to prevent serious damage to the individual from over-exertion and to avoid undue exaltation of the athletic ideal. The conclusion of the whole matter, from their point of view, as from Professor Münsterberg's, seems to be that wholesome moderation and balance in physical and nervous activity is the essential of the healthy, rational life.

THE STATUS OF OLEOMARGARINE.

There is said to be considerable discussion in Washington over the proposed new law relative to the sale of oleomargarine, which is to be brought before the next Congress. The present law provides that colored oleomargarine, which resembles butter, shall be taxed ten cents a pound, whereas uncolored oleomargarine is taxed only a quarter of a cent a pound. The new law substitutes a uniform tax of two cents a pound on all oleomargarine, with a strict labeling requirement making it impossible for oleomargarine to be mistaken or fraudulently sold for butter. This change seems just, since there appears no adequate economic reason for discriminating between plain and colored oleomargarine. Medically the public does not need protection against oleomargarine, for it is entirely healthful when made of pure materials, though it has not so high a food value as butter. The protection required is solely financial, that the poor consumer may not unwittingly purchase the cheaper product at the price of the more expensive. This the new law seems to furnish, and its passage ought to promote the establishment of the much-maligned oleomargarine in the position it deserves as an inexpensive, wholesome substitute for the luxury, butter.

MEDICAL NOTES.

Cholera in Holland and Belgium. — Dispatches from Rotterdam and Amsterdam state that there have been no new cases of Asiatic cholera in those ports during the past week, and that the disease is considered suppressed in Holland. Simultaneous report from Belgium, however, brings news that a case of cholera has broken out in Athens, near Brussels, and that stringent measures have been adopted to prevent spread of the infection.

Public Drinking Cups in Kansas. — Probably few physicians ever travel in a railroad train without considering the possibilities of infection that lurk in the public drinking-cup, the conspicuous position of which in the car is an invitation to its needless and heedless use by all sorts and conditions of people. Indeed, such cups are possibly responsible for the spread of much preventable disease, — syphilis, tuberculosis, diphtheria and minor oral infections. It is encouraging to learn that in Kansas a state ordinance, which went into effect on Sept. 1 of this year, now forbids the presence of public cups in any train, railroad station or school. Those who wish to drink must carry their own cups. This action, which was probably expedited on account of the large numbers of consumptives traveling through the state, goes far towards removing the unsanitary use of public drinking utensils, and should be speedily followed by other communities.

BOSTON AND NEW ENGLAND.

Acute Infectious Diseases in Boston. — For the week ending at noon, Sept. 14, 1909, there were reported to the Board of Health of Boston the following cases of acute infectious diseases: Diphtheria 29, scarlatina 31, typhoid fever 43, measles 12, smallpox 0, tuberculosis 53.

The death-rate of the reported deaths for the week ending Sept. 14, 1909, was 15.99.

Boston Mortality Statistics. — The total number of deaths reported to the Board of Health for the week ending Saturday, noon, Sept. 18, 1909, was 177, against 221 the corresponding week of last year, showing a decrease of 44 deaths and making the death-rate for the week 14.81. Of this number 92 were males and 85 were females; 173 were white and 4 colored; 122 were born in the United States, 54 in foreign countries and 1 unknown; 45 were of American parentage, 102 of foreign parentage and 30 unknown. The number of cases and deaths from infectious diseases reported this week is as follows: Diphtheria, 42 cases and 1 death; scarlatina, 31 cases and 0 deaths; typhoid fever, 33 cases and 3 deaths; measles, 8 cases and 1 death; tuberculosis, 46 cases and 11 deaths; smallpox, 1 case and 0 deaths. The deaths from pneumonia were 13, whooping cough 1, heart disease 9, bronchitis 5 and marasmus 2. There were 8 deaths from violent causes. The number of children who died under one year was 61; the number under five years 74. The number of persons who died over sixty years of age was 41. The deaths in public institutions were 63.

Cerebrospinal meningitis: 2 cases.

Of the above the following were non-residents: Consumption: 2 cases. Diphtheria: 1 death.

Deducting deaths of non-residents, the total is 159. The corrected death-rate is then 13.31.

Bequest to Salem, Mass., Hospital. — Through the death of Mrs. Mary Bertram, a large estate left by her husband becomes available.

According to the will, on the death of the widow a sum which now amounts to $120,000 goes to the Salem, Mass., Hospital.

NEW YORK.

REMOVAL OF STOMACH. — Dr. William F. Campbell, at the Bushwick Hospital, Brooklyn, recently removed the entire stomach in an adult male patient on account of gastric cancer. The operation was completely successful in its immediate results.

SOCIETY OF THE WOMEN'S CLINIC. — The incorporation of a body to be known as the Society of the Women's Clinic, the object of which is to provide free medical and surgical treatment for poor and deserving women, was approved by Supreme Court Justice Guy on Sept. 17.

BEQUESTS TO HOSPITAL. — The late Miss Mary Rhinelander King, of New York and Long Island, who died on Aug. 13, left the bulk of her estate, valued at over $1,000,000, to religious and charitable objects. Among the bequests in her will are $5,000 to Roosevelt Hospital, New York, to endow a bid to be named in honor of Dr. Francis Delafield, and $2,000 to the Jamaica Hospital.

DIPHTHERIA AMONG NURSES. — Three of the pupils of the training school for nurses of Bellevue Hospital are reported to be suffering from diphtheria and have been removed to the Minturn Hospital for contagious diseases. As they were all in attendance upon an observation ward for children, and as several of the inmates of this ward proved to have diphtheria, there would seem to be no question that they contracted the disease from these patients.

POSSIBLE CLOSING OF INFANTS' MILK DEPOT. — Since the announcement was made that the downtown infants' milk depots of the New York Milk Committee (Association for Improving the Condition of the Poor) must be closed because of a lack of funds, the six physicians at these depots have made a public protest against such closure. In the course of this they say: "As physicians connected with these stations, because of interest and serving without compensation, we protest against the closing of the depots. The discontinuance of milk distribution will certainly mean death to many infants, and will cause distress to many others. Because of our personal knowledge of what these depots mean to the mothers and babies of the poor, we appeal to the newspapers and to the public to uphold the hands of the New York Milk Committee, which maintains these depots. We appeal for an enlargement of this work instead of curtailment; for more depots instead of the closing of those now in existence."

LABOR DAY DINNER. — At the Labor Day dinner, which was attended by nearly eight hundred persons, the principal speaker was Homer Folks, secretary of the State Charities Aid Association, who took as his subject, "The Fight of the Labor Unions against Tuberculosis." Alluding to the alleged brilliant discovery of Dr. Cook, he spoke of the much greater practical benefit to mankind involved in the discovery of the bacillus tuberculosus twenty-six years ago by Dr. Robert Koch. The speaker mentioned the saving of many lives which had already resulted from the establishment by the labor unions of tuberculosis camps and sanitariums, praised the work as in every way admirable, and urged that it should be more widely extended.

MORTALITY STATISTICS. — The weekly reports of the Health Department show that during the month of August the mortality in the city represented an annual death-rate of 15.77, as against 15.87 in July and 15.99 in August, 1908. Among the diseases in which there was a diminished fatality were the following: The weekly average of deaths from measles declined from 20.75 in July to 13.25 in August; the weekly average from scarlet fever, from 8 to 4.75; from diphtheria and croup, from 29 to 14.75; from epidemic cerebrospinal meningitis, from 8.75 to 7.75; from pulmonary tuberculosis, from 147.75 to 144.75; from pneumonia, from 46.25 to 35.5; from bronchopneumonia, from 68.25 to 59.5; from cancer, from 68 to 63; from Bright's disease and acute nephritis, from 87 to 85.25; and from cirrhosis of the liver, from 18.25 to 16.75. Among the diseases in which there was an augmented mortality were the following: The weekly average of deaths from typhoid fever increased from 9.5 to 13; from whooping cough, from 10.5 to 12.5; from acute bronchitis, from 9 to 11; from apoplexy, congestion and softening of the brain, from 16 to 22.75; from organic heart diseases, from 101.5 to 106; from diarrheal diseases, from 280.25 to 320; and from diarrheals in children under five years of age, from 266.25 to 302.75. It will thus be seen that, contrary to the usual condition of affairs, the diarrheal mortality in infants and young children was greater in August than in July. The maximum number of deaths from this cause is commonly reached about the third week of July; whereas, in the present year, it was not reached till the second week in August, when these deaths amounted to 353, as against 333, the highest number in any one week during July. The corrected death-rate for the month, excluding non-residents and infants under one week old, was 14.85.

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Current Literature.

NEW YORK MEDICAL JOURNAL.

SEPT. 4, 1909.

1. GRAHAM, C., AND GUTHRIE, D. *The Value of the Test Meal in Gastric Diagnosis.*
2. KNOPF, S. A. *Tuberculosis and Congestion.*
3. SAJOUS, C. E. DE M. *True versus False Opotherapy.*
4. WHITE, J. B. *A Brief Consideration of the Contagious Theory of Tuberculosis.*
5. *GRIFFITH, J. P. C. *The So-Called Thymus Death.*
6. LYNCH, J. M. *Report of a Case of Prolapse of the Uterus, Vagina and Rectum.*
7. FULLER, W. *Primary Tuberculosis of the Mammary Gland.*
8. STERN, H. *Astasia-Abasia.*
9. MURRAY, D. H. *Necessity for Routine Examination of the Rectum in Intestinal Diseases; Illustrative Cases.*
10. JOHNSTON, R. H. *Esophagoscopy in the Removal of Foreign Bodies.*
11. MURTAGH, J. A. *A Simple Method for the Treatment of Suppurating Bubo.*

5. Griffith enumerates and discusses the various theories which have been advanced to explain sudden death from enlarged thymus. They fall under four general heads, viz.: (1) Hyperthymization of the blood — a toxic condition; (2) defective secretion by the thymus with consequent constitutional disturbances; (3) a neurosis, of which enlargement of the thymus is an anatomical manifestation; (4) pressure, the thymus causing death mechanically by strangulation or by reflex inhibition of the heart.

The writer mentions a family of nine, all of whom died suddenly in childhood with almost identical symptoms; autopsy was performed on one of them, and an enlarged thymus was the only thing found which could explain the death. [L. D. C.]

SEPT. 11, 1909.

1. OGILVY, C. *Inflammation of the Knee-Joint, with Special Reference to Symptomatology and Diagnosis.*
2. LEVY, R. *Laryngeal Tuberculosis.*
3. BEACH, W. M. *Treatment of Pruritus Ani.*
4. GARRISON, F. H. *Physiology and the Second Law of Thermodynamics.*
5. *WILE, I. S. *Blood Examination in the Presence of Gangrene.*
6. SAVITZ, S. A. *Complication of Fracture of the Neck of the Femur in a Multipara.*
7. *LEROY, B. R. *Do the Saprophytes, So-Called, Produce Toxines which Have Selective Attraction for the Brain and Nerve Tissue and Thus Cause the Idiopathic Diseases of These Structures?*
8. IRWELL, L. *Is Tuberculosis Decreasing in Cities of between Three Hundred Thousand and Half a Million Inhabitants?*

5. Wile, commenting on a recent article by Coons and Bratton,[1] warns us not to be guided by the blood examination alone in deciding whether to operate or not in acute appendicitis. Gibson's chart, he says, graphically indicating the disproportion between the total leucocyte count and the relative percentage of polymorphonuclear neutrophiles, is serviceable for purposes of prognosis and diagnosis of the general systemic effects of toxic absorption. As an indicator of the presence or absence of gangrene, however, it is valueless.

7. LeRoy calls attention to the disagreeable personal odor commonly observed in epilepsy, dementia paralytica and other diseases of the nervous system, and suggests that many " idiopathic " nervous and mental disorders may be caused by absorbed toxines generated by smegma bacilli and other spore-bearing saprophytes. In a small number of cases he has obtained excellent results by thorough scrubbing of the skin and the use of strong antiseptic vaginal douches. [L. D. C.]

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION.

SEPT. 11, 1909.

1. *MYGIND, H. *Diagnosis of Otogenic Meningitis.*
2. MANNING, W. J. *Disposal of Sputum.*
3. BABCOCK, W. W. *Surgical Treatment of Certain Deformities of the Jaw associated with Malocclusion of the Teeth.*
4. ABT, S. A. *Infantile Eczema.*
5. *CHURCHILL, F. S. *The Serum Treatment of Epidemic Meningitis.*
6. McFARLAND, J., AND WESTON, P. G. *Hemolysis of Human and Rabbit Erythrocytes by Crotalus Venom.*
7. GOLDTHWAIT, J. E. *Some Points of Contact between Neurology and Orthopedic Surgery.*
8. *FRAZIER, C. H. *Surgical Aspects of Cerebral Decompression. With Remarks on the Etiology and Certain Manifestations of Papilledema.*

1. Mygind discusses otogenic meningitis and does not agree with the popular idea that it is caused by a retention of pus in the middle ear, but more by the nature of the suppuration combined with the anatomic relations of the petrous portion of the temporal bone and the mastoid process. There is but one trustworthy objective sign of this disease, viz., turbidity of the cerebrospinal fluid, emptied by lumbar puncture. The disease is an acute febrile one with diffuse brain symptoms, but focal symptoms are frequent, namely, nystagmus, paralysis of the facial nerve, Jacksonian epilepsy and hemiplegia, irregularity of pupil action, rigidity of the neck and Kernig's sign. Meningitic symptoms rarely occur sooner than a week after the onset of an acute suppurative process in the middle ear. True meningitis is differentiated from meningismus, so common in the child, by its more acute course and the fact that otogenic meningitis rarely occurs in infants under one year. Lumbar puncture should always be done for diagnostic purposes, but has no therapeutic value.

5. Churchill writes on the serum treatment of epidemic meningitis and gives in detail the technic. He divides meningitis into two main groups, the tuberculous and the non-tuberculous, and states that the latter is due to invasion by a great variety of organisms, but that 80% are due to the diplococcus of Weichselbaum. It is with this type and this alone that the Flexner serum is effective. It is useless in all other forms. The general practitioner should know this. He quotes Flexner's review of six hundred cases treated by the serum: " It is our belief that the analyses of histories of cases of epidemic meningitis which have been presented furnish convincing proof that the anti-meningitis serum, when used by the subdural method of injection, in suitable doses and at proper intervals, is capable of reducing the period of illness; of preventing, in a large measure, the chronic lesions and types of the infection; of bringing about complete restoration of health in all but a small number of cases, thus lessening the serious, deforming and permanent consequences of meningitis, and of greatly diminishing the fatalities of the disease." This statement is in accordance with the experience of Churchill and others. Bacteriologically the giving of the serum produces a phagocytosis of the diplococci which quickly disappear from the fluid. Early lumbar puncture is imperative. If the fluid is cloudy, give 30 ccm. of the serum before getting the bacteriological report — of course after withdrawal of a like amount of fluid. If the diplococcus is found, repeat the serum for three or four consecutive days. After the first series, wait two or three days and repeat if necessary. It is useless to give the serum subcutaneously.

8. Frazier emphasizes the importance of the closest coöperation between the ophthalmic and neurologic specialist and the surgeon in the diagnosis of all brain diseases, before, during and after operation, both as a means of accuracy and the avoidance of further surgical blunders.

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[1] N. Y. Med. Jour., July 31, 1909.

In order to determine whether or not increased intracranial tension was the chief cause of papilledema, a series of experiments were done by Drs. de Schweinitz, Sweet, Prince, Holloway and Frazier, on dogs, and detailed observations made on the disk. They conclude: "Increase of intracranial tension by artificial means up to a point attended with profound disturbance of the circulatory and respiratory functions was in no instance attended by development of a papilledema, except in two instances not recorded, and in these there was no marked swelling of the disk, but only a slight edema and filling in of the center of the disks. The degree of intracranial tension artifically produced in these experiments exceeded by far that which obtains in the vast majority of these lesions of which papilledema is a clinical manifestation. Therefore, in the etiology of papilledema, some factor or factors other than increased intracranial tension play an important part. Therefore, whatever other indications there may be for decompression in cases of intracranial trauma, it would appear from these, at least, that papilledema alone cannot be regarded as one." The comparative infrequency of papilledema minimizes its significance as a diagnostic sign and as a means of determining the degree of intracranial tension and the necessity of relieving it by surgical means. [E. H. R.]

The Lancet.

Aug. 21, 1909.

1. *MacLeod, J. M. H. *The Present State of Our Knowledge of the Bacteriology and Pathological Anatomy of Leprosy.*
2. Keith, A. *Malformations of the Heart.*
3. *Gossage, A. M. *The Early Signs of Rheumatism of the Heart.*
4. Bonney, V. *Five Cases of Tumor of the Large Intestines Simulating Disease of the Uterus or Uterine Appendages.*
5. Don, A. *A Case of Henoch's Purpura Associated with Angioneurotic Edema.*
6. *Castellani, A. *Anti-Typhoid Vaccination with Attenuated Live Cultures.*
7. *Strong, R. M. *The Results of the Use of Fibrolysin in Cases of Fibrous Contraction.*
8. Brehaut, B. A. *An Unusual Type of Stomatitis in an Infant.*
9. Hirsch, C. T. W. *Motoring Notes.*

1. MacLeod discusses the present status of our knowledge of the bacteriology and pathologic anatomy of leprosy. He first takes up the lepra bacillus, briefly going over its morphology, classification and cultivation. At the present time the only means of cultivation has been by introducing the juice of a recent nodule into the yolk of a fresh egg. The hole in the shell is closed up with collodion and the egg incubated at 37°. Out of twenty-six eggs, a growth of lepra bacillus was obtained twice. The mode of invasion is probably through the nasal mucosa and upper respiratory tract. He discusses the relation of the maculo-anesthetic and the nodular type of the disease. Although the cause of these two different types has not been definitely decided, he believes that it is probably due to a difference in the virulence of the bacilli. He goes over the histology and pathology of the lesions produced in the various tissues of the body.

3. Gossage, discussing the early signs of rheumatism of the heart, is of opinion that the systolic murmur heard in the course of an attack of acute articular rheumatism is not due to any damage done the valves, but to a dilatation of the auriculo-ventricular ring on account of a myocardial weakness caused by the toxins formed in the course of the disease. He believes that an actual myocarditis is rare. A diastolic murmur sometimes heard in association with the systolic murmur he believes is due to an aspiration of blood from the auricle into the dilating ventricle. Murmurs due to actual damage done to valves can come only late in the course of the disease when the valves have become thickened and contracted.

6. Castellani, in a short paper, describes the preparation of a live typhoid vaccine and the effects of vaccination with this vaccine in men and in animals. He believes that inoculation of human subjects with a live typhoid vaccine, using a non-virulent broth culture heated at 50° C., is not dangerous and that it induces a higher degree of immunization than the ordinary vaccines consisting of dead cultures. His routine method in anti-typhoid vaccination is the inoculation of the patient with ½ ccm. of dead vaccine followed in a week's time by the inoculation of 1 ccm. of live vaccine. The number of cases which he reports is too small to be conclusive,

7. Strong describes his results from the use of fibrolysin in cases of fibrous contraction. Among the cases he describes are the following: Stricture of the rectum, Dupuytren's contraction, chronic rheumatoid arthritis, stricture of the urethra, gastric adhesion, and fibrous adhesions of the knee-joint. He injects the fibrolysin in 2 ccm. doses in the gluteal region. He emphasizes the point that the drug alone will accomplish nothing, but must be accompanied by massage, dilatation and other methods to take advantage of the softening of the fibrous tissue, which is caused by the fibrolysin. [J. B. H.]

Deutsche Medizinische Wochenschrift, No. 32.

Aug. 12, 1909.

1. Finkelstein, H. *The Summer Acme of Infant Mortality.*
2. Braun, W., and Boruttau, H. *The Question of Death from Ileus and the Treatment of Ileus.*
3. Molnár, B. *The Analysis of the Mechanism of Stimulation and Inhibition of the Secretion of Succus Entericus.*
4. Schlimpert, H. *Observations on the Wassermann Reaction.*
5. Wechselmann. *Satin-Wood Dermatitis; an Anaphylaxis of the Skin.*
6. Kulenkamp, T. *The Physical Therapy of Pulmonary Edema.*
7. Bünting. *A Case of Infantile Myxedema.*
8. Auerbach, S. *Influencing the Opinion of Patients with Nerve Injuries due to Accident.*
9. Scheffzek. *Repeated Suprapubic Cæsarian Section in the Same Woman.*
10. *Hesse, F. *The Value of Retinal Examination in the Differential Diagnosis between Pernicious and Severe Secondary Anemias.*
11. Heschelin, A. *A Rare Case of Foreign Bodies in the Esophagus and the Trachea.*
12. Guttman, W. *Practical Ear Specula.*
13. v. Leliwa, F. *The Typhoid Epidemic in Altwasser.*

10. Hesse, from a review of the literature and a study of cases, comes to the conclusion that hemorrhage in the retina is very common in cases of pernicious anemia. Also, it is very uncommon in cases of severe secondary anemia. If, after repeated examinations, no hemorrhages on the retina are seen, a hidden malignant growth must be expected. [C. F., Jr.]

Münchener Medizinische Wochenschrift. No. 34.

Aug. 24, 1909.

1. *Küstner, O. *The Extraperitoneal Cæsarian Section; Technic and Indications.*
2. *Anton, G. *The Treatment of Optic Neuritis due to Sugar-Loaf Skull.*
3. Levy, E., and Hamm, A. *Combined Active-Passive Protective Inoculation and Treatment in Puerperal Fever.*
4. Birnbaum, R. *The Prognosis and Treatment of Puerperal Fever.*
5. Schnöller, A. *Intrafocal Use of Marmorek's Tuberculosis Serum.*
6. *Plehn. *The Diagnosis of Latent Malaria.*
7. Spiro. *The Treatment of Ophthalmoblenorrhea in the Newborn.*
8. Kühl, W. *A New Way of Holding the Head during Narcosis.*
9. Näcke, P. *On Pollutio Interrupta.*
10. Raab. *The Supervision of Infants in Swabia in the Year 1908.*
11. Tegeler. *Bullet-Wound of the Aorta with a Bullet walled off in a Valve of the Heart.*
12. Ziegenspeck, R. *The Results of a Hysteropexy with Castration.*
13. Steiner, L. *A Simple Apparatus for Float-Tests.*

14. JAKS, A. *Forceps for Obstetrical Rotation.*
15. LINZ, O. *The Turpentine-Guaiac Test for Blood.*

1. Küstner discusses different methods of performing Cæsarean section with special reference to the extraperitoneal route, and he describes his technic for the latter operation. For fourteen cases are tabulated the measurements of the pelvis, previous pregnancies, duration and stage of labor, condition of genital organs, indications for operation, and technic and results of operation. The technic recommended for the extraperitoneal operation is as follows: The position of the bladder having been shown to vary in pregnancy, it should be filled with water and located. Filling the bladder helps also by pushing up the fold of peritoneum above it. The incision should be longitudinal through the rectus, a few centimeters from the linea alba. When the bladder lies to the right, the left side should be chosen for the incision, and *vice versa*. In median positions of the bladder, the incision should be on the side nearest the back of the head in order to facilitate delivery, which by this route is not always easy. The writer has devised special forceps to overcome the difficulties. In the Breslau clinics, since the introduction of these methods, the Porro operation and craniotomy have not once been performed on living children. The writer is not enthusiastic over symphyseotomy. In clean cases, he thinks the transperitoneal method has no striking advantage over the open peritoneal operation. Where there is suspicion of sepsis, he prefers the extra- to the transperitoneal route and he does not hesitate to recommend the extra-peritoneal operation even when sepsis is manifest and other methods of Cæsarean section distinctly contraindicated.

2. Anton reports a case of sugar-loaf deformity of the skull in an adult with resulting failure of vision, dizziness and optic neuritis, all of which symptoms were much relieved by removal of a portion of the top of the skull. The veins of the dura at operation were found to be engorged, and fluid removed by aspiration from the ventricles was under abnormal pressure.

6. The writer distinguishes three phases of latent malaria, the first lasting from the time of infection until the onset of fever; the second is the afebrile stage between the paroxysms, and the third phase begins after disappearance of parasites and stippling from the blood. The first phase ordinarily is short, but in those taking prophylactic treatment it may last many months and the fever may not come at all. The symptoms are nervousness and digestive disturbances associated with more or less anemia. This symptom complex was formerly believed to be a manifestation of acclimatization. In this stage, the red cells show a form of stippling peculiar to parasitic diseases. It persists until the beginning of the third stage. Particularly after energetic quinine treatment, pigment from the red cells may be found in the leucocytes, but it is seen most frequently in the large mononuclear basophile. Plehn lays special stress on the importance of urobilinuria for the diagnosis of latent malaria in the third phase. It may begin in the first phase, and in the later stages it is constant until after the beginning of the third phase, when it may be the only sign of the disease. When urobilinuria from complicating diseases can be ruled out, the writer believes that, following known malarial infection, it indicates the persistence of degenerative changes of the organs. He leaves the question to be settled by later investigation as to whether recurrences of malaria ever take place after the disappearance of urobilinuria. [G. C. S.]

BERLINER KLINISCHE WOCHENSCHRIFT. NO. 35.
AUG. 30, 1909.

1. MAGNUS-LEVY. *Bernhard Naunyn.*
2. ONODI, A. *The Surgical Treatment of Tuberculosis of the Nasal Septum.*
3. *PIAZZA, A. *A Case of Brain Tumor.*
4. *ALBRICHT, M. *Total Extirpation of the Right and Partial Resection of the Left Upper Jaw.*
5. HESCHELIN, A., AND SCHAPIRO, E. *Central Dislocation of the Hip-Joint.*
6. *DE BESCHE, A. *Perilous Dyspnea with Collapse after Serum Injection.*
7. VAN DEN BERGH, A. A. H. *Hemolysis in Paroxysmal Hemoglobinuria.* (Second communication.)
8. DE DOMINICIS, A. *New Spectra of the Blood.*
9. FINKELSTEIN, J. A. *The Technic of the Wassermann Reaction.*
10. HESSE, E. *Observations on Asiatic Cholera in the Years 1908 to 1909 according to the Data of the Obuchow City Hospital for Men in St. Petersburg.*

3. In a clinical and pathologic study, Piazza reports a case of small round-cell sarcoma involving the third ventricle, right optic thalamus and corpora quadrigemina. He analyzes the symptoms and signs, discusses the differential diagnosis, and collects from the literature several similar cases.

4. Albricht describes, with admirable illustrations, an extensive operation for giant-cell sarcoma of the upper jaw. The cosmetic and functional results were excellent, and the patient has remained free from recurrence for over two years.

6. The author describes a case of unusual idiopathic susceptibility to diphtheria antitoxin. [R. M. G.]

REVUE DE MÉDÉCINE.
AUGUST, 1909.

1. *HALBRON, P. *The Bronchial Lesions of Pulmonary Tuberculosis.*
2. *ROCH, M. *Circulatory Hippus.*
3. *COTONI, L. *Recent Work on the Parathyroid Glands.*
4. *ROCH, M., AND CAMPICHE, L. *The Co-existance of Respiratory Hippus and the So-Called Paradoxical Pulse.*
5. *LÉPINE, R. *The Frequency of Diabetes Mellitus in Different Parts of the World and Its Increase.*

1. Halbron declares that the large bronchi are very rarely attacked by the tubercle bacillus, and macroscopic ulcerations are practically never seen. The bronchi may be the seat of secondary infection, in which case there is a thickening of the wall without any change in the epithelium, which seems to act as a barrier against infection. Although the epithelium of the small bronchi is exposed to infection, both from within, because of contact with the caseous material which is being thrown off, and from without, where tubercles may be in the closest proximity, it remains intact, even after the rest of the walls have been necrosed and caseation has taken place. In other words, caseation of the bronchi occurs only when they are situated in the center of a disease process. Even then the epithelium may remain intact alone, thus causing bronchial dilatations. New-formed cuboid epithelium is found in the neighborhood of the tubercular processes, which in its turn acts as a protective agent. But when, at last, the epithelium yields, is ulcerated, undergoes necrosis and desquamation, the resistance is removed and caseation, fibroid changes and calcification all may take place. The bronchi, contrary to the old idea, do not act as agents for the spread of the process, but seem to resist its diffusion.

2. Hippus, that phenomenon of rhythmic contraction and dilatation of the pupil, without regard to light or accomodation, may be either respiratory or circulatory. In the first instance, there is dilatation of the pupil synchronous with inspiration; in the latter, contraction, with systole. Roch has found that an increase of blood tension brings about myosis and *vice versa.* He cites a case of an alcoholic with marked arteriosclerosis and bradycardia who showed pronounced contraction of the pupil with each systole. This was found here, as elsewhere, associated with the capillary pulse.

3. In a very exhaustive résumé of the work done on the parathyroid glands, Cotoni shows that embryologically, anatomically and histologically they are distinct from the thyroid glands. Chemical analysis has shown that they contain fat, glycogen, a colloid substance and iodine in larger amounts than in the thyroid. It is well known that the removal of the thyroid may, if the operation is complete enough, cause myxedema. In the same way, tetany may be brought about by complete parathyroidectomy. This is evidenced by vomiting, bloody diarrhea, tachycardia, dyspnea and repeated tonic muscular spasms. The function of the glands is still much in doubt. By some, it is claimed that there is no regular function; by others that they are dependent on and supplementary

to the thyroid gland, and lastly, by a few, that their function is absolutely independent from the neighboring gland. Experiments by grafts of the parathyroids and organotherapy practised in certain cases of tetany tend to uphold the latter belief. The following processes have been attributed to defective secretion of the parathyroids: Basedow's disease, epilepsy, convulsions of childhood, Parkinson's disease, puerperal eclampsia and tetany. Where the truth of these matters lies is still in doubt. But, as regards the last, it is well to bear in mind that hemorrhages into the parathyroids are found in many cases of infantile tetany. Doubtless this importance of the glands has been overestimated, as is usual when investigations are started upon a new field. But, at least, the evidence is sufficient to indicate the decapsulation operation on the thyroid, since in that way the parathyroids are left and a certain number of post-operative convulsions obviated.

4. Hippus is never found unassociated with the paradoxical pulse; hence it is a rarer phenomenon. Roch and Campiche cite two cases in which the two signs were present; but since only one came to autopsy, they devote their entire attention to that. The classical causes for these signs were absent in that case, namely, aortic aneurism and adhesive pericarditis. Autopsy revealed a mitral regurgitation and dilatation of the heart. The systolic murmur heard during life, loudest on inspiration and associated with dilatation of the pupil, is explained by them by the weakness of the heart wall in relation to variations in respiratory pressure.

5. Diabetes is a disease of the rich more than of the poor, but is more frequently found, judging from mortality statistics, in the country than in the cities. In England and America, but not in France, the death-rate from diabetes mellitus is increasing. [L. H. S.]

Revue de Chirurgie.

August, 1909.

1. *Vincent, E. *The Rational Treatment of Fractures of the Base of the Cranium.*
2. *Cantonnet, A. *Partial Optic Atrophy in Fractures of the Base of the Cranium.*
3. Doche, J. *Indications and Operative Results in Penetrating Wounds of the Abdomen by Small Projectiles in War.*
4. Patel, M., and Chalier, A., *The Tumors of the Spermatic Cord.* (Conclusion.)
5. Piquand, G. *Subphrenic Abscesses.* (Continuation.)

1. From a careful literary and clinical study, Vincent undertakes to formulate the indications for treatment of fractures of the base of the cranium, and reports two operative cases, one successful, the other fatal. His conclusions are as follows:

(*a*) The majority of fractures of the base communicate with the exterior through an opening into one of the facial cavities or through the petrous bone; hence their frequent infection.

(*b*) The classic treatment by irrigation or insufflation of the cavities is not only inadequate, but often carries infection; direct intervention for disinfection of the site of fracture is dangerous for the patient.

(*c*) The modern treatment is to intervene by trephining, followed by meningeal drainage and even temporary hemicraniectomy on the appearance of the first manifestations of meningo-encephalitis; but it is then almost always too late to check the fatal march of infection.

(*d*) The rational treatment is that which permits of forestalling the development of meningeal accidents; it is secured by primary trephining with permanent opening of the dura mater, permitting the escape of the cerebrospinal fluid; this provides drainage and thereby prevents spreading infection. It is the application of a therapeutic rule which has been proved to apply to all other serous cavities.

(*e*) Repeated lumbar puncture seems to give good results in fractures of the cranium, acting by elimination of the toxic products accumulated in the cerebrospinal fluid. Cushing's subtemporal trephining acts in the same way, but less efficiently than lumbar puncture, although the author contemplated the decompressive effect of trepining only as susceptible of preventing the intracranial complications following fractures of the base.

2. From analysis of two hundred and eight cases of unilateral and seventeen of bilateral optic lesion following fracture of the base of the cranium, and from discussion of two similar personal cases, Cantonnet reaches the following conclusions:

(*a*) Cranial trauma, though of slight violence, may, by its recoil on the antero-lateral region of the head, produce, even without giving rise to the grave classic symptoms of fracture of the base, an injury of the optic nerve on the same side, on both sides, sometimes even on the opposite side alone. This injury is produced most often, but not always, by a fissure of the optic canal. Hematoma of the ganglia of the optic nerve most often accompanies fissure of the canal, but fissure may occur without hematoma and *vice versa.*

(*b*) Total and final loss of vision on the side of the injured nerve is very frequent; it may be produced at the moment of the accident, or may develop progressively.

(*c*) Vision may be lost at the moment of injury and subsequently be re-established with complete return to normal

(*d*) There may finally be produced a definite but partial atrophy of the optic nerve, whether with incomplete recovery of vision lost at the time of accident, or with ultimate degeneration of vision at the time unimpaired.

(*e*) All these facts indicate that the state of vision in fractures of the base of the cranium ought to receive attention; that the visual prognosis of this sort of fracture is often very grave, but often less grave than would be thought at first; finally, that it is sometimes needful to wait a considerable time before being able to pronounce definitely on the visual condition. [R. M. G.]

Bulletino delle Scienze Mediche.

July, 1909.

1. Silvagni, L. *Radiologic Researches on the Evacuation of the Stomach in Gastro-Enterostomy.*
2. *Pazzi, M. *From the Physio-Pathologic Frontiers of Pregnancy to the Ultra-Confines of Oncology and of Teratology.*
3. Bonazzi, A. *The Will of Hieronymus Mercurialis.*

2. In a theoretical disquisition, Pazzi discusses the physiologic and pathologic problems of placental exchange between mother and fetus, the origin of placental toxemias and the histopathology of chorio-epithelioma. He concludes, with de Bovis, that there is a genuine conflict between the maternal and fetal elements, as a result of which the latter may become ingraft on the former in a malignant character. [R. M. G.]

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Obituary.

THOMAS H. GAGE, M.D.

Dr. Thomas H. Gage was born in Waterford, Me., May 22, 1826. He was educated at Bridgton Academy, but the death of his father, Dr. Leander Gage, when he was but sixteen years old, prevented further study until he entered the Harvard Medical School, in 1849. Immediately after graduation, in 1852, he received the appointment of House Surgeon at the Massachusetts General Hospital and served for one year. He then began the practice of medicine at Sterling, Mass., as the partner of Dr. Kendall, and remained there until 1857, when he removed to Worcester. Here, for over fifty years, he has occupied a very prominent position in the medical profession of the city. He enjoyed a large private practice and was frequently called as a consultant. He had held all the offices in the Worcester District Medical Society; had been a Councillor in The Massachusetts Medical Society for forty years; delivered the annual oration before that society in 1880, and was its president in 1886 and 1887, the first Worcester physician to be honored with that office. He had been connected with the City Hospital from the time of its organization, as member of the visiting staff from 1871 to 1879; of the consulting staff from 1879 to 1883; a trustee from 1883 to 1902, and president of the board of trustees from 1889 to the time of his resignation in 1902. He was one of the original trustees of the Memorial Hospital named in the will of Deacon Ichabod Washburn, and served until failing health compelled him to retire in 1906. From 1891 to 1904, he was the president of the board of trustees. He was also a trustee of the State Lunatic Hospitals of Worcester from 1876 till 1904.

He had been Medical Director of the State Mutual Life Assurance Company from 1865 until 1908, when he was made consulting medical director, and he was the vice-president of the company from 1882 until his death. He had been a director in the old City National Bank and a trustee of the Worcester County Institution for Savings since 1873. In 1891, he was made a trustee of Clark University, to succeed the late Judge Charles Devens, and since 1893 had been the treasurer of the University.

He was a member of Central Congregational Church for over fifty years; a member of the American Antiquarian Society and a former member of the Worcester Fire Society.

In 1860, he married Annie M., daughter of the late William Homer Lane, of Boston. Mrs. Gage died in January, 1908. He is survived by his three children, Miss Mabel C. Gage; Mr. T. H. Gage, Jr., of the firm of Smith, Gage & Dresser, and Dr. Homer Gage, the distinguished surgeon of Worcester; by a sister, Miss Mary S. Gage, of Worcester, and a brother, Mr. George M. Gage, of Portland, Ore.

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Miscellany.

INTERNATIONAL CONFERENCE ON LEPROSY.

In the Public Health Reports for Sept. 17 appears the report of Past Assistant Surgeon Donald H. Currie, of the United States Public Health and Marine-Hospital Service, on the Second International Conference on Leprosy held in Bergen, Norway, Aug. 16–19, 1909. Dr. Currie was one of the official delegates representing the United States at the conference. In his report he states that the following enumeration gives the distribution of leprosy throughout the world as obtained from the reports of the official delegates and from data furnished by the Norwegian government:

	Cases.[1]
France,	246
Iceland,	200
Germany,	28
Roumania,	208
Servia,	3
Bulgaria,	9
European Turkey,	550
Greece,	9
Crete,	600
Russia,	1,372
Italy,	123
Spain,	240
Palestine,	800
India,	97,340
Ceylon,	589
Indo-China,	10,500
Java,	15,000
Borneo,	68
Sumatra,	896
Japan,	40,000
Canada,	20
Cuba,	1,297
Jamaica,	115
United States of Colombia,	4,152
Argentine Republic,	12,000
Algeria (in 26 years),	109
United States of America:	
Mainland of America,	146
Hawaiian Islands,	764
Porto Rico,	17
Guam,	19
Philippine Islands,	2,330
Canal Zone,	7

A brief review of the more important papers read at the conference is given. Dr. Ehlers, of Copenhagen, who recently made a visit to this country, presented the preliminary report of the Danish-French commission for the study of leprosy, the title of his paper being "The Transmission of Leprosy by Suctorial Insects."

The conference adopted the following resolutions:

A.

1. The Second International Scientific Conference on Leprosy confirms in every respect the resolutions adopted by the First International Conference of Berlin, 1897.

Leprosy is a disease which is contagious from person to person, whatever may be the method by which this contagion is effected. Every country, in whatever latitude it is situated, is within the range of possible infection by leprosy, and may, therefore, usefully undertake measures to protect itself.

2. In view of the success obtained in Germany, Iceland, Norway and Sweden, it is desirable that other countries should isolate lepers.

3. It is desirable that the children of lepers should be separated from their parents as soon as possible and that they should remain under observation.

4. An examination should be made from time to time of those having lived with lepers by a doctor having special knowledge.

It is desirable that lepers should not engage in certain trades or occupations.

All leper vagabonds and beggars should be strictly isolated.

B.

5. All theories on etiology and the mode of propagation of leprosy should be carefully examined to ascertain if they accord with our knowledge of the nature and biology of the bacillus of leprosy.

6. The clinical study of leprosy induces the belief that it is not incurable. We do not at

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[1] Approximate.

present possess a certain cure. It is desirable, therefore, to continue the search for a specific remedy with the greatest zeal.

The International Leprosy Conference, held in Berlin in 1897, arrived at the following conclusions: Every leper is a danger to those around him, the danger varying according to the nature and extent of his relations to others and also to the sanitary conditions under which he lives. Among those living in an insanitary manner, every leper is especially dangerous to his family and fellow-workers. The theory of the heredity of leprosy is becoming less probable, and the contagiousness of the disease is generally accepted. The following resolutions were formally adopted:

1. In countries in which leprosy forms foci or has a great extension, isolation is the best means of preventing the spread of the disease.
2. The system of obligatory notification and of observation and isolation, as carried out in Norway, is recommended to all nations with local self-government and a sufficient number of physicians.
3. It should be left to the legal authorities, after consultation with the medical authorities, to take such measures as are applicable to the special social conditions of the districts.

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AMERICAN ASSOCIATION OF CLINICAL RESEARCH.*

A meeting of physicians and surgeons interested in scientific clinical research is called for Wednesday, Oct. 27, 1909, at John Ware Hall, Boston Medical Library, No. 8 Fenway, Boston, Mass. The meeting will come to order at 10 A.M., and carry its sessions through Wednesday, and, if necessary, through Thursday and Friday.

The object of the meeting is,

First, to establish an American Association of Clinical Research; secondly, to establish clinical research on an incontrovertible scientific basis in hospitals; and thirdly, to institute an American Journal of Clinical Research, in which the work of members of the American Association and of others doing clinical research work in a scientific manner shall be published.

The American Association of Clinical Research is not intended to disturb the present medical affiliations of its members nor to intefere in the very least with the duties they owe and the privileges they enjoy by virtue of their affiliation with any existing national medical body.

The American Association of Clinical Research is to take cognizance of the fact that the clinic requires cold facts and conclusive methods, and upon these fundamental requirements the structure and the work of the American Association of Clinical Research are to be built.

It is of the utmost scientific importance to establish conclusively all that is at present true in medicine and surgery, and only upon such proved knowledge to base any further advancement. The clinic deals with clinical entities and not, like the laboratories, with parts as entities. Therefore, clinical research differs, and must differ, from experimental laboratory researches. Clinical research must consider clinical entities, and, when considering parts, it must consider them only as parts and not as wholes. All that subserves the object of obtaining and investigating clinical facts and principles belongs to clinical research, and the laboratory is a part of the means of clinical research, but only a part.

The crux of the matter appears to be that experimental laboratory proof is not sufficient clinical proof. In order to advance in an irresistible line, clinical research must be based on a conclusive form or method of clinical proof. Clinical proof is conclusively established when all observations and experiments are made conjointly by at least two competent men, preferably of opposite ideas, at the same time. Conjoined critical observation and experiment, at the bedside and in the laboratory, as may be required, furnish simultaneous identical experiences, the proof proceeding on the principle that a whole can be proved only by the whole and not by dislocated parts.

These and other weighty questions await your assistance for a necessary solution. The benefit that will accrue, both to medicine in particular and to the medical profession and humanity at large in general, from a satisfactory establishment of scientific clinical research, can be easily surmised. Come prepared, yourself and your friends, to give to this matter your mature convictions and your personal assistance. Only from a critical interchange of critically acquired opinions can we hope for clearness and for the clarification of the medical atmosphere now charged with confusion and indifference.

Your communication, indicating your interest and your expectation of being present at the meeting in Boston on Oct. 27, next, is eagerly awaited, and on receipt of the expression of your interest further developments will be communicated to you personally in due time.

Please address your communications at the earliest possible date directly to James Krauss, M.D., 419 Boylston Street, Boston, Mass.

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Correspondence.

PAINT IN THE USE OF PLASTER OF PARIS DRESSING.

Lynn, Mass., Sept. 5, 1909.

Mr. Editor: In many instances in the use of plaster of Paris dressing, where it is desired that the dressing last for several weeks or more, we are much troubled with the crumbling and cracking of the plaster of Paris dressing, no matter with how much care it may be applied. This difficulty may be considerably obviated by the use of paint on the outside of the plaster of Paris dressing, when the dressing has been completed.

Any kind of paint may do, but the kind found most satisfactory is white bath-tub enamel. The way to apply this is to finish the plaster of Paris dressing, then split the dressing if it is desired to do so, and apply the paint with a thin, broad brush about one and one-half or two inches wide, in medium consistency, including the cut edges, then have the patient sit near a radiator or in the sunshine. The paint dries rather quickly and in ten or fifteen minutes it is usually sufficiently dry to allow the patient to go home. A bandage may or may not be applied over the completed painted dressing.

This has been found to make the plaster of Paris dressing very much more durable and practically obviates the crumbling and cracking of the plaster. We have found in our service at the Emergency Hospital that a plaster dressing may be able to go by this treatment for six weeks to three months or more.

Not having heard of its being used anywhere before, and thinking it might be of interest to physicians and surgeons, it is hereby reported.

James A. Keown, Ph.G., M.D.,
Resident Surgeon at Emergency Hospital, Lynn, Mass.

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* Portions of an open letter.

RECORD OF MORTALITY

FOR THE WEEK ENDING SATURDAY, SEPT. 11, 1909.

CITIES.	Reported deaths in each.	Deaths under five years.	CITIES.	Reported deaths in each.	Deaths under five years.
New York	—	—	Waltham	7	1
Chicago	562	215	Pittsfield	15	9
Philadelphia	—	—	Brookline	3	—
St. Louis	—	—	Gloucester	4	2
Baltimore	202	80	North Adams	3	1
Cleveland	—	—	Northampton	7	2
Buffalo	—	—	Chicopee	7	—
Pittsburg	—	—	Medford	6	2
Cincinnati	—	—	Beverly	6	2
Milwaukee	—	—	Leominster	3	1
Washington	—	—	Hyde Park	6	5
Providence	—	—	Melrose	4	2
Boston	196	81	Newburyport	10	2
Worcester	36	12	Revere	3	—
Fall River	47	33	Westfield	6	—
Cambridge	32	9	Woburn	8	0
Lowell	46	28	Peabody	—	—
New Bedford	27	17	Marlboro	6	3
Lynn	22	8	Attleboro	1	
Springfield	12	5	Adams	—	—
Lawrence	34	16	Clinton	5	3
Somerville	8	1	Gardner	5	1
Brockton	8	6	Milford	3	1
Holyoke	16	7	Watertown	2	0
Malden	8	1	Plymouth	—	—
Chelsea	11	4	Southbridge	2	1
Newton	8	3	Weymouth	3	1
Salem	12	4	Framingham	4	—
Haverhill	8	5	Wakefield	—	—
Fitchburg	17	11	Webster	—	—
Everett	10	7	Arlington	1	1
Quincy	—	—	Greenfield	3	—
Taunton	25	7			

LIST OF CHANGES OF STATIONS AND DUTIES OF COMMISSIONED AND OTHER OFFICERS OF THE PUBLIC HEALTH AND MARINE-HOSPITAL SERVICE FOR THE SEVEN DAYS ENDED SEPT. 8, 1909.

EAGER, J. M., surgeon. Granted one day's leave of absence, Sept. 7, 1909.

KING, W. W., passed assistant surgeon. Granted thirty days' leave of absence from Sept. 8, 1909.

CURRIE, D. H., passed assistant surgeon. Granted twenty-one days' leave of absence en route to station.

BAHRENBURG, L. P. H., passed assistant surgeon. Granted thirteen days' leave of absence from Aug. 17, 1909, on account of sickness.

DE VALIN, HUGH, assistant surgeon. Granted three days' leave of absence en route to station.

LYON, R. H., assistant surgeon. Granted one day's leave of absence in August, 1909, under paragraph 191, Service Regulations.

DEERHAKE, WM. A., acting assistant surgeon. Granted one day's leave of absence in August, 1909, under paragraph 210, Service Regulations.

HOUGHTON, M. W., acting assistant surgeon. Granted seven days' leave of absence from Oct. 4, 1909.

KENNEDY, S. R. M., acting assistant surgeon. Granted thirty days' leave of absence from Sept. 1, 1909.

MACCAFFRY, W. B., acting assistant surgeon. Granted two days' leave of absence in August, 1909, under paragraph 210, Service Regulations.

MASON, WM. C., acting assistant surgeon. Granted six days' leave of absence from Sept. 19, 1909.

ONUF, B., acting assistant surgeon. Granted one day's leave of absence, Aug. 14, 1909, under paragraph 210, Service Regulations.

SIMONSON, G. T., acting assistant surgeon. Granted two days' leave of absence from Sept. 7, 1909.

TUTTLE, JAY, acting assistant surgeon. Granted thirty days' leave of absence from Sept. 14, 1909.

CARLTON, C. G., pharmacist. Granted thirty days' extension of annual leave on account of sickness from July 5, 1909.

MORRIS, G. A., pharmacist. Granted three days' leave of absence from Aug. 30, 1909.

RESIGNATION.

Surgeon Milton J. Rosenau, resignation accepted by the President, to take effect Jan. 31, 1910.

CHANGES IN THE MEDICAL CORPS U. S. NAVY FOR THE WEEK ENDING SEPT. 18, 1909.

ROBBINS, I. W., acting assistant surgeon. Detached from the Naval Hospital, Mare Island, Cal., Sept. 25, and ordered to instruction at the Naval Medical School, Washington, D. C. Sept. 10.

ROSE, M. E., assistant surgeon. Detached from the Naval Hospital, Norfolk, Va., and ordered to the "Celtic." Sept. 11.

THOMPSON, F. W., acting assistant surgeon. Detached from the "Celtic" and ordered to instruction at the Naval Medical School, Washington, D. C. Sept. 11.

PAYNE, J. H., passed assistant surgeon. Detached from the Naval Recruiting Station, Hartford, Conn., and ordered to the Naval Hospital, Navy Yard, New York, N. Y. Sept. 15.

KUDER, W. S., assistant surgeon. Unexpired portion of sick leave revoked, ordered to the Naval Recruiting Station, Hartford, Conn. Sept. 15.

STUART, M. A., assistant surgeon. Detached from duty with the Marine Detachment, Camp Elliott, Canal Zone, Panama, and ordered to duty at Ancon, Canal Zone. Sept. 16.

ZIEGLER, J. G., assistant surgeon. Detached from duty at the Naval Hospital, Navy Yard, Pensacola, Fla., and ordered to duty with the Marine Detachment, Camp Elliott, Canal Zone, Panama. Sept. 16.

SOCIETY NOTICE.

MISSISSIPPI VALLEY MEDICAL ASSOCIATION. — The thirty-fifth annual meeting of the Mississippi Valley Medical Association will be held at St. Louis, Mo., Oct. 12, 13 and 14, 1909.

RECENT DEATHS.

GAGE, THOMAS HOVEY, M.D., M.M.S.S., died in Worcester, Sept. 17, 1909, aged eighty-three years.

DR. HUGH T. ADAMS, of Jersey City, N. J., died on Sept. 8, at the age of sixty-three years. He was a native of Dublin, Ireland, and was graduated from Queen's College in that city, in 1869. He had practiced in Jersey City for thirty-five years.

BOOKS AND PAMPHLETS RECEIVED.

Philadelphia General Hospital Reports. Vol. VII. 1908. Edited by Herman B. Allyn, M.D. Philadelphia: Dunlap Printing Co. 1909.

Medical Sociology, a Series of Observations Touching upon the Sociology of Health and the Relations of Medicine to Society. By James Peper Warbasse, M.D. New York and London: D. Appleton & Co. 1909.

Rapports a M. le Préfet. 1. Sur quelques îlots de maisons tuberculeuses (20 décembre 1904). 2. Sur le répartition de la mortalité par tuberculose pulmonaire dans les maisons de Paris, du 1er janvier 1894 au 31 décembre 1904 (20 mars 1905). 3. Sur le répartition de la tuberculose pulmonaire dans les maisons de Paris, pendant l'année 1905 (19 mars 1906). 4. Sur les enquêtes effectuées en 1905 dans les maisons seignalées comme foyers de tuberculose (20 mars 1906). Paris. 1908.

A Treatise on the Principles and Practice of Medicine. By Arthur R. Edwards, A.M., M.D. Second and thoroughly revised edition. Illustrated. New York and Philadelphia: Lea & Febiger. 1909.

Minor and Operative Surgery, including Bandaging. By Henry R. Wharton, M.D. Seventh edition, enlarged and thoroughly revised. Illustrated. Philadelphia and New York: Lea & Febiger. 1909.

The Practical Medicine Series. Under the general editorial charge of Gustavus P. Head, M.D. Vol. VI, Series 1909. Chicago: The Year Book Publishers.

The Needs, Methods and Value of Medical College Inspection. By N. P. Colwell, M.D. Reprint.

The Methods and the Objects of State Examinations. By W. T. Councilman, M.D. Reprint.

A Catalytic Theory of Infection and Immunity. By J. W. McLaughlin, M.D. Reprint.

Personal Observations in Latent Malaria. By J. W. McLaughlin, M.D. Reprint.

Court Testimony of Alienists. By Britton D. Evans, M.D. Reprint.

Original Articles.

A PRACTICAL DIET CHART.*

BY HORACE D. ARNOLD, M.D., BOSTON.

It will be generally conceded, I think, that although the proper regulation of the diet is an important therapeutic measure, it has received altogether too little attention from the medical profession. To be sure, the subject is not entirely neglected. We give some very general directions as to diet. If there is disturbance of digestion, we exclude some of the more indigestible forms of food. We may go a step farther and furnish our patients with lists of articles of food headed "May Take" and "Do Not Take," and these lists are more or less modified for various diseases. We give liquid nourishment to fever cases, and confine the diet in typhoid fever as far as possible to milk. We stuff our phthisical cases with milk and eggs, try to feed up our debilitated cases, and cut out from the diet of our cases of obesity certain articles that are reputed to be fat producers. We exclude or limit the starches and sugars in diabetes. We know that the diet should be regulated in nephritis so as to spare the kidneys, and yet, somewhat irrationally, we strive to keep the patient as far as possible on milk alone.

Some of these measures are good, as far as they go; some are bad. They are practically all qualitative measures and we pay very little attention to the quantitative regulation of food. That is left too largely to the appetite of the patient or to the judgment of the nurse. The doctor rarely concerns himself seriously with the "trifling" matter of the dose of food. And yet, many patients do badly because they get too little nourishment, and more people actually poison themselves by too great quantities of food. Growing fat is comparatively harmless as compared with some other results of overfeeding.

Besides the lack of sufficient knowledge of the fundamental principles of dietetics, the chief reason why physicians have paid so little attention to the quantitative control of diet has been the difficulty of estimating the nutritive value of food in a practical way The investigations of Atwater and Bryant and others have in recent years furnished in tabular form the necessity scientific data for such calculation, and such information is now easily available.

For a few cents, any physician can get from the United States Department of Agriculture (Office of Experiment Stations at Washington) Bulletin No. 28, "The Chemical Composition of American Food Materials." In this are given tables which express the percentages of the different ingredients of all articles that are commonly used for food. Moreover, some of the more recent books on treatment, and many books on dietetics, contain tables based on this work. And yet, the general practitioner stands aghast before the problem of applying this knowledge to every-day diets, and even the expert finds the work difficult and time-consuming.

Is it worth while to attempt a scientific quantitative and qualitative regulation of the complicated diet in adults? Every one admits that such a regulation of food has been of immense value in infant feeding, but there the diet is milk — a comparatively simple form of nourishment — and practical rules have been evolved that make the problems relatively simple. An intelligent application to adults of the same principles of regulation of food will soon convince one that the advantages are as great as in infant feeding. A realization of its importance immediately convinces one of the desirability of devising some way of applying this knowledge practically in every-day practice.

The diet charts which are submitted for your consideration to-day represent an attempt to solve this problem in a practical way. The aim is to put in the hands of the general practitioner and the medical student an instrument that will enable them to scientifically regulate the diet of patients with comparative ease.

These charts were designed originally as an aid in instruction in the course in dietetics at Tufts College Medical School. The success attending their use there, and the benefits derived from their use in my own practice, have led me to believe that they would be of interest and value to the general practitioner. In order to have a convenient designation, the name of Tufts Medical Diet Chart has been adopted.

The aim is to give on one sheet of paper all the data necessary for arranging and calculating the nutritive value of a diet, and to furnish a convenient means of recording the results. This is accomplished in Chart A. This chart has spaces for recording the diet for five successive days or for five changes of diet at any interval of time.

A supplementary chart (Chart B) is designed to fulfill the same functions for a single day. It offers a convenient means for giving orders to a patient, or for the patient or nurse to record the amounts taken at each meal. From these records the amounts for twenty-four hours can be readily determined and the nutritive value of the food calculated. The results for the day can be transferred, if desired, to Chart A.

The feature which makes these charts practical for use is the information given as to the nutritive value of food *in measures such as are used in every-day life.* A fairly accurate record may thus be obtained with very little inconvenience to the patient. It is perfectly practical to get such a record, even from our less intelligent patients, and the physician's calculations involve only the simplest arithmetical calculations. In cases where great accuracy is desired, the food should be accurately weighed. If this is done, that part of the table should be used which gives statistics for 100 gm. of each article of food. One hundred grams is taken as a unit partly because of the ease in calculation from this basis. It is advantageous, also, because the statistics of the composition of foods are given in figures that represent the percentage of the three nutritive elements of food, — protein, fat and carbohydrates. These same figures will represent the number of grams of each of these ingredients in 100 gm. of the food. Thus the tables furnished on the chart may be readily supplemented from the statistics of more elaborate diet lists. If the patient is to purchase scales for weighing food, it will be a matter of great convenience to have the weights in grams. Weights in ounces can, however, be easily changed to the metric system by using the table given for this purpose on the back of Chart A. Ordinary letter scales weigh with sufficient accuracy for most cases, and are convenient to use. Oftentimes it is not necessary to continue weighing everything. After a short time, a patient can learn the size of a portion of the common articles of food that weighs 50 or 100 gm. or 1 oz., and such food can then be calculated with sufficient accuracy by the eye.

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*Read at the annual meeting of The Massachusetts Medical Society, June 15, 1909.

In cases where accuracy by weighing is less essential, the unit of record may be a tablespoonful or other ordinary measure used at meals. In that case, that part of the table on Chart A should be used that is headed "Common Measures." Statistics are given in this connection only for the more common articles of food used in dietetics, but from information given on the back of Chart A, under the head of "Miscellaneous Data," the weight of "common measures" of other articles can be determined, and the statistics for a "common measure" of any article of food can be readily calculated from the 100-gm. table.

The values in all tables on these charts are approximate only; they do not pretend to extreme accuracy. They are, however, sufficiently accurate for all ordinary purposes, and are the more practical because all fractions are omitted and the nearest *convenient* figure is chosen. Furthermore, the values in many instances represent an average for closely allied foods. For example, the differences between the various forms of cereals are so slight in the amounts eaten in a day that they may be disregarded in practical work. The same is true of the different forms of bread. The figures given represent an average of the kinds commonly used.

The unit for the measurement of the nutritive value of food is the chemical heat-unit, or calorie. One gram of protein theoretically produces 4.1 calories; and 1 gm. of fat, 9.3 calories; and 1 gm. of carbohydrates, 4.1 calories. Practically, we may count 1 gm. of protein as 4 calories, 1 gm. of fat as 9 calories, and 1 gm. of carbohydrates as 4 calories. After calculating the total nutritive value of a given amount of food in this way, the nearest convenient round number has been taken in making up the table. This value, of course, is only an approximate one, but it is sufficiently accurate and the results are surprisingly close to calculations by more elaborate methods.

Table I contains the articles of food most commonly employed in dietetics. Blank spaces are left where other articles of diet may be added. Most of these articles will be found in Table II on the back of Chart A, and still others may be obtained from the more detailed diet tables of standard authorities.

In the use of Chart A, the first step is to make the list in Table I complete by adding the names of any other articles of food that the patient may have taken. It will be more convenient if we complete the statistical part of the table also for each of these new articles of food. Table I is, then, a complete one for the case in question.

We now proceed to make a record for a day in one of the five sections on the chart. At the top, the date is placed. In the first column is recorded opposite each name the amount of that food used in twenty-four hours. This amount may be expressed in grams, ounces, or "common measures," whichever is most convenient. According as the amount is stated by weight or by "common measure," we use the first or the second part of our statistical table to calculate the caloric value of each article of food. The figure representing the caloric value for twenty-four hours is placed in the second column on the same line with the name of the food.

If it is desirable to know the number of grams of protein, fat or carbohydrates, it is calculated from the table in a similar way and it is recorded in its proper column. The last column is for a record of the amount of water, although it is not intended that the amount in "dry" food should be counted.

At the bottom of the page, the totals for the day are summarized in the proper columns. A separate line is allowed for each one so that the results on successive days may be compared by glancing across the page from left to right. For convenience of comparison, the amount of urine is recorded in the same column with the water ingested, the amount of urea is in the protein column, and the amount of sugar in the urine is in the carbohydrate column. A space is reserved for the weight of the patient. A short dash in each case indicates the proper space in which to make the record.

On the back of Chart A, besides the statistical data in Table II, are given directions for using the chart, a brief abstract of the principles of dietetics, and various other useful data.

The proper amount of nutrition for twenty-four hours is a matter of considerable importance. If the amount is sufficiently reduced below normal, the patient loses weight and strength. Again, a person cannot build up from a debilitated condition on an insufficient supply of nourishment. On the other hand, a large majority of the cases of obesity are due to eating too much. Individual peculiarities, of course, exist. We have all seen the fat man who eats little and the glutton who remains thin. Nevertheless, the average need of the average healthy man is sufficiently constant to establish a normal standard. This standard is estimated at a certain number of calories a day for each kilogram of weight, or, as we have planned it, so many calories per pound. In making your calculations, however, it is important not to take the actual weight of the patient (which may be abnormally high or low), but to take the *normal* weight for the patient's height. A table for this purpose is given on the back of Chart A.

TABLE I.

TUFTS MEDICAL DIET CHART (Chart A).

Diagnosis,

Name,

Address,

Approximate Values.									ARTICLES OF FOOD.	Date,																													
100 Grams (⅕-¼ lb.)				COMMON MEASURE.						Amount for 24 hours.	Total Cal.	Grams for 24 hours.			Water oz. or cc.	Amount for 24 hours.	Total Cal.	Grams for 24 hours.			Water oz. or cc.	Amount for 24 hours.	Total Cal.	Grams for 24 hours.			Water oz. or cc.	Amount for 24 hours.	Total Cal.	Grams for 24 hours.			Water oz. or cc.	Amount for 24 hours.	Total Cal.	Grams for 24 hours.			Water oz. or cc.
Grams.				Measure.	Grams.																																		
P.	F.	C.	Cal.		P.	F.	C.	Cal.				P.	F.	C.				P.	F.	C.				P.	F.	C.				P.	F.	C.				P.	F.	C.	
									Proteids.																														
(See Table III.)				1 portion	8	5	5	100	"Proteid Portion."																														
4	4	4	70	1 pint	20	20	20	350	Milk (whole).																														
3	.5	5	40	1 ,,	15	2.5	25	200	Buttermilk.																														
13	10		150	1 egg	8	5.5		80	Eggs (whole).																														
13			50	1 white	4.5			20	White of egg.																														
20	5		125	¼ lb.	20	5		125	Meat, lean.																														
20	20		250	¼ ,,	20	20		250	,, fat.																														
									Fats.																														
3.5	20	3.5	200	1 oz.	1	6	1	60	Cream (20%).																														
3.5	20	3.5	200	½ pint	9	50	9	500	Cream (20%).																														
	85		800	1 pat. (⅓ oz.)		9		80	Butter.																														
	100		900	1 tablespoon		15		125	Olive Oil.																														
10	60		600	Slice (½ oz.)	1.5	9		90	Bacon.																														
									Carbohydrates.																														
(See Table III.)				1 portion	4	1	30	140	"Cereal Portion."																														
2		24	100	1 tablespoon	1		15	60	Rice (boiled).																														
2		20	90	1 medium	2		20	90	Potatoes ,,																														
2	.5	12	60	1 tablespoon	1	.5	6	33	Cereal (cooked).																														
9	1	55	250	Avg. slice	3	.5	15	80	Bread.																														
10	10	70	400	,, ,,	3	3	20	120	Zwieback.																														
11	10	70	400	See note.					Crackers.																														
10	1.5	75	350	1 biscuit	3	.5	22	100	Shredded Wheat.																														
		100	400	1 teaspoon			6	25	Sugar.																														
		10	40						Sweet Fruits.																														
3	1	10	60	1 tablespoon	2	.5	6	40	**Vegetables.**																														
									Beverages.																														
									Water.																														
									Total Calories.																														
									Weight of patient.																														
									Total grams, P.																														
									,, ,, F.																														
									,, ,, C.																														
									Total Water.																														
									URINE. 24 hr. amt.																														
									Urea. Gms. in 24 hrs.																														
									Sugar. ,, ,, ,,																														

NOTES:

P. Protein.
F. Fats.
C. Carbohydrates.
Cal. Calories.

CRACKERS: 1 oz. is equivalent to slice of zwieback. 1 lb. of crackers contains P. 50, F. 45, C. 320, Cal. 1900. Count the number of crackers in 1 lb. and divide into the above values to get nutritive values for one cracker.

FOR OTHER ARTICLES SEE OVER.

(Prepared by H. D. ARNOLD, M.D., Boston.)

TABLE II.

Additional Nutritive Values (Approximate).

100 Grams (⅕-¼ lb.)				ARTICLES OF FOOD. (More common articles on other side.)
Grams. P.	F.	C.	Cal.	
				LEAN MEATS (in order of nutrition).
20	2		100	Fish, Game, Chicken, Beef, Turkey, Lamb, Goose, Lean Ham. — F. varies from 2 to 20% according to amount of fat present.
20	20		250	
				FAT MEATS.
15	30		350	Mutton, Pork.
15	50		500	Fat Ham.
10	60		600	Bacon.
2	80		700	Salt Pork.
9	2.5	4	75	Oysters.
16.5	2	.5	80	Lobster.
25	33	2	400	Cheese (full cream).
8	10	1	120	,, ,, ,, one ounce.
10	7.5	1.5	115	Scrambled Eggs.
6	4.5	1	70	,, ,, 1 tablespoon.
				LIQUID NOURISHMENT.
2	2	6	50	Gruels (with milk).
5	.5	1	25	Beef Juice, Meat Soups.
3	2	5	50	Soups (average).
8	3	8	90	Fish Chowder.
				STARCHES, etc.
		95	375	Arrowroot.
		90	350	Cornstarch, Tapioca.
		80	325	Sago.
8		80	350	Rice.
9	2	75	350	Flours and Meals.
12	1	75	350	Wheat Flour.
16	7	65	400	Oatmeal.
22	2	60	350	Dried Beans or Peas.
				MISCELLANEOUS.
4	5	30	175	Puddings — Bread, Rice, Indian, Tapioca, Cornstarch.
6	5	12	120	Custard.
6	9	60	350	Cake.
13	48	30	600	Chocolate.
20	30	36	500	Cocoa.
				VEGETABLES (Fresh — Cooked).
10		30	160	Butter Beans.
8		22	120	Lima ,,
7	2.5	20	125	Baked ,,
3		20	100	Green Corn.
7		17	100	,, Peas.
2	3	18	110	Mashed Potato.
1.5	2	11	70	,, ,, 1 tablespoon.
3	1.5	16	90	Macaroni (cooked).
2		15	70	Parsnips.
2		10	50	Beets, Carrots, Mushrooms.
2		10	50	Onions, Squash, Turnips.
				FRUITS (Soluble Sugars).
3	3	76	350	Raisins.
		70	280	Dried Fruits.
		20	80	Edible parts of Bananas and Grapes.
		20	80	Fresh Figs, Plums, Prunes.
		15	60	Apples, Pears, Cherries.
		15	60	Currants, Apricots.
		15	60	Blue or Huckle Berries.
		15	60	Bananas (weighed with skins).
		10	40	Lemons, Oranges (edible part).
		10	40	Strawberries, Peaches.
		10	40	Blackberries, Cranberries.
		10	40	Raspberries, Pineapple.
		10	40	Musk Melon (edible part).
		5	20	Lemons, Musk Melon (as purchased).
		5	20	Grape Fruit, Watermelon.
				NUTS (Edible Part).
6	6	40	250	Chestnuts.
25	40	25	550	Peanuts.
20	55	20	650	Almonds.
10	70	15	750	Pecans.
20	60	15	700	Walnuts.
16	65	13	450	Filberts.
17	67	7	700	Brazil Nuts.
28	60	4	650	Butternuts.

"Fodder Vegetables."— These theoretically have about 5% or less of carbohydrates, but most of it is lost in cooking or is indigestible. The chief nutritive value is in butter, oil, etc., added to them. They are : —

Asparagus, String Beans, Brussels Sprouts, Cabbage, Cauliflower, Celery, Cucumbers, Greens, Lettuce, Pumpkin, Radish, Rhubarb, Spinach, Tomatoes.

TABLE III.

PROTEID PORTION.

(Unit = Protein in one egg, 8 grams.)

P.	F.	C.	Cal.	
8	5	5	100	**Average "Portion."**
8	5.5		80	Egg, one.
8	8	8	140	Milk, 1 glass (200 cc.).
7.5	1.25	12.5	100	Buttermilk, ½ pt.
8	5		80	Meat or Fish, 1⅓ ounces or ⅓ serving.

CEREAL PORTION.

(Unit = 4 grams of Protein.)

P.	F.	C.	Cal.	(Cooked foods.)
4	1	30	140	**Average "Portion."**
4	2	24	135	Cereal, 4 tablespoons.
4		60	240	Rice, 4 tablespoons.
4	2	20	120	Macaroni, 4 tablespoons.
4	2	20	120	Vermicelli, 4 tablespoons.
4		40	180	Potatoes, 2 moderate-sized.
3	.5	15	80	Bread, 1 oz. (or slice).
3	3	20	120	Crackers, 1 oz.
3	.5	22	100	Shredded Wheat, 1 biscuit.

PRINCIPLES OF DIETETICS.

Height.	Weight.
4 ft. 8 in.	70 lbs.
,, 9 ,,	75 ,,
,, 10 ,,	80 ,,
,, 11 ,,	90 ,,
5 ft.	100 ,,
,, 1 in.	110 ,,
,, 2 ,,	120 ,,
,, 3 ,,	130 ,,
,, 4 ,,	135 ,,
,, 5 ,,	140 ,,
,, 6 ,,	145 ,,
,, 7 ,,	150 ,,
,, 8 ,,	155 ,,
,, 9 ,,	160 ,,
,, 10 ,,	165 ,,
,, 11 ,,	170 ,,
6 ft.	180 ,,
,, 1 in.	185 ,,
,, 2 ,,	190 ,,
,, 3 ,,	200 ,,

The unit for the measurement of nutrition is the chemical heat-unit, or *calorie:* — the amount of heat necessary to raise the temperature of one kilogram of water one degree centigrade.

1 gram protein	will produce	4 cal.
1 ,, fat	,, ,,	9 ,,
1 ,, carbohydrate	,, ,,	4 ,,
1 ,, alcohol	,, ,,	7 ,,

NUTRITION FOR 24 HOURS.

An adult requires in 24 hours :

At rest	14–16 cal. per lb.
Light work	16–18 ,, ,, ,,
Moderate work	18–20 ,, ,, ,,

In calculations take the *normal* weight corresponding to height. (See table.)

An average-sized man requires :

At rest	2,000 cal. in 24 hours.
Light work	2,500 ,, ,, ,, ,,
Moderate work	3,000 ,, ,, ,, ,,

Children.— Owing to the relatively greater surface in proportion to weight, the loss of heat is relatively greater in children and they require a higher number of calories per pound.

Age.	Weight.	Cal. per lb.	Cal. in 24 hrs.	Grams P. in 24 hours.	
0- 6 mos.	7-15 lbs.	45-35.	315-525.	1 gram per lb.	
6-12 ,,	15-20 ,,	35.	525-700.	,, ,, ,,	
2 yrs.	30 ,,	35.	1,050.	,, ,, ,,	
4 ,,	40 ,,	35.	1,400.	Average 55.	Minimum 32.
8 ,,	50 ,,	28.	1,400.	,, 60.	,, 36.
12 ,,	70 ,,	23.	1,610.	,, 75.	,, 44.

PROPORTIONS IN MIXED DIET.

	P.	F.	C.	Cal.
Moderate work	90	80	400	2,800
Minimum	50	50	300	1,900
Maximum	150	150	500	4,000

PROTEIN.

Fifty grams needed, except for a short time as in nephritis. A light protein diet contains 60 grams, which may be made up from 5 "Proteid Portions" and 5 "Cereal Portions." (See Table III.)

FATS.

Use Cream, Butter, Olive Oil, Fat Meats, ordinarily 50-100 grams daily. Undesirable to go above 150 grams.

CARBOHYDRATES.

300 grams is enough for persons exercising moderately. 500 grams is the maximum that can be digested, and is enough for extreme physical exertion and cold. Carbohydrates are practically eliminated from strict diabetic diet.

WATER.

Besides what is taken in "dry food," fruit, and beverages, give 1,000 cc. or 5 glasses as water.

MISCELLANEOUS DATA.

1 large grape fruit . 20 oz.
1 ,, orange . . 10 ,,
1 medium ,, . . 5 ,,
1 ,, apple . . 6 ,,
1 ,, banana . 6 ,,
(without skin) . . 5 ,,
Potato size of egg . 2 ,,
1 square Baker's chocolate . . . . . . 1 ,,
Lean part of lamb chop weighs . . . . . 1 ,,
Thin slice of beef weighs . . . . . 1 ,,
1 cubic inch of meat weighs . . . . 1 ,,

Meat loses 25% water in cooking.

1 slice of bread weighs 1 oz. . . . . = 80 cal.
1 large roll weighs 2 ozs. . . . . = 160 ,,
1 shredded wheat biscuit, 1 oz. . . = 100 ,,

Crackers.— For large crackers, count the number in 1 lb. (see other side). For small crackers calculate the average weight of each by weighing a given number. Get caloric value by calculating 1 gram of cracker equivalent to 4 cal.

A small teaspoon or lump of sugar weighs about 6 grams = 25 cal.

Fruit sauces = 25% sugar.

Candy.— Estimate as 400 grams sugar to a pound.

INSTRUCTIONS.

The tables give the composition of ordinary articles of food. The values are approximate only, but are sufficiently accurate for practical use.

The tables are based chiefly on Atwater and Bryant's statistics. (The Chemical Composition of American Food Materials, Bulletin 28, U. S. Dept. of Agriculture. Experiment Stations.) Other authorities have also been consulted.

Table I contains the articles of food which are most commonly employed. Blank spaces are left where the data about other articles of food may be inserted. For this purpose the figures may be obtained from Table II or from any standard authority on dietetics.

If great accuracy is desired, the articles of food should be weighed on accurate scales, but in many cases sufficient accuracy will be attained by using that part of Table I in which the statistics are given for ordinary measures of food.

The spaces to the right of the List of Articles in Table I are for a summary of the nutriment for 24 hours. There is space for records for five days.

Day Record.

The first column is for the total daily amount of each article of food used. In the second column is to be placed the corresponding value of each article of food, expressed in calories. This is easily calculated from one or the other calorie column in the table according as the amount of food is expressed in grams or in "rough measures." The number of grams of P, F, and C can be calculated easily from the table in a similar way.

A daily record of the number of grams of a given form of nutriment is often of very great value. For example, in nephritis the total daily grams of protein; and in diabetes the total daily grams of carbohydrates.

The last column is for a record of the amount of water ingested daily.

The totals for the day are summarized at the bottom of the page in the corresponding columns. For convenience a dot indicates the space where each record should be placed. A space is also indicated for the weight of the patient.

The amount of urine is recorded in the water column, for easy comparison with the amount of fluid ingested. Similarly the amount of urea is compared with the protein ingested, and the amount of sugar in the urine with the amount of carbohydrates ingested. It should be remembered, however, that in severe diabetes some sugar may be derived from proteids — that 60 grams of glucose can be formed from 100 grams of albumen

The daily records can be compared by glancing along the line from left to right.

1 kilogram (35 ozs.) . . . . . . = 2⅕ lbs.
453.6 grams (450 or 480 grams) . = 1 lb.
30 ,, ... = 1 oz.
1 gram . . . . = 15 gr.
1 litre (34 fld. ozs.) . . . . . = 1 qt.
½ ,, (17 ,, ,,) . . . . . = 1 pt.
Tumbler or coffee cup (full) . . = 250 cc.
Tablespoon (½ oz.) . . . . . = 15 ,,
Teaspoon (⅙ oz.) . . . . . . = 5 ,,
4 level tablespoons of flour . . . = 1 oz.
2 ,, ,, ,, butter . . = 1 ,,
2 ,, ,, granulated sugar = 1 ,,

In serving cereal and vegetables a tablespoonful is a heaping one and weighs about 2 ozs., 60 grams.

The proper amount of nutrition in twenty-four hours for an adult varies from 14 to 20 calories per pound of normal weight, according as the person is at rest, doing light work or at moderately heavy work. For example, a man 5 ft. 7 in. in height should weigh 150 lb., and at light work should receive 150 x 16 calories = 2,400 calories. On this, he should just maintain his weight. If, as a result of over-feeding, his weight were 200 lb., it would be absurd to calculate nutrition on the basis of this excessive weight. He would then get 200 x 16 calories = 3,200 calories, and would gain still more. In such a case of obesity, we should endeavor to reduce his weight by giving less than the normal requirement of 2,400 calories, — say 2,000 calories, — and the balance of the needed nourishment would be made up by burning up his superfluous fat.

Exactly the reverse would be true if the man were emaciated through too little nourishment. If, for example, he weighed only 100 lb., he could hardly expect to build up on 1,600 instead of 2,400 calories.

A case in point which illustrates the advantage of an accurate calculation of the diet is as follows: A patient who came under my charge a year and a half ago was 5 ft. 10 in. in height, and weighed 190 lb. His normal weight should have been 165 lb. He had interstitial nephritis and a weak heart. The elimination by the kidneys was so much impaired that it had to be supplemented by free watery movements of the bowels. If the bowels became sluggish, he had an attack of acute pulmonary edema of an alarming degree. Indigestion also caused the same kind of an attack.

He was a hearty eater, with an excess of proteids in his diet. General directions were given which reduced the albuminoid food especially, and his diet was limited moderately and then reduced until he gradually began to lose weight. In the course of three months he had lost 10 lb., and weighed 180. Six months later, he weighed 175 lb. All this time, his strength and general condition had improved, although he still had occasional attacks of pulmonary edema.

This weight was maintained for several months, and then, for no apparent reason, he began to lose weight steadily. His heart got worse, and his attacks of pulmonary edema increased in frequency. Inquiry as to his diet seemed to indicate that it remained essentially the same, and I naturally assumed that his disease had reached the stage where he must gradually lose ground, and that the end was not far removed. When his weight reached 150 lb., his condition was rather desperate. I had felt all along that his diet was properly regulated, and I had not, therefore, calculated its caloric value. I now did this and to my surprise found that he was taking only 1,400 calories instead of about 2,500 which he should have had.

Owing to the association of his attacks with indigestion, he had become afraid to eat much, and insufficient nourishment had resulted. A careful revision of the diet, raising it first to 2,000 and later to about 2,500 calories, produced remarkable results. In two months, he had gained 15 lb., he felt stronger than he had for months, and he had had no more attacks. He was not, as I thought, in the last stages of his disease, but was *allowed to partially starve himself under my observation* simply because I had not regulated the diet quantitatively as well as qualitatively; because I had given general directions and was satisfied with his general reports that he was adhering to the diet ordered and was " getting all he wanted to eat."

This is not an isolated case. The proper regulation of the amount of nutrition is of importance in many conditions. While the figures given in the tables offer a standard for general guidance, it is also true that individuals vary as to their needs. Occasionally a person maintains weight on a surprisingly small caloric value of the diet, and sometimes a large increase fails to add to the nutrition of the patient.

It is for various reasons frequently unnecessary to estimate the caloric need for twenty-four hours very accurately. For an average-sized adult, we may prescribe a diet of 2,000 calories if at rest, 2,500 if at light work, and 3,000 if at active work. We can then raise or lower the amount according as we get the desired results or fail to get them. The weight and general strength taken together are reliable guides as to the efficiency of diet regulation.

Besides regulating the total daily amount of nutriment, it is often essential to regulate the amount of protein, fat or carbohydrates ingested. It is now generally recognized that if we are to treat diabetes intelligently, we should know the amount of carbohydrates ingested. We should also determine the point of " carbohydrate tolerance," and should keep the number of grams of carbohydrates in the diet safely below that point. This can be readily planned on our chart.

It is not always as fully recognized that in disease of the kidneys the ingestion of protein should be watched as closely and regulated as carefully as are the carbohydrates in diabetes. Yet surprising improvement will often follow if this is done.

The chart lends itself readily to the regulation of the amount of any of these three ingredients of the food. By glancing up and down the proper column in our statistical table you can see at a glance what articles contain none of the particular ingredient in question, and which of them contain but a small amount. We select our diet from these articles and avoid especially those that have a large percentage.

At the same time that we are regulating the amount of any one of the ingredients of food, we must nevertheless keep in mind the importance of the total caloric value of the diet for the day. It is easy enough to regulate either one of these factors if we disregard the other, but both must be properly arranged if we are to attain success. Sometimes we find the amount of a certain ingredient of the food has been cut down instinctively by the patient himself. This may have come either because he developed a dislike for this class of food, or because he noticed that such food disagreed with him — however much he might like it.

A recent case, a woman who has interstitial nephritis and mitral stenosis and regurgitation, is interesting in this connection. She was losing weight and strength rapidly, and her heart was beginning to give out. The kidney disease was well advanced and the elimination power of the kidneys was considerably reduced. She had gradually reduced her diet, instinctively guided to a low proteid diet. A calculation of that diet for a period of four days showed that she was getting an average of only 50 gm. of protein a day. This was satisfactorily low, — but she was getting on the average only 1,150 calories in a day. Her height is 5 ft. 2 in. Her normal weight should be 120 lb., whereas she weighs 106, — having lost 20 lb. in the past nine months. Her estimated caloric need for a day would be 120 x 16 = 1,920 calories. She had been getting 1,150 calories, or only 60% of her normal amount of nourishment.

The problem was to increase her nourishment without materially increasing the amount of protein in her food. Furthermore, the problem in this case was complicated by the fact that she took her meals at restaurants and had to be very economical in her expenditure of money for food. By the aid of the chart a satisfactory diet was planned to meet all these requirements. While its caloric value was 2,300, it contained only 70 gm. of protein. The caloric value had been advanced 110%, although the amount of protein had been increased only 40%. This amount of 70 gm. was within the capacity of her kidneys, and her general condition improved.

The question of variety in diet is an important one. This is especially true where a diet is arranged to cover a long period. No matter how satisfactory a given diet may be made, the patient will soon tire of it if it is not changed. While the patient is acutely ill and the doctor is in close attendance, changes in diet can be easily made. But when the patient feels well and is able to look out for himself otherwise, he will rarely consult the physician merely for a slight change of his food. He will seek variety on his own responsibility, and is likely to cause serious injury.

In order to make a success of the diet in such cases, we must plan for variety and yet control the caloric value and the amount of the important ingredients. As a means of accomplishing this end in cases where the amount of protein is the important thing to regulate, I have designed the scheme of the " Proteid Portion " and the " Cereal Portion " given in Table III.

Under the head of " Proteid Portion " are given the commoner articles of diet that are rich in protein, — eggs, milk, buttermilk, meat and fish. The unit for comparison is the amount of protein in one egg, or 8 gm. The amount of each article of food that furnishes 8 gm. of protein is stated in the table and constitutes one " portion." You can then order a certain number of " portions " and allow the patient to choose that number in any combination he wishes. He thus gets variety, but the number of grams of protein remains the same.

Under the head of " Cereal Portion " are grouped a number of the staple articles of diet, such as bread, cereal, rice, etc. They are less rich in protein, but contain enough so that the amount taken must be regulated if the protein ingestion is to be restricted. The unit of the " Cereal Portion " is 4 gm. of protein, — the amount in a good serving of cereal or an average slice of bread. Here again you can order a certain number of " portions," you can allow your patient to choose his own combination to make up this total, and yet you still regulate the amount of protein that is taken. A light protein diet contains about 60 gm. of protein, and would be made up of 5 " proteid portions " and 5 " cereal portions."

These tables may be enlarged and even greater variety secured by adding other articles in amounts furnishing the same amount of protein. Similar tables of equivalent " portions " can readily be constructed for other purposes. For example, a table for " carbohydrate portions " can be constructed for diabetes. The unit for such a table of " carbohydrate portions " would vary with the carbohydrate tolerance of the patient, and such a table is, therefore, left to the ingenuity of the physician and is not incorporated in the chart.

The diet in diabetes can be easily arranged on this chart. Those articles that are free from carbohydrates can be recognized by a glance at the tables, and a diet of sufficient caloric value can be arranged. To this the " fodder vegetables " may be added, and this practically constitutes the " strict " diabetic diet. To this may be added in suitable cases a definite amount of carbohydrates. Variety may be secured by constructing a table of " carbohydrate portions," or a chart may be given the patient on which are checked those articles containing 5, 10 or 15% of carbohydrates, and the patient is allowed a certain weight of each group. For convenience in this matter, the articles of food in Table II are grouped in the order of their carbohydrate content.

The limitations of time prevent the giving of details illustrating the use of the charts in other diseases. It is enough to state that the charts are applicable to any condition where it is desirable to regulate the diet.

After the explanations about Chart A, the use of Chart B is easily understood. The object of this chart is to furnish a convenient means of giving orders to the patient, and for the patient or nurse to record the amounts of food taken at each meal. One side of the chart is intended for use when the physician gives his orders by the day, and the other side if he wishes to give orders for each meal. In either case, the amounts for the day can be easily made up from the records and the calculations made for the day. This chart may be used as a permanent record, or the results may be transferred to Chart A.

SUMMARY.

Scientific work in connection with the diet must be based on the caloric value of foods, and the

TUFTS MEDICAL DIET CHART (Chart B).

Day Order and Record Chart.

Name,

Address,

Diagnosis,

Date,

Record the Amounts of Food in Grams, Ounces, or "Measures" (see table).		APPROXIMATE VALUES.									ARTICLES OF FOOD	SUMMARY FOR 24 HOURS.					
		100 Grams (⅛-¼ lb.)				COMMON MEASURE.								Grams for 24 hours.			
FOOD ORDERED.	FOOD TAKEN.	Grams. P.	F.	C.	Cal.	Measure.	Grams. P.	F.	C.	Cal.		Amount for 24 hours.	Total Cal.	P.	F.	C.	Water oz. or cc.
Breakfast (at A.M.)	**Breakfast** (at A.M.)										**Proteids.**						
						1 portion	8	5	5	100	"Proteid Portion."						
		4	4	4	70	1 pint	20	20	20	350	Milk (whole).						
		13	10		150	1 egg	8	5.5		80	Eggs (whole).						
		20	5		125	¼ lb.	20	5		125	Meat, lean.						
		20	20		250	¼ ,,	20	20		250	,, fat.						
											Fats.						
Lunch (at A.M.)	**Lunch** (at A.M.)	3.5	20	3.5	200	1 oz.	1	6	1	60	Cream (20%).						
			85		800	1 pat. (⅛ oz.)		9		80	Butter.						
			100		900	1 tablespoon		15		125	Olive Oil.						
		10	60		600	Slice (½ oz.)	1.5	9		90	Bacon.						
Dinner (at P.M.)	**Dinner** (at P.M.)																
											Carbohydrates.						
						1 portion	4	1	30	140	"Cereal Portion."						
		2		24	100	1 tablespoon	1		15	60	Rice (boiled).						
		2		20	90	1 medium	2		20	90	Potatoes ,,						
		2	.5	12	60	1 tablespoon	1	.5	6	33	Cereal (cooked).						
		9	1	55	250	Avg. slice	3	.5	15	80	Bread.						
		10	10	70	400	,, ,,	3	3	20	120	Zwieback.						
Lunch (at P.M.)	**Lunch** (at P.M.)	11	10	70	400	See note.					Crackers.						
		10	1.5	75	350	1 biscuit	3	.5	22	100	Shredded Wheat.						
				100	400	1 teaspoon			6	25	Sugar.						
Supper (at P.M.)	**Supper** (at P.M.)																
				10	40						Sweet Fruits.						
		3	1	10	60	1 tablespoon	2	.5	6	40	**Vegetables.**						
Lunch (at P.M.)	**Lunch** (at P.M.)																
											Beverages.						
											Water.						
											Total Calories.						
											Weight of patient.						
											Total grams, P.						
											,, ,, F.						
											,, ,, C.						
											Total Water.						
											URINE. 24 hr. amt.						
											Urea. Gms. in 24 hrs.						
											Sugar. ,, ,, ,,						

DIRECTIONS FOR USE OF DAY ORDER AND RECORD CHART.

Either side of this chart may be used, as is most convenient. On the other side the amount of each article of food ordered for 24 hours is recorded, and the division among the meals is left to the discretion of the patient or nurse. If the physician wishes to give orders for each meal, this side of the chart should be used.

Only the commonest articles of food are printed on this chart. Blank spaces are left where additional articles may be added. The nutritive values of such articles may be found in standard books on dietetics, or may be obtained from the tables of the larger **TUFTS MEDICAL DIET CHART**, which also contains other valuable information.

TUFTS MEDICAL DIET CHART (Chart B).

Day Order and Record Chart.

ame

Address.

Diagnosis.

Date.

Record the Amounts of Food in Grams, Ounces, or Measures (see table).

APPROXIMATE VALUES.

ARTICLES OF FOOD.	FOOD ORDERED.	FOOD TAKEN.						Amount for 24 hours.	Total Cal.	Grams for 24 hours.			Water oz. or cc.	100 Grams (1/5-1/4 lb.)				COMMON MEASURE.				
		Breakfast.	Lunch.	Dinner.	Lunch.	Supper.	Lunch.			P.	F.	C.		Grams. P.	F.	C.	Cal.	Measure.	Grams. P.	F.	C.	Cal.
Proteids.																						
"Proteid Portion."																		1 portion	8	5	5	100
Milk (whole).														4	4	4	70	1 pint	20	20	20	350
Eggs (whole).														13	10		150	1 egg	8	5.5		80
Meat, lean.														20	5		125	¼ lb.	20	5		125
,, fat.														20	20		250	¼ ,,	20	20		250
Fats.																						
Cream (20%).														3.5	20	3.5	200	1 oz.	1	6	1	60
Butter.															85		800	1 pat. (⅛ oz.)		9		80
Olive Oil.															100		900	1 tablespoon		15		125
Bacon.														10	60		600	Slice (⅛ oz.)	1.5	9		90
Carbohydrates.																						
"Cereal Portion."																		1 portion	4	1	30	140
Rice (boiled).														2		24	100	1 tablespoon	1		15	60
Potatoes ,,														2		20	90	1 medium	2		20	90
Cereal (cooked).														2	.5	12	60	1 tablespoon	1	.5	6	33
Bread.														9	1	55	250	Avg. slice	3	.5	15	80
Zwieback.														10	10	70	400	,, ,,	3	3	20	120
Crackers.														11	10	70	400	See	note.			
Shredded Wheat.														10	1.5	75	350	1 biscuit	3	.5	22	100
Sugar.																100	400	1 teaspoon			6	25
Sweet Fruits.																10	40					
Vegetables.														3	1	10	60	1 tablespoon	2	.5	6	40
Beverages.																						
Water.																						

"PROTEID PORTION." Each of the following "portions" contains the same amount of protein as one egg (8 grams). One egg; 200 cc. (1 glass) of milk; ½ pint buttermilk; 1⅛ ounces (⅛ of a serving) of meat or fish.

"CEREAL PORTION." (Each contains about 4 grams of protein.) 4 tablespoons of cooked cereal, or rice, or macaroni or vermicelli; 2 moderate-sized potatoes: 1 slice (ounce) of bread; 1 ounce of crackers; 1 shredded wheat biscuit.

Total Calories.
Weight of patient.
Total grams, P.
,, ,, F.
,, ,, C.

Total Water.

URINE. 24 hr. amt.
Urea. Gms. in 24 hrs.
Sugar. ,, ,, ,,

NOTES:

P. Protein.
F. Fats.
C. Carbohydrates.
Cal. Calories.

CRACKERS: 1 oz. is equivalent to slice of Zwieback. 1 lb. of crackers contains P. 50, F. 45, C. 320, Cal. 1900. Count the number of crackers in 1 lb. and divide into the above values to get nutritive values for one cracker.

amount of each of the three ingredients (protein, fats and carbohydrates) contained in the food.

The quantitative regulation of food is as important as its qualitative regulation.

These charts give all the data needed in the practical regulation of the diet in such a form that calculations about the diet can be readily made and the results can be conveniently recorded.

They are applicable whenever the diet needs regulating in any condition.

DISCUSSION.

Dr. Franklin W. White, of Boston: It is perhaps a fair question to ask why we should use such a diet chart as this. It looks rather complicated at first, and I am afraid some members of our profession are not on speaking terms with the calorie. Is this chart a practical matter, or is it only a frill? Do we really need it?

I think we do need it; some of us need it badly, and for this reason: Because our knowledge of food values is far too small and too much neglected, and because this chart will help us to a better knowledge of food values.

We know about drugs and their doses, and we keep careful account of the amount we use, but we are accustomed to order our foods in a much more careless fashion. We do not know their doses, and do not pay enough attention to daily amounts or total quantities. Perhaps it was not sufficiently emphasized in our medical training, and we have fallen into bad habits. It is worth while to remember that while some of our patients take drugs, all of them take food.

What is the result? Some of our patients get fat and we cannot make them thin; some get thin and we cannot fatten them up. The doctor gives a liquid diet without realizing the great difference in the food value of different liquids, and the patient is dangerously starved without the doctor knowing it. Another patient may be dangerously overfed for the same reason.

Food values are not the whole thing. Quality and digestibility count, but we are too much inclined to forget amounts. We do not add up the total foods taken per day, or, if we do, it is in gross amounts, — so much bread, so many eggs, so much milk,—not reduced to their simplest terms — calories. We ought to become familiar with the calorie. There is no more reason to avoid it than the grain or dram. It is the only way we can bring all foods to a common level and get an idea of the total value of the day's rations. This is just what the chart enables us to do. Its greatest value in my opinion lies in educating the doctor in the values of the foods he has ordered.

One of the greatest mistakes in the past in typhoid fever and gastric ulcer as been to treat the patient's bowel or stomach and to forget the patient as a whole — his nutrition. I was very much impressed with a paper read at the last meeting of the American Medical Association, in which forty-five cases of typhoid fever were cited which were carried through their illness without any loss of weight. The doctor had succeeded in getting them to take from 4,000 to 5,000 calories a day. If we use this chart, we shall not give our patient one half or one fourth or one tenth of the amount of food needed per day without knowing it. We shall have the facts staring us in the face in our daily total.

I was much interested when abroad in going into one of the baby hospitals in Berlin. At the bed of each child was a chart which showed just how many calories of food the baby had taken each day. That is a very valuable thing. It would be an eye-opener to do this with many of our adult patients, and would prevent both dangerous overfeeding and starvation. The chart enables us to do this. If you ask a doctor whether his patient is taking sufficient food, he does not know; he guesses at it. This chart will enable him to know.

One reason we waste our patient's money on patent foods and have such exaggerated ideas about them is that we do not know how to compare their value with plain foods. If we did, their relative uselessness would be seen at once.

The plan of combining condensed tables of food values with the daily record is valuable, for it brings together on one sheet all the data needed for calculation of total food values or of total proteid or total carbohydrate eaten. The arrangement of the totals for a day is excellent for the comparison of the total carbohydrates eaten with the amount of sugar in the urine in diabetes, and for comparison of the total proteids eaten with the total urea in the urine, — for example, in nephritis, — and for comparison of the total amount of urine with the amount of water drunk. It is always a surprise to me to find how frequently the amount of urea in the urine is estimated without knowing the total amount of proteids eaten. No factor so influences the total urea excretion as the amount of proteids eaten, and to estimate the amount of urea without estimating the proteids in the diet is not only useless, but may be misleading.

There are a few things which perhaps might be criticised. It is of course impossible to arrange any chart in a perfect fashion at the outset. It will be necessary for the doctor who uses the chart to calculate more values of common measures of food in addition to those given in order to get his results quickly; for example, of soups, vegetables, fruits, simple desserts, ice cream, etc. These can be put in the blank spaces in Table I.

To illustrate what I mean, take the orange. In Miscellaneous Data, we find that one medium orange weighs 5 oz. One ounce equals approximately 30 gm. In Table II, we find that 100 gm. of orange has a food value of 40 calories and contains 10 gm. of carbohydrate, and thus we can calculate the value of the orange and write it down in Table I for future use.

One other trifling detail. The table of the Day Order and Record Chart of food taken reads, "Calories, Proteids, Fat, Carbohydrate." The food values read in another order, "Proteid, Fat, Calorie, Carbohydrate." It might be more convenient if both were given in the same order.

These are minor details, however. The chart is carefully worked out and has a great deal of practical worth in my opinion in teaching us food values.

Dr. Ralph C. Larrabee, of Boston: I agree with Dr. White and Dr. Arnold as to the need of more attention on the part of practitioners of medicine to these matters. But our present slipshod methods are not altogether our own fault. They are due rather to the difficulties which have attended calculations of the sort we are discussing. Such calculations have been made mostly by chemists and laboratory workers for scientific rather than for everyday practical purposes, and for such purposes great accuracy of detail is of course needed. For practical work such accuracy must give way to simplicity. Dr. Arnold's chart supplies us with a simple means of obtaining results which are accurate enough for our purpose — treatment of the sick. I do not see how the thing could be made any easier. At the same time, some will find the chart hard to use. Mathematics comes hard to the medical mind. Some of us find it so hard to think in percentages that we cannot even do it in infant feeding where milk only is used, and even with this chart the present matter is far more complicated. Most of us, however, will find that with a little thought and a little practice the use of the chart is easy. Dr. Arnold is to be congratulated for making a difficult matter much more simple.

Dr. Richard Hogner, of Boston: In my opinion, almost every table giving the figures for the relation between weight and height are quite in favor of the weight.

Dr. Arnold (closing the discussion): At the present time the charts will have to be procured from me. I have been trying to get some publishers interested, and I have negotiations under way now which I hope will be successful. I shall be glad in the meantime to supply anybody with charts.

In this connection, I was rather interested in a comment on the medical profession made by some of the publishers. They said to me: "The general practitioner is not capable at present of using these charts; there is no market for them." This is the comment of the practical men who are selling things to the profession, and I do not know of any harder criticism on the profession in regard to their knowledge of diet.

If I may be allowed to speak of one or two things without taking up too much of your time, I will do so.

The results that may be accomplished in some cases by a proper regulation of the diet have been a revelation to me, and they must be to many of you. Take, for example, the point spoken of by Dr. White in reference to the paper recently read at Atlantic City. The idea that it is possible to feed typhoid fever patients so that they do not lose weight is a surprise to most of us. I had a talk with the author of that paper, Dr. Warren Coleman, of New York, and was much interested in his methods of dieting these cases. They have a practical bearing on some of the problems I have laid before you to-day.

Dr. Coleman found it necessary, in preventing the loss of weight in these cases, to give upwards of 4,000 calories in a day. Let us take 4,200 calories as a convenient figure, and inquire how much milk — the food usually given to a typhoid fever patient — would be required to furnish this number of calories. From our table we know that 70 calories are furnished by 100 ccm. of milk. It would, therefore, require 60 times as much — or 6,000 ccm. — to furnish 4,200 calories. This is 6 liters, or approximately 6 quarts, — an impossible amount for such a patient to take day after day. It is, then, impossible to prevent the serious loss of weight in typhoid fever so long as we stick to a diet of milk alone.

Furthermore, if you desire to arrange a better diet for this purpose, you must know about the caloric or nutritive value of the different articles of food that may be used. Dr. Coleman's solution of the problem was to use a moderate amount of milk, to which was added a few eggs, and then cream and milk sugar were added in amounts sufficient to make up the desired total amount of nutriment.

A case which occurred in my own practice this winter was another revelation, — all the more striking because it occurred while I was working out some of these problems and because it shows so clearly the importance of the *quantitative* regulation of the diet. The patient had been under my charge for a year and a half with serious disease of the kidneys and heart. The diet had been carefully regulated quantitatively, and the amount of proteid food had been roughly restricted. He started with a weight of 190 lb., whereas his weight should have been 165 lb. A gradual loss of weight, without loss of strength, to 175 lb. was welcomed, and then he remained for months at that weight. Last fall there came a change for the worse. He lost weight rapidly. There was a marked loss of strength. The attacks of pulmonary edema, which he had had occasionally, now became more frequent and much more severe. It seemed to me in March that his disease was approaching a fatal termination, and that he could not live more than two months. His weight had dropped to 150 lb.

At this point, rather in a spirit of investigation than because I hoped to do much in the way of benefit, I calculated the exact amount of nutriment that he took in a day. I had not done this before, because I thought that his diet was already satisfactorily arranged, and he repeatedly assured me that he was getting "enough to eat." To my surprise, I found that he was getting only 1,400 calories instead of 2,300 which he should have had. Careful inquiry now showed that he had associated his attacks of pulmonary edema with slight changes in his food, and that he had become afraid to eat and had thus gradually cut his diet down to where it was far too low. I now carefully regulated his diet quantitatively as well as qualitatively, taking care that the nutritive value was sufficient. The results were surprising. Instead of a fatal termination, in two months he had improved marvelously. He had gained 15 lb. (up to his normal weight), he had gained in strength so that he felt as strong as a year before, and he had had no more attacks of pulmonary edema, although such attacks had been coming every two or three weeks. I had been allowing this man to starve under my own eyes simply because I did not accurately estimate the nutritive value of the food that he took. How many such cases do we let die through ignorance? (Note: Two months later, in July, this improvement still continues uninterrupted.)

Dr. White's suggestion that more "household measures" on the chart would add to its convenience is a good one and would make our calculations easier, but I found my space too limited for this. This is not desigsigned to be a wall chart, but to be of such size that it can be conveniently folded up and carried in the pocket. I felt that it was unnecessary to elaborate Table II by giving "household measures." In any individual case the calculation can be made easily from the figures in the table, together with the information given under the head of "Miscellaneous Data." This calculation, when once made and recorded in Table I, will not have to be repeated on the same case, no matter how long the diet is carried out.

Another very fair criticism that was made by Dr. White was in regard to the change in the order of the columns where the record for the day is kept from the order where the statistics are given. This change was made deliberately for the convenience of the general practitioner. He will more often consider only the caloric value of the food and not the number of grams of each ingredient. Consequently, it will be more convenient for him to have this column come first, next to that stating the amount. It will mean very satisfactory progress in dietetic treatment if we can get the general practitioner to pay attention even to the caloric value of the food. Furthermore, even where we wish to give consideration to the number of grams of each ingredient of the food, in the first arrangement of the diet, we do it by the total number of calories. For this purpose it is much more convenient to have this column come first. One quickly gets used to the arrangement, and confusion does not arise.

In regard to the relation of height and weight (spoken of by another gentleman), it is perfectly true, standard tables do not fit all individual cases. However, such tables are suitable for the average case. In the cases that most need regulation — the excessively fat and the excessively thin cases — we cannot take the actual weight as a basis for calculation. Should we do so, we should still more over-nourish the fat man and still more under-nourish the thin man. My table of height and weight is founded on one of the standard life insurance tables. As a matter of convenience in calculating, I have taken the nearest multiple of five for the figure for the weight. This gives results that are sufficiently accurate, for the daily allowance of calories need be determined only approximately.

NASAL AND NASO-PHARYNGEAL CONDITIONS AS CAUSATIVE FACTORS IN MIDDLE EAR DISEASES.

BY G. A. LELAND, M.D., BOSTON, MASS.

That the nose is the source of all our woes was once stated as the caption of an article in a New York daily paper. That the nose and naso-pharnyx are the source of a great majority of aural woes can hardly be gainsaid. For when we come to inquire into those conditions of the ear which conduce to discomfort, to abolition of the sense of hearing, even to danger to life itself, it will be found that almost all have their morbid origin in this region. For with the exception of certain changes in the secretion of cerumen, which are said to be influenced by naso-pharyngeal circulation, whether exuberant or diminished; also of some markedly virulent cases of external otitis which may possibly pass through a thinned drumhead; and also of trauma, we can exclude largely external conditions as causative factors of middle ear disease.

So also as to invasions from the cerebral side. Trauma, as in fractures of the base, may cause middle ear complications; and, aside from this, may be mentioned that still rarer factor, cerebrospinal meningitis, which may invade the tympanum through the labyrinth. Thus we are confined in our consideration to the protean forms of middle ear diseases which have their origin in extension of inflammation and of infections from the naso-pharynx. And the reason for this extension must be found in loss of the protection normally provided for the safety and the integrity of the conducting apparatus of the organ of audition.

Now the ear is both the most delicate organ of the body, and the best protected. From without, it is fended from damage by a movable cushion, the auricle, set upon the hardest bone in the body, the membrana tympani, its outer limit an inch and a quarter from the surface, approachable in the white races by a narrow curved canal, the inner two fifths of which is of flinty hardness. From within, it is protected by being at the outer end of a tube about one and a half inches in length, whose inner mouth is about three inches from the outside. Thus, by its position, is it guarded from changes of temperature as well as from other sources of injury. Now as most diseases come from the inside, a brief consideration of this protective mechanism may be opportune; and this may be arranged under two heads.

1. Structure of the Eustachian tube, its muscles and surroundings; and their physiological movements.

2. The influence of normal respiration (respiratory movements of membrana tympani).

1. The Eustachian tube is a vertical slit in the side of the naso-pharynx, about one and a quarter inches long, and about one-fourth inch high, whose sides, except at the outer end as it emerges from the tympanum, and at the inner opening in the pharynx, are, when at rest, in high contact. It is lined with columnar ciliated epithelia whose motion is downward towards the pharynx. The posterior wall of the tube consists of a cartilage which curves over at the top so as to form a hook-like projection forward, below the anterior edge of which the anterior wall consists of a fibrous membrane or fascia which is attached to the anterior tip of the Eustachian cartilage continuous with its perichondrium, and, extending downwards, becomes part of the tendon of the origin of the tensor palati muscle. This muscle is the dilator of the tube, and would have been called so if it had not been named before Rüdinger described it and its action. (Bezold.) It has its origin from the anterior tip of the Eustachian cartilage and from the fascia of the anterior wall and then narrows to pass around the hamular process.

Another muscle is the levator palati, which has its origin from the petrous portion of the temporal bone and " its cylindrical belly runs along the floor of the cartilaginous tube (Bezold), to be inserted into the soft palate."

Hovell describes a third muscle of the tube, the salpingo-pharyngeus or retractor of the tube, which, however, is not always present. It arises from the pharyngeal end of the cartilage and passes backward and downward into the muscles of the pharynx.

The action of these muscles is obvious. The tensor palati pulls forward the anterior movable fibrous wall of the tube; the levator palati by its contraction swells its rounded belly upward and pushes upward the floor of the tube, and pushes backward the inner tip of the posterior cartilaginous wall. This action widens the pharyngeal mouth, assisted by the action of the tensor, which immediately follows. This pushing backwards of the tip of the cartilage is assisted by the third muscle, though a weak one.

In normal conditions, therefore, every act of swallowing, most acts of speaking, and even those of respiration, as they cause movements of the very sensitive and flexible soft palate, also cause this continual opening of the inner mouth of the Eustachian tube.

We can conceive, also, that when active contraction ceases and the sides of the tube fall together again to a state of rest, the letting downwards of the floor, as the belly of the levator relaxes, acts as pumping or sucking, to draw air and moisture out of the tube, assisted by the elasticity of the drumhead itself.

Now, the inner opening of the Eustachian tube is situated in the midst of the lateral extension of the adenoidal ring of His or Heryng, and in the anterior wall of the tube between the fascia and the mucous lining is a mass of lymph glands. It will be readily seen that when the naso-pharyngeal glands are hyperplastic and hypertrophied, and the mucous membranes are swolled because of their presence, the normal movements of the Eustachian tube will be curtailed and the circulation increased to even a pathological degree.

Hence the protection of the middle ear afforded by normal physiological ventilation and drainage will be lost. Hence will result rarefaction of the air in the middle ear spaces; depression of its only external movable part, the membrana tympani; the possible consequent effusions, serous or mucous, or both, which may cause maceration of the inner walls; and so adhesions, which may take place without inflammation of a sthenic type, without pain or invasion of germs, but producing the insidious variety of adhesive catarrh which leads to loss of hearing sooner or later, becomes the O. M. C. C. of middle and later life, but which is amenable to treatment at any time, but curable only in the earliest stages.

Moreover, if the tube is covered in and pressed upon by adenoidal masses or swollen mucous membranes, so that the action of the cilia of the interior is in abeyance and the pumping motion lost, bacterial invasion may pass up the tube, with so-called extension of inflammatory conditions (O.M.A.; O.M.P.; O.M.P.C.) with all the complications with which we are only too well acquainted.

Both the structure and physiology of these parts point out the rational method of treatment.

2. One of the greatest factors in the protection which should hedge about the organs of hearing may be found in proper normal respiration, and that means *nasal respiration*, first, last and all the time. An English writer said long ago that the Eustachian tube begins at the tip of the nose; that meant that the air passages in front of the Eustachian orifices should be free. Mr. Mayo Collier, of London, has shown in an interesting brochure, published some ten years ago, the great influence of nasal respiration upon the integrity of the upper air passages. Others have written on this subject, but as Collier's arguments are especially lucid, they may be mentioned here. There has been much said as to how the accessory cavities of the nose are kept clean, since at least two of these have their only exits near the top of thin, bony cavities (antrums of Highmore and sphenoid), and all of them have only very small exits. Collier shows that this is accomplished by alternate condensation and rarefaction of air, because the nasal orifices are very much smaller than the cavities to which they lead. The air passages, including the nose, pharynx, trachea and lungs, contain a very large quantity of air, and this must be constantly renewed by alternate movements to and fro through the small nasal orifices. In normal quiet respiration, at rest, 20 cubic inches of air must pass through these orifices 20 times a minute. By exercise or exertion this may be increased to 30 cubic inches of air 30 times or more a minute. It is obvious that on inspiration there must occur a partial vacuum behind the introitus nasi, and that on expiration the air pressure must be increased. And it is this alternate variation of pressure which causes an interchange of air through the foramina leading into the accessory nasal sinuses and keeps the orifices clean. In this category may also be considered the middle ear cavity, for its ventilating tube is only somewhat longer than that of the frontal sinus.

That these respiratory movements actually take place was shown by Politzer, in 1860, by the use of his manometer, and has been shown by another European observer who was able to see these movements by covering the membrana tympani with an iridescent paint and using a magnifying glass for accurate observation.

The writer also had an experience which amply proved to his mind that these respiratory movements take place. Some years ago, a laborer was admitted to the City Hospital with large exostoses of the external auditory canal. On account of pain and deafness, caused by accumulation of epithelial débris which could not be removed through the occluded canal, the exostoses were chiseled away after the removal of the cartilaginous and cutaneous canal. There was a perforation through the membrana tympani, and the wound became infected. One morning, on removal of the packing, a bubble was formed over the canal orifice, which swelled out with expiration and was retracted with inspiration, which movements were constant till the bubble burst. His Eustachian tubes were apparently not abnormally open; but this observation and the experiments of others clearly show that there is a movement of air through the Eustachian tube, even though its walls are in apparent contact, and even though the force of the respiratory currents may not be very great.

From the foregoing may be deduced the rationale of treatment. Continuous nasal respiration is essential to the preservation of proper passages through the nose; that is, by the proper circulation of air through this region, proper circulation of the blood and lymph fluid is maintained.

Upon this also depends the normal condition of the naso-pharyngeal surfaces, and it is undoubted that the increase in the size of the lymphatic chain which surrounds the upper entrance to the body is largely caused by the lack of the proper play of air through the nose. Slight colds and carelessness of the medical attendants, as well as of the parents, allow the mouth to be used instead of the nose for respiration. Hence the space, not being needed, is filled up by hyperplastic lymph masses called adenoids. The proper movements of the Eustachian tubes are thus curtailed, and thus in earliest life is the foundation laid for deafness after the soft stage of life has passed, that is, after middle life. The time to cure, therefore, O.M.C.C. is *before* the initial earache has taken place or exudate has formed which causes depression and probably subsequent adhesions in the middle ear, and though in a very limited field there is no part of preventive medicine that can have more far-reaching individual importance than the prevention of these initial earaches in the very young.

To this end, almost universal education must be promulgated to teach people that their children must not be allowed to have earaches, and the general indifference of the community to even a slight earache must be removed, for the middle ear never forgets it. Too many of us, and the writer speaks from personal experience, are suffering from this very neglect which took place in our earliest life; and it is a very serious question for the individual when he gets along in life to a position of some importance, at least to himself, if he finds that he is to be shut off from the activities and pleasures of life, more or less, by the inevitable encroachment of almost irremediable deafness which could have been prevented had it been taken in time.

Hence the earliest symptoms of the presence of these growths must be a warning to us for their removal. Slight colds, which are frequent and last a considerable time, should call attention to the ears, and if the drumheads are found to be dull and lusterless, the air in the middle ear having been diminished or lost, the naso-pharynx, and especially the fossa of Rosenmüller, should be immediately cleaned out and nasal respiration insisted upon. But supposing the earaches have already taken place, delays are dangerous at this stage, not only for the present, but more so for the future; and from what has been said, it seems deducible that the rational method of treatment even then is to clear out the naso-pharynx and fossa; that is, to hasten the mechanism of opening and shutting and pumping the Eustachian tube. To this end the sides of the naso-pharynx should be relieved of the growth which is inevitably present, for I am sure there is no child to be seen with earaches not caused by an injury where adenoids are not present, with the possible exception of the infections of the exanthemata and of influenza, and even here it is doubtful.

To possibly throw some light on this point, my assistant, Dr. Henry Tolman, Jr., examined last week 127 cases in the scarlet-fever wards at the Contagious Department of the Boston City Hospital. It is well known that this disease often, if not always, causes an increase in size of these naso-pharyngeal lymph tissues. I was surprised to find that he found 43 cases without adenoids. There were 84 cases with adenoids, and of these it is again surprising that there were 72 without aural complications, either past or present. Of the 12 cases with aural complications, acute or chronic, all had adenoids, and of these only 5 had them generally distributed, and the other 7 had them only in the fossæ of Rosenmüller. This bears out my reïterated statement that children with earaches always have adenoid growths, and further emphasizes the importance of clear fossæ of Rosenmüller.

It has been the writer's privilege in numerous cases on the oncoming of earaches to scrape out the fossæ of Rosenmüller and the sides of the naso-pharynx at the mouth of the Eustachian tube, and to have others do it under his direction in the hospital. In almost every instance (I recall no exceptions), drainage has been established, inflammation of the ear has gone down, and perforation, pathological or artificial, was not necessary. Of course this procedure, which looks barbarous, cannot be done in every instance. Unfortunately, we have to defer to the opinions, whims and prejudices of guardians and parents, but in those instances where I have been given permission to do it, or where the more formidable ether operation has been allowed, the immediate removal of these growths from the naso-pharynx has been followed by an immediate subsidence of inflammation in the middle ear, both in children and adults.

Hence, with this etiology in view, the rhinologist evidently is the most natural aurist for the beginning of these cases. Now if these cases have been allowed to run on, and the insidious variety of adhesive catarrh has commenced to take place, with or without adhesions, the most rational treatment is that aimed to establish the proper physiological movements of the pharyngeal mouth of the Eustachian tube. From what has been said, it will be recalled that the mouth of this tube is never at rest; that its continuous movements tend to renew the air in the middle ear; but that if the side of the pharynx is swollen, and especially if there is present a mass of adenoidal tissue, the older the tougher, or of adhesive bands or cicatricial tissue *in the fossæ of Rosenmüller*, the pushing back of the tip of the tube by the levator palati and the pulling back by the retractor of the tube cannot take place. Hence the proper movements are curtailed. Formerly, the customary treatment in these cases was by inflation of the middle ear by the Politzer method, or by the use of the catheter; also, by means of tragus massage after Hommel's method, aiming thus to keep up the mobility of the drumhead. In most of these cases lasting improvement did not take place, and could hardly be expected when these grosser methods of inflation were applied only once or twice a week; and it is a question whether the use of Politzer's bag is not injurious because it is usually used with so much force and because these forceful methods produce an overstretching of the membrana tympani and middle ear structures.

The proper method, therefore, in the writer's opinion, is to establish the physiological movements of the air, and to this end must be restored the integrity of the region of the mouth of the Eustachian tube. The fossæ of Rosenmüller must be kept clean and wide, so as to permit the proper excursions of the posterior lip of the tube. Therefore, it may be said that the operation for the removal of adenoidal vegetations, in whatever time of life it is performed, is far from complete and, in fact, utterly useless where adenoids are removed only for the restoration of the respiratory space, and not for the restoration of proper movements at the sides of the naso-pharynx, i. e., utterly useless as far as the ear is concerned.

Moreover, one result of the operation in this fossa, which is a sulcus narrowing at depth outwards, and which by the rhinoscope may appear but one-fourth inch deep, but which, by the use of the finger, may be found to be one-half inch or more in depth, is to wound its surfaces. Hence, as these surfaces are movable, there is a tendency for the production of adhesions, so that sooner or later after the operation this fossa will be found to be occluded by fibrous tissue or by a reproduction of adenoids which it is a fact are absolutely impossible of complete removal, especially in this locality. Hence, in order to keep these fossæ clean so to insure their proper movements, it is occasionally necessary to scrape them after the major operation and to make application of astringents in them soon and perhaps frequently afterwards to keep the adhesions from forming.

Now it is evident that such subsequent treatment is difficult of accomplishment; but it is also evident that in many cases it will be necessary, if the proper movements of this tube are to be established and hearing preserved; that it is without doubt much better to suffer a few weeks of uncomfortable treatment than that the rest of life after middle age or earlier should be compromised by increasing deafness.

But the obliteration of this fossa, more or less complete, is not confined to early life. It frequently obtains also in adults with increasing deafness, and compromises the proper movements that establish ventilation of the middle ear. It seems to the writer much more rational to re-establish proper movements of these parts whereby the patient treats himself by the motions of swallowing, and by movements of respiration twenty to thirty times a minute, than it is to rely wholly on the use of the catheter or Politzer's bag. I beg to submit that this auto-treatment is much more effective where the middle ear has not been too firmly bound down by adhesions than any other treatment which can be artificially applied. To emphasize this position might be cited numerous cases which have been formerly under treatment for many years, where the re-establishment of these palatal and respiratory movements has brought the ear back to a satisfactory degree of hearing and given the patient much greater comfort and a brighter outlook on life.

In one case, a man sixty years of age, where a diagnosis had been made of anchylosis of the stapes and the patient, after twenty-five years of treatment, had been given over to that hopeless state where further treatment was considered useless, the establishing of these movements brought back hearing so that it was considered by his family that he had been restored to his normal condition.

Another case of fifty-eight years of age, after the same length of former treatment, had been given over to *occasional observation* without treatment, which was considered hopeless interference.

The hearing has been restored from 1 inch right ear and ½ inch left to between 1 and 3 feet right ear and ½ to 1 foot left, for Politzer's acoumeter. Here, general conversation at the table had been wholly lost, but now there is comfort at the table and in the office, which had been unknown for years.

Another one, a man of sixty-four years of age, after forty years of ordinary methods of treatment, finally consented to have his nose restored, the swellings of his naso-pharynx reduced, and so was brought into a condition where intercourse with his fellow men has now become a comfort when formerly it was a trial.

The reason which may be given for this difference in these cases is deduced from what has been said above, and here reiterated, that the proper respiratory and naso-pharyngeal movements are operative twenty-four hours in each day, twenty or more times a minute, and that these very gentle movements of the drumheads tend to stretch, or make flexible, the stiffened membrane and even the adhesions, just as continual dropping of water may wear away the rock. In the writer's opinion, this rational method of treatment has given better results in cases of encroaching deafness than are produced in any other way; and that in many cases this treatment must be insisted on at the very beginning of life.

There is one form of disease in which as yet very little progress has been made, viz., oto-sclerosis. May it not be true that even this disease started by inflammatory attacks in early life, influenced by rheumatism and other dyscrasiæ, may be prevented with all the rest by rational treatment of the naso-pharynx *before these inflammatory attacks are begun?*

Dependent on the nose and throat may be mentioned several isolated symptoms. And the first is pain. Many patients come to us complaining of earaches, where, after careful examination, there is no evidence of inflammatory mischief in the middle ear or its annexes. This pain is, therefore, reflex and may come from various locations, even from the aryepiglottic folds or from the sides of the larynx, as was shown many years ago by our colleague, Dr. J. Orne Green. Most frequently it comes from the tonsils, radiating upward. It occasionally comes from swelling of the lateral pharyngeal lymphatic bands behind the posterior pillars of the fauces, which pass up around the region of the Eustachian tubes. It may come from a tooth, painful because of decay or improper striking, for any part of the trigeminal in its myriad branches may have the cause of pain which may be referred to any other part. Also, we may have pain in the ear from intranasal pressure, from suppuration of the sphenoid, and probably also the ethmoid; but this only shows that in some cases the whole periphery, or whole nervous supply, must be overhauled to find the cause.

The second symptom of this nature is a feeling of fullness in the ear, as if there were a plug of cotton, the removal of which would clear up this condition of discomfort. I have found this pressure feeling to be only a lesser degree of that which means pain, and to be caused in a large number of cases by pressure of the corresponding second turbinal upon the top of the third, or on the outer wall. The removal of this pressure clears up the feeling of plugging, and it is utterly irrational to inflate the ear in these cases, for in most of them hearing tests will prove that, the ear being all right, there can be no cause for the sensation there.

The third symptom to which I would like to call attention is tinnitus, and especially the low-toned roar, often with pulsations, or, as the patient describes it, a hammering. In these cases there is frequently an effusion in the middle ear, but as often the tympanum is clear. That this variety is often due to hyperemia of the lymphatic structures in the sides of the naso-pharynx, and especially in the fossæ of Rosenmüller, has been abundantly proved by its almost immediate cessation after they have been cleared out and kept clean by astringent applications, often necessarily made with considerable force. So, also, the hissing variety of tinnitus, especially in late or even middle life, is often thought less surely diminished or abolished by reduction of the circulation around and inside of the mouth of the Eustachian tube. And to this end, for a result more or less permanent, let it again be reiterated that normal unobstructed nasal respiration must be established, and further that that most common of all nasal obstructions corrected, viz., the vicious habit of mouth breathing.

The fourth and last symptom is vertigo. The occlusion of the nose with its hypercirculation is occasionally responsible for this symptom, even without active aural lesions. An old habitué of the aural service many years ago is well remembered who for several months came to the clinic led by his daughter because of staggering in the street. He was treated aurally by me three to four months with little relief, by my colleague for the next six months, and was still coming in the same way when the service was changed. Then it was discovered that his turbinates, lower and middle, were much engorged. On reduction of these bodies, the vertigo ceased and hearing improved. This case has served good stead as a pointer to occasional cases of nasal vertigo.

In speaking of these functional movements, those produced by blowing the nose have not been mentioned because it is considered, together with the Valsalvan experiment, a pernicious practice, resulting too often in over-stretching of the membrana tympani and of the middle ear tendons and ligaments, and because proper treatment and proper use of the nose should make the use of the handkerchief unnecessary, for there is no doubt that this act increases congestion and intensifies most morbid conditions.

In closing, it must be conceded that the whole subject has by no means been touched upon in this paper — it is too large for the time allotted; that many of the diseases of the ear, of inflammatory and infectious extensions, have been only hinted at, but it has been attempted to call attention to certain principles which have been of value as stimuli in practice, and to certain methods which have been followed by satisfactory results. Nor is it thought for a moment that anything new has been brought forward, anything outside of the practice or experience of most, if not all, of this audience of specialists; but only that this paper is a small part of this symposium which, with its discussion, is to go out to do missionary work among the family physicians, and especially the pediatrists, and even the obstetricians, who have to do with the youngest victims of these troubles, when treatment is most effective for the future as well as for the present; and also to make clear that treatment of the naso-pharynx, especially operative treatment, is in the province of the aural specialist, since its effect on the function of hearing is of the utmost importance.

THE DIAGNOSIS OF PHTHISIS, AND ITS ASSOCIATION WITH CERTAIN SIMULATING DISEASES.*

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AND
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CERTAIN FREQUENTLY NEGLECTED POINTS IN THE DIAGNOSIS OF PHTHISIS.

THE diagnosis of phthisis in its incipiency presents to the great body of medical men one of the most difficult problems. No disease is so multiform in its manifestations or so often obscured or simulated by other diseases. Aside from these facts, the location and the depth of beginning pulmonary involvement are of great importance in determining the ease with which a diagnosis can be made. The small lobule of tuberculous tissue is almost impossible of detection on account of its minute size, and even where several have coalesced, compensatory emphysema precludes detection. Again, where the primary area of consolidation occurs in those parts of the lung away from the surface, normal lung tissue coming between the diseased area and the ear will exclude all transmission of abnormal adventitious sounds. In such cases, phthisis may not be suspected until routine sputum examination shows tubercle bacilli to be present. Furthermore, in those cases whose pulmonary expansion is limited and areas of atelectasis are constantly present at the margins of the lung, this condition may obscure a small area of caseous bronchopneumonia in this location. The phthisical patient, by the very reason of his general physical condition, is more prone to develop complicating diseases, and asthma, chronic bronchitis or nephritis add one more element of difficulty in the way of the early detection of phthisis.

For this and many other reasons, an early diagnosis of pulmonary tuberculosis consists of a summary of all factors obtainable as indicative of its presence. Far too many physicians neglect to treat a patient for phthisis until they have proved its presence in the individual. Treatment may, with advantage, be instituted while the suspicion of phthisis is being proved a certainty.

The onset of phthisis is varied and often ushered in by some complicating disease whose presence apparently accounts for all symptoms. Bronchitis, laryngitis or marked debility are often the beginnings of phthisis and their signs or symptoms may be all that are obtainable for weeks or months. Nevertheless, their association with pulmonary tuberculosis is generally appreciated and the accompanying lung condition, therefore, closely scrutinized. Hemoptysis is of immense diagnostic significance, even in the absence of pulmonary signs, and while it may not necessarily arise from tuberculosis, its occurrence is always suggestive of tubercle formations in the lungs. Not infrequently phthisis first produces marked constitutional symptoms by gastric upset. Stomach cough is a well-known expression. The dyspepsia of latent or incipient disease frequently shows itself as mere functional inactivity or as hyperchlorhydria. So noticeably frequent is the association of gastric symptoms with phthisis that a routine pulmonary examination is now being made in most cases of apparently simple indigestion in at least one of our large out-patient clinics. It is well known that the best soil for the growth of the tubercle is the tissue of the lung. The presence, therefore, of adenitis or pleurisy with or without effusion, where the tubercle bacillus is the probable etiological factor, should always direct attention to the lungs themselves. Many cases of tubercular adenitis show signs of diminished areation at the apex of one lung, and frequently this may be the beginning of an active process from glandular involvement of long standing. Pleurisy with effusion is known to be tubercular in the great majority of instances, and a study of the final results in such cases shows the development of phthisis in by far the larger number. These two diseases when present may be taken as an index of the patient's resistance to the tubercle bacillus and generally mean a lack of, or a considerably lowered, natural resistance to this organism. Such symptoms of phthisis as cough, expectoration, loss of strength and weight and night sweats need no emphasis, but the presence of a number of other less evident symptoms are often of great significance.

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* Read at the annual meeting of The Massachusetts Medical Society, June 15, 1909.

The body temperature is among the most valuable of these. It is undoubtedly true that occasionally incipient tuberculosis may show a subnormal temperature, but in the large proportion of cases of developing phthisis, fever is present. A marked elevation is not generally noticeable, but the occurrence of a temperature running between 99 and 99.6° in the late afternoon is of real import. Oversight of such cases where no evidence of tuberculosis is present for a number of weeks will rarely fail to show signs of pulmonary disease sooner or later.

Frequently, a febrile reaction may be brought out in incipient phthisis following exertion which is unassociated with fatigue. This is in all probability due to auto-inoculation through the absorption of the toxins produced by tubercle growth. Many a case of suspected phthisis will, on reporting at a clinic for examination, show a slight morning temperature either from excitement or exertion. The home record of the case reveals no elevation whatever. This is especially true in children. Not only is this symptom of value in diagnosis, but also in prognosis, for when, under treatment, no febrile reaction occurs, even on exertion, immunization against the toxin of tubercle is being built up or the process in the body is to a considerable degree arrested.

Pulse. — Hand in hand with elevated temperature occurs the accelerated pulse. In many instances, even where toxic absorption is not sufficient to produce a febrile reaction, it may yet markedly affect the pulse-rate. A low-tension running pulse is not so characteristic of the incipient case as where the disease has existed for some time. Nevertheless, when low tension and acceleration of pulse are present, a phthisical lesion may explain this condition which might otherwise be attributed to neurasthenia.

Sputum. — The great value of sputum examination is in diagnosis. The prognostic significance of the presence of a large or small number of tubercle bacilli has been greatly exaggerated, and little value can be placed upon it. The occurrence of bacilli in the sputum of consumptive patients shows great variation. Nagel, in 1,081 cases of phthisis, found the tubercle bacillus in about 15%, and of these, only 1.4% were in the incipient stage.

The diagnosis, therefore, of most cases must be made before the sputum is positive. In a considerable number of instances, if the whole sputum were examined, the percentage of positive cases would be materially increased. With the disintegration of the sputum by means of sodic hydrate, and the use of the centrifugalized sediment, a far larger number of tubercle bacilli might be demonstrated on first examination.

Physical signs. — Among the physical signs of pulmonary tuberculosis that are frequently neglected in diagnosis is that of expansion of the base of the lungs. In many instances, when there is an active lesion at the apex, the expansion of the base of the lung on the same side will be markedly limited as compared with the other. This has been especially emphasized by Williams in the use of the x-ray in the diagnosis of phthisis. Frequently, in the suspected case, an initial examination of the base of the lungs will, through the limitation of expansion on one side, give good evidence as to the location of the lesion. As the process becomes quiescent or well marked, so that the capacity of the lung is taxed, this phenomenon may disappear. In the incipient case, however, it is fairly constant. Corresponding to the expansion of the lower lung border on inspiration, as demonstrated by the x-ray, percussion or the observation of Litten's phenomenon, is the expansion of the apices. In the percussion of the apical outline in the normal chest, unless forcible inspiration is used, the full width of the lung apex is rarely obtained. Inflation of the lung tissue in this region, even before the isthmus of lung resonance across the shoulder is narrowed, may show expansion to be markedly retarded in this region, even on forced inspiration. In those cases, also, where one apex is involved and full expansion of the lung fails to give a widening girdle of pulmonary resonance on the opposite side, that apex should be viewed with suspicion. This sign may be of value in deciding between atelectasis and consolidation in many instances. In the very earliest cases, before the percussion note shows any change, the limitation of apical expansion taken together with the loss of Litten's sign on the same side may localize a beginning lesion. Aside from the limitation of lung movement at the apices, the narrowing of the width of pulmonary resonance across the summit of the lung occurs in early apical involvement. The normal area of resonance measures 3½ – 4¾ ccm. in width. When phthisis exists, this may be materially decreased, so that the area of resonance may measure $\frac{3}{4}$ to 1 ccm. in diameter. Before contraction of the lung tissues has occurred, due to the coalescence of tubercules, this sign may be absent, but as coalesence and retraction occur early, the shrinking of the apical outline is of value in detecting beginning apical disease.

In the use of percussion in the diagnosis of phthisis, not only the character of the sound elicited is of importance, but also the flexibility of the underlying tissues. The sense of resistance obtained by the pleximeter finger over consolidation is in marked contrast to the elasticity of the normal lung. This varies from a slight loss of elasticity over an area of lung consolidation to the board-like resistance over fluid or plastic pleurisy.

Waller, in discussing the methods used in applying percussion, strongly urges the use of the vertical asymmetrical method. He says, and with good reason, that by constantly comparing the note obtained while percussing two sides of the chest, the fact that both may be abnormal is often overlooked. By examining the lungs from above downward, however, the change of the note obtained gives a far more accurate conception of the presence or absence of dullness.

Fluoroscopic examination of the lung generally shows that the evidences of infiltration are well below the extent made out by percussion. That a more correct idea of the real extent of consolidation can be obtained by vertical percussion, there is little doubt. In most instances where one apex is involved to any appreciable degree, careful examination will almost invariably show impaired resonance on the opposite side, but this can only be obtained with certainty when the method of Waller is used.

The change of position of the patient in the examination of the lungs, as is done in the examination of the heart, may occasionally give us one more aid in diagnosis. Postural dullness, due, according to Albert Abrams, to the gravitation of blood to the dependent portion of the lungs, occurs constantly in health, most marked perhaps in children. The uppermost portion of the chest in the prone position, however, normally shows hyperresonance.

In phthisis, variations from the normal by means of percussion may be brought out by having that portion of the lung which is suspected uppermost, and a lack of hyperresonance may be of real importance.

The use of tuberculin as a diagnostic means is of more value in the determination of the presence or absence of the tuberculosis rather than in its localization. The simpler methods of giving tuberculin are chiefly of use in this way. With the subcutaneous test, however, the presence of a local reaction may point out the seat of the lesion, and the character of the response obtained will aid us in deciding whether the lesion is active or quiescent. All these methods should be used and interpreted with care, but no single adjunct in diagnosis should replace repeated pulmonary examination.

CERTAIN DISEASES ASSOCIATED WITH AND STIMULATING PHTHISIS.

When phthisis complicates or occurs in coincidence with other diseases, its prognosis and treatment are frequently modified by the non-tubercular process. The relation between phthisis and certain other conditions is well known to the pathologist, but is less emphasized in clinical teaching. Considerable work has been done on the actual relation of valvular heart disease and phthisis, and special stress has been laid on the protective influence of passive hyperemia in mitral stenosis. Tileston showed that in 4,240 autopsies here in Boston, among 128 cases of mitral stenosis, there was only 20 cases of phthisis, and of these, only 1 was active clinically and showed bacilli in the sputum. Nevertheless, every large series of cases of mitral stenosis recorded, either at autopsy or clinically, shows a few cases of active phthisis, and a certain percentage appears in mitral regurgitation and aortic disease. From the other point of view, every large series of cases of phthisis contains a few cases of valvular heart disease. For instance, in 3,056 cases of valvular heart disease in the wards and out-patient department of the Massachusetts General Hospital in the last ten years, a positive diagnosis of phthisis appears 33 times, or 1.08%. On the other hand, at the out-patient department of the Boston Consumptives' Hospital, in 1,688 cases of proven phthisis, valvular heart lesions were present in 42 cases, or 2.5%, of which 10 were mitral stenosis. Of the latter, however, only 4 were active cases of phthisis with bacilli, and 1 of these has actually acquired the heart lesion over a year subsequent to the proven existence of the pulmonary lesion while under observation. The same thing holds true in a recent series of autopsies at the Charité, where, among 505 cases of phthisis, there were 14 cases of valvular heart disease, only 3 of which, however, were active and recognized clinically. Without going into further details, it seems fair to say that valvular heart disease occurs more or less frequently with phthisis and, therefore, where the former occurs, with suspicious symptoms, these cases should have the benefit of pulmonary and sputum examination.

Phthisis was noted as a frequent complication of Bright's disease so long ago as 1845 (by Peacock). Statistics on the relation between nephritis and phthisis are exceedingly unsatisfactory because of the well-known fact that phthisis frequently produces nephritis. Certain cases, however, will show at autopsy that there was a preceding renal lesion. The prognosis of such cases is distinctly grave. A case was recently under observation in which there was a history, dating back eighteen months, of cough, loss of weight and strength and hemoptysis, in a woman of twenty-eight years of age. Physical examination showed a condition of advanced phthisis. There was also a history of transitory edema of the hands and face. Before a specimen of urine could be obtained, the patient had a severe convulsion, and the urine was later found to be loaded with albumin and casts. Further inquiry demonstrated that ever since scarlet fever, in early childhood, the patient had had polyuria and nocturia, and that she had been told several times that her kidneys were diseased. It is easy to see how a full diagnosis might not have been made if the convulsion had been the cause for calling the physician, and how the prognosis of the phthisis was affected by the nephritis. Eight cases of apparently antedating nephritis have been found in the Boston Consumptives' Hospital Out-Patient Department, while at the Massachusetts General Hospital, among 1,176 cases of chronic nephritis, there have been 8 cases of phthisis.

Diabetes is supposed to render the patient prone to succumb to consumption, and Naunyn, in Nothnagel's System, quotes some very striking figures to that effect. Griesenger, in 250 autopsies on diabetes, showed that 42% had phthisis. In 31%, it was one of the causes of death. Freichs, in 55 clinical cases of diabetes, had 25 cases showing phthisis. Naunyn, in 252 cases, had 33 instances of phthisis. Germain-Seè states that 2.3% of diabetics die of phthisis. In all of 557 cases of diabetes, 154 had phthisis, or 27.7%.

Here in Boston the figures are very different, for among 415 cases of diabetes at the Massachusetts General Hospital, only six times does the clinical diagnosis of phthisis occur, with one additional case of miliary tuberculosis; and in only 1 case where a patient died of diabetes was unsuspected phthisis found at autopsy. Similar statistics have been obtained at the Boston Consumptives' Hospital clinic, where only 2 cases of diabetes have been found among 1,688 cases of phthisis in the past twenty-one months.

Bronchial asthma and chronic bronchitis also occur in conjunction with phthisis. At the Massachusetts General Hospital, among 508 cases of chronic bronchitis, phthisis has occurred 14 times; among 419 cases of asthma, 5 times. Out of 1,688 cases of phthisis at the Boston Consumptives' Hospital, there have been 11 obscured by asthma and 10 by chronic bronchitis. Furthermore, of the 21 cases just mentioned, 7 showed no physical signs of phthisis before a positive sputum was obtained, and 5 of the 7 gave very little definite evidence of the location of the process after repeated examinations. The diagnosis of chronic bronchitis or asthma should be made with a certain mental reservation and should be accompanied by continued observation of the patient. Last but not least of the diseases obscuring pulmonary tuberculosis is the whole "nervous" symptom complex. It may be of interest to note that in one out-patient clinic in this vicinity, 24 of the 2,363 cases of phthisis were classed as neurasthenia, dyspepsia and debility for some time before the correct diagnosis was made. It is equally instructive to observe that in the first thousand there were 13 such cases; in the second thousand, 7 cases, and in the third thousand, only 4 cases so disclosed. Two very striking cases have recently been under observation. The first patient was a woman of twenty-nine years of age. Without physical examination she was given electric and mechanical treatment for her nervous cough and dyspepsia for one year. At the end of that time, hemoptysis began, sputum was positive and the case was in the second stage at the first examination. The second patient, a woman of forty years of age, had had violent attacks of hysteria and gastric indigestion for years. For two months she complained of indefinite pains in her chest and was more nervous than usual. Finally, she began to vomit continuously and the diagnosis of gastric ulcer was made. She was sent to a general hospital for operation. The abdomen was negative, the chest nearly so, but the sputum was loaded with bacilli, and in a few days the patient was in a private sanatorium for tuberculosis. The diagnosis of neurasthenia should not be made until phthisis has not only been searched for, but even ruled out.

Of the non-tubercular conditions which more often simulate phthisis, some of which are often associated with it, asthma and chronic bronchitis are fairly frequent, 30 cases of the former and 33 cases of the later with no evidence of phthisis having been recently observed at the Boston Consumptives' Hospital; chronic influenza is much less frequent and is only diagnosed by long observation and study. Occasionally, however, patients appear with a history of years of cough, large amount of sputum, often with hemoptysis and fever, and showing the physical signs of consolidation. Repeated sputum examinations show only enormons numbers of influenza bacilli, or perhaps a mixed infection with pyogenic organisms. Some of these patients are in excellent general condition, while others may be emaciated to the last degree. Two such cases have been under our observation. Both were children of three and twelve years respectively, in whom there were signs of consolidation at the apices. Sputum examinations showed influenza bacilli, but no tubercle bacilli were present. A tuberculin test of 10 mgm. was negative in each case.

Of the cardiac conditions, acute endocarditis is perhaps as baffling as any. A boy of three years was recently seen with the history that since he had measles, two years ago, he had never been well; that he had frequently suffered for weeks at a time with a cough, fever, night sweats, pallor and loss of appetite. Physical examination of the lungs was negative, but there was obvious cardiac hypertrophy, and murmurs were present and became more marked under observation at both the mitral and aortic areas. Further questioning brought out the fact that he had severe "growing pains" during the attack of measles and at times afterward. Occasionally a definite history of phthisis is obtained in a case where negative chest examination, together with hypertrophied heart and typical urine, have made the diagnosis of chronic interstitial nephritis clear. One very marked case of consolidation of the lung with a suspicious lesion in the throat has cleared up entirely and rapidly under treatment with mercury. A similar case is now under treatment. Finally, two young women with almost every symptom of phthisis, including fever and hemoptysis, but whose chests were entirely negative, proved upon blood examination to be cases of pernicious anemia.

In conclusion, we wish to offer a plea for the more extended use by the practitioner of such methods of diagnosis as are easily within reach of every medical man; and for the exercise of infinite pains and judgment in the early detection and treatment of pulmonary tuberculosis.

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DISTINCTION BETWEEN THE PSYCHONEUROSES NOT ALWAYS NECESSARY.*

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There are few subjects upon which more confusion exists than that of the classification of cases without known organic basis, but presenting nervous symptoms of a general character such as sensitiveness, insomnia, indecision, lack of ambition, headache, backache and various pains, lack of emotional control and morbid fears.

It is not surprising that this classification should be somewhat vague in the mind of the general practitioner, since the distinctions have not yet been clearly established by the specialist.

There is no difficulty in the well-marked case. Such symptoms as aphonia or hemi-anesthesia would be labeled by every neurologist those of hysteria; similarly, exaltation, pressure of activity and flight of ideas, alternating with profound depression, retardation of thought and confusion would be recognized by every alienist as characteristic of the manic-depressive state. In like manner the patient may readily be called a hypochondriac whose troubles take the direction of constant self-study, with undue interest in and undue anxiety regarding his physical condition. Regarding the status of neurasthenia and its comparative indefiniteness, I shall have a word to say further on.

But after the elimination of such definitely marked cases, there still remain a very large number whose symptoms are not so well marked, in fact, whose symptoms are practically identical. It is regarding this class that there prevails, it seems to me, an undue and illogical insistence upon exact classification.

If we epitomize the symptoms of manic-depressive insanity according to one standard author, and divide them into those characterizing the severe case and those common to all cases, the lack of distinctive features in the second class is apparent. In the first class will be found the following perfectly characteristic symptoms: Disturbance of apprehension; clouding of consciousness; disorientation; stupor; insensibility to heat, cold, hunger and pain; delusions (persecutory, hypochondriacal, of jealousy, of poisoning, of self-accusation); flight of ideas; retardation of thought; pressure of activity; absence of fatigue; incoherence; impairment of memory; psychomotor retardation. If a case presents such well-marked symptoms as these, there need be no hesitation in labeling it.

But note the symptoms of the less pronounced cases as given by this author: Irritability; indecison; distractibility; lack of initiative; anxiety; depression; easy exhaustibility; poor sleep; poor appetite; indigestion; constipation; tremor; numbness; tinnitus aurium; dizziness; chilliness; heaviness of the limbs; weight on the chest and general weakness with increased reflexes. Suppose a patient presents only symptoms of this class, together with a certain variability of mood, how shall we distinguish between a mild manic-depressive state and neurasthenia? For, on looking through the symptoms of neurasthenia in this and other textbooks, we find that they are practically identical with those under consideration.

Turning to the section on diagnosis in this textbook, we find that it is difficult to distinguish the mildest forms of this disorder from certain morbid personal peculiarities, and that the ill humor and the exhilaration should not be mistaken for simple whims or be designated hysteria, neurasthenia and hypochondriasis. But the following suggestion offered as an aid in the avoidance of this error shows the elusiveness of the distinction: "The simple lack of decision, the inability of the depressive patient to come to a conclusion, is so characteristic that they alone often suffice in making the diagnosis." But lack of decision is one of the symptoms common to all these psychopathic states, including neurasthenia. Again, regarding the mild manic state, we are told that the distinction depends chiefly upon the fact that the increased business and activity is not uniform, but shows variations. Upon the inadequacy of such a distinction I need not comment.

Suppose we start with hypochondriasis. As in the case of manic-depressive insanity, we shall find comparatively little difficulty in applying the diagnosis to the pronounced case. If the patient thinks his leg is made of glass we may safely diagnosticate pronounced hypochondria provided there is no persecutory element in his belief, and provided we can assure ourselves that this is not one of the hypochondriacal delusions of manic-depressive insanity, which remind us that even in the marked cases some confusion is inevitable. We should also diagnosticate hypochondria if the patient's self study, though falling short of delusion, dominates his thoughts and guides his conduct.

But suppose the hypochondriacal fears are only moderate in degree, why need we attempt to determine whether they are of manic-depressive or of neurasthenic origin? In the symptomatology of both these states we find these hypochondriacal fancies given a prominent place.

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Suppose we approach the subject from the point of view of hysteria. If the patient has such characteristic symptoms as convulsions, aphonia, spasms, anesthesia or paralysis, the diagnosis is easily established, but suppose we find only the following symptoms (enumerated by a well-known authority, whose textbook merits a place on the shelves of every physician and every student): "Emotional weakness, nervousness, hyperesthesia and pains, crises of an emotional character, undue sensitiveness, depressed and easy alarm, lack of control over the emotions, feelings of nervousness, laughing or crying or yielding to impulse, headaches and spinal pains, poor sleep and disagreeable dreams, trembling and chilly feelings, with vasomotor irritability." This author well appends to the above catalogue of complaints the statement that "hysteria minor is closely allied to a condition of neurasthenia or of simple nervousness," so nearly, it seems to me, that the attempt to place every case in one or the other category means sacrificing clearness to insistence for classification.

The diagnosis *folie du doute* we need not seriously consider, since the practical abandonment of this designation shows general acceptance of the fact that doubt and indecision have already been merged in the various states we are studying. My plea is that this recognition of the real state of affairs be carried to its logical conclusion.

Thus far our search would indicate that *manic-depressive insanity* and *hysteria* are useful diagnoses for pronounced cases, and that *hypochondria* has sufficiently definite symptoms to deserve, for well-marked cases, a separate classification, though the dividing line is sometimes indistinct.

But what of neurasthenia? Under this head we find no definite and peculiar set of symptoms, but rather a collection of symptoms common to manic-depressive insanity, hysteria minor, hypochondriasis, congenital psychopathy and simple nervousness. Is it not, then, misleading to use this name as if it applied to a peculiar class? The word itself is also objectionable in that it implies an asthenic state by no means always present; the substitutes "phrenasthenia" and "psychasthenia," while preferable because they recognize the mental element in these cases, share the same objection through retaining the word "asthenia." Why is it "too inclusive" to group together, under a general term like "psycho-neuroses," cases some of which are now included under misleading terms, and all of which are so far identical that to distinguish between them involves dealing with shadows?

And if the general diagnosis *neurasthenia* rests on an insecure foundation, what shall we say of its multitudinous subdivisions? We are admonished, for example, by a certain author to distinguish carefully between congenital and acquired neurasthenia; but our search through this and other textbooks for the diagnostic features between these conditions is most unsatisfactory. It is hard to exclude congenital tendency, for example, in such a case as that (cited in our textbook under the diagnosis "acquired neurasthenia") of the young lady who, when received at the hospital from the hands of a tender-hearted mother, had not had her hair combed for two years and one of whose toenails had grown to the length of five inches. We learn, in the same book, that the stress which produces acquired neurasthenia in a given case is far less *when heredity predisposes* to neurasthenia; also that the breakdown of acquired neurasthenia is more pronounced in those who *are so constituted that the simplest exercise causes exhaustion.* Such observations would indicate a congenital predisposition even in acquired neurasthenia. Again, how does the vascular irritability of "angiopathic neurasthenia" differ from that of "hysteria minor," and how shall we distinguish the mental vagaries of the "sexual neurasthenic" from those of the hypochondriac whose fears are focussed upon his reproductive organs? My aim in making these comments is not to ridicule these books nor in any way to detract from the worth of volumes we could ill spare.[1] It is rather to show the difficulties under which we labor in endeavoring to establish distinctions which shall hold for *every* case of psychoneurosis.

As the result of such considerations, the diagnosis "neurasthenia" appears on the books of the neurological department of the Massachusetts General Hospital only three times in the course of a certain year, during which time this diagnosis was made in the medical department of the same institution one hundred and twenty-seven times. The frequency of the diagnosis *psychoneurosis* in the neurological department indicates that such psychoneuroses as do not present preponderant symptoms enough to justify their definite inclusion under hysteria, hypochondria or manic-depressive insanity are simply classed under this head. While this method may not satisfy the craving for subclassification, it is quite as accurate as the forced and artificial distinctions previously attempted in this department and still followed in other clinics.

To the question whether I should class a given case under manic-depressive insanity or under neurasthenia, my most frequent answer is that if the symptoms are not distinctive enough to place it beyond question in one or the other class, I should name it *psychoneurosis* without attempting further distinction unless in course of time characteristic symptoms appear. The following example is chosen because it represents an actual case in which I was asked this question by Dr. J. H. Pratt who kindly furnished me these notes:

Case. Mrs. X., forty-one. The chief complaint is of great nervousness and agitation. She was always well up to seven years ago aside from the fact that she was frightfully nervous when she sang. She was active and socially inclined and did charitable work prior to her marriage. In 1901 she broke down shortly after her marriage. The slightest noise pained her like pressure on an inflamed nerve. There was lancinating pain in the chest. Was in bed for weeks. She does not remember that she was depressed. She would wonder what people would think of a bride who broke down, especially certain people that she scarcely knew at all. She has never entirely recovered from an illness of five years ago. Has slept well, but is easily tired. Is subject to attacks of depression coming on without apparent cause and lasting perhaps an hour. Since four months ago she has had continuous depression, except for a short time each evening. No special cause is assigned. She sleeps fairly well. The nervousness comes on gradually during the early morning hours. She has almost constant suicidal desire. She feels that she must constantly fight against it and dreads to be left alone, and has arranged that she shall not be so left.

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[1] In point of fact, I gather that further editions of these books will contain material modification.

There are no delusions or hallucinations. She dreads to dress for dinner. She does not feel that she could care for her baby while this depression continues. When alone she dwells constantly upon her condition, although she tries not to do so and prays for strength. She has felt in church an "inward seething" and despair, a feeling as if she must stand up and scream. She dreads meeting old acquaintances for fear of talking about old friends. She has a fear that she will never get well.

Physical examination shows a well-built, healthy-looking woman, of good color. The heart and lungs are normal, the reflexes alike, slightly increased. The urine is normal. There is a slight tremor of the hands.

The following report of the case is received from Dr. S., under whose care she was during the winter: There is no insanity in the family, but the history points to a neurotic tendency. Her father was of a sensitive disposition and two brothers have been "neurasthenics." She is decidedly intellectual, with high ideals, has always been a close student, serious in her studies and in her recreations. Her first attack began a few months after her marriage, and for nine months was under treatment for "neurasthenia," after which she became the patient of the physician who consulted me regarding classification. Her recovery was good, but there has always been a "nervous tendency." Last summer, upon her return from the holidays, she felt nervous and depressed, fearful of trouble, with loss of energy and failing interest in her occupations and friends. There was sleeplessness, loss of weight and physical weakness. By November this condition had become so distressing that she went for a six weeks' rest cure to a sanitarium. She returned much improved physically, but not much better in her nervous condition. She took no interest in her home, would not see her child, nor her servants nor her friends.

Since her return there has been steady improvement under regulated exercise, diet, salt rubs, etc. She now has dispensed with her nurse, takes her meals with her family, has regular walks, sees her friends, and sleeps from six to eight hours, but still lives in a state of great nervous tension. There is continuous introspection and distress at the slowness of her recovery and fear of never becoming well.

Why strain a point to decide whether this should be labeled a manic-depressive case or one of neurasthenia?

The following case, taken at random from my notebook, will serve for further illustration of such cases as I class under "psychoneuroses."

Miss Y., fifty-five, single. The family history presents nothing remarkable; the father was inclined to be "nervous," especially when not well. There is no definite mental or nervous trouble in the family. The patient formerly taught school; now has no occupation. Six years ago her mother died, from which occurrence she dates her trouble, and to which her family attribute it. She is subject to fits of depression, between which she feels "fine." She is liable to recurring dizziness without discoverable cause. She complains of numb feelings in the legs and all over, of tenderness in the side and of burning in her elbows, and of pressure in the top of her head. When I saw her she had remained in bed most of the time for five weeks, and at the time of my visit she was shaking and crying with no special cause. She complains of feeling smothered. In the course of the examination she became animated and argumentative, particularly concerning the seriousness of her condition and the existence of serious physical cause for her anomalous sensations. She complained of lack of energy to pull herself together or to attempt the least exertion. She was full of doubts, anxieties and regrets.

In other words, the case contained elements of the manic-depressive state, of hypochondria, of hysteria minor and of "neurasthenia," both congenital and acquired.

There is one practical consideration far more important than this subclassification, a consideration worthy of all the study we can put into a case. It is this: Are the peculiarities of the patient such as make him dangerous to society, or are they of the type to produce for the patient himself distress, possibly danger, but to others annoyance and distress only, not danger? The following case will serve to illustrate the practical importance of this distinction:

Case. A young woman, seen by Dr. Paul and myself, had gradually discontinued her occupation (that of stenography) to take up music. Music she in turn abandoned and had become a burden on the household. Her mother states that she does practically nothing at home, that she assumes a superior air with others, is reticent and self-centered, but has shown no delusions.

At the first visit nothing definite was elicited beyond an obsessive tendency, with marked hypochondriacal element and a certain degree of negativeness. The patient stated that she had given up music because she was weakened by a dropping in her throat; that the reason she took no part in the work of the house was that her tissues were not sufficiently renovated by the night's rest to make up for the loss of strength during the day.

It seemed that a large part of her time was spent in attending religious services, and that she was determined to enter the church. The question whether she expected, in that event, to simply attend services and do no work made no impression on her. Such questions aroused neither resentment nor argument, the patient retaining a placid demeanor with an appearance of abstraction and lack of interest in proceedings. On being asked if she would insist upon entering the church if the authorities felt it was inadvisable, she intimated that she would brook no interference with her plans; that it had been opposed before, and that she thought it would not be again attempted. This statement was made decidedly, but quietly and without heat.

Her whole manner lacked the sensitiveness of the ordinary hypochondriac and simple obsessive, suggesting that of a self-centered and self-satisfied paranoiac.

The family were informed that while her manner was suggestive and while it was probable that she would eventually have to be placed in an asylum, the evidence elicited was as yet not enough to warrant taking that step.

At the following visit it transpired that she thought she could hear peoples' voices, and that this was a power religious people had. On her mother's expressing surprise, the patient observed that her mother had not realized what she was hearing and what she was seeing, and implied that her mother had hardly done justice to her superior powers at the times when she credited her with idleness. To the question whether she heard the voice of those not living, she declined to answer.

These observations would indicate that the case falls quite outside the class with which we are dealing, and that her incompetency and her seclusive tendency rest, not on the basis of hypochondrial fears, but indicate rather a dementing process of the paranoid type; in other words, that we probably have to do with a case of dementia precox. The patient, then, instead of being merely a harmless incubus upon her family and society, constitutes a dangerous element to both, and her sequestration will be best for all concerned if it is not, indeed, imperatively demanded. Here, then, is a distinction well worth the making, and a classification which is of real value from every point of view.

In importance and interest such questions far surpass the study of intangible and elusive distinctions.

CONCLUSIONS.

After eliminating, from the cases presenting nervous symptoms without known organic basis, those whose features are sufficiently marked to justify their classification under hysteria, hypochondria or manic-depressive insanity, there remains a large, perhaps a larger, number whose symptoms are not distinctive.

The effort to place each of these cases under one or the other category is unsatisfactory. The efforts of the textbooks to distinguish between the minor forms of these conditions are confusing, the symptoms given being practically identical.

To apply the term " neurasthenia " to all these cases is neither logical nor satisfactory, since this term implies a condition distinct from the other psychoneuroses, to say nothing of the fact that the term implies the asthenic condition which is far from constant.

In the present state of our knowledge and study of these conditions, the most satisfactory solution seems to be to place under the diagnosis hysteria, hypochondria and manic-depressive insanity such cases only as have dominant features characteristic of these disorders, and to group the remainder under the general term " psychoneurosis " until definitely diagnostic features appear.

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SOME OBSERVATIONS ON THE OPHTHALMO-TUBERCULIN REACTION.*

BY FRANCIS P. MCCARTHY, M.D.,
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SINCE the original use of tuberculin by the ophthalmic test, first reported by Wolf-Eisner[1] and Calmette[2] (working independently), in the spring of 1907, a vast amount of literature dealing with the subject has appeared in the medical journals of the different countries.

The extensive use and results of this rather simple method of using tuberculin by so many observers has not detracted from the original claims of Calmette and Wolf-Eisner as to its immense value in the diagnosis of tuberculous disease.

Wolf-Eisner at first used a 10% aqueous solution of tuberculin, which caused rather a marked conjunctival reaction in tuberculous patients and no reaction in the non-tuberculous.

Calmette, a few months later, used a 1% aqueous solution, prepared by the precipitation of crude tuberculin with 95% alcohol, the resulting precipitate being dried. By this method, the glycerin and beef extract salts were removed, which, he claimed, were sufficiently irritating to cause some slight conjunctival reaction.

Other investigators, including MacLennan,[3] Baldwin,[4] Webster and Kilpatrick, using a 1% aqueous solution of " old " tuberculin, have obtained equally good results without any of the irritating effects as first mentioned by Calmette.

In our work at Colon Hospital, we have used dried precipitated old tuberculin, put up in tablet form by Parke, Davis & Co. We have also used a solution of older tuberculin issued by Von Ruck, and at present are using an aqueous solution of old tuberculin from Parke, Davis & Co.

We have found the latter form equally reliable, far more inexpensive, and that it can be more quickly prepared for use, than the tablet form of precipitated tuberculin.

Various observers have used different strengths of the aqueous and saline solutions with varying success. After trying the $\frac{1}{4}$%, $\frac{1}{2}$% and 1% solutions in our series of cases, the latter strength has been found to be the most dependable.

The severity of the reaction varies considerably in different individuals, from the slightest injection of the conjunctiva to edema of the eyelids with purulent exudation.

The division, according to the severity of the inflammatory change into mild, moderate and strong reactions, seems to me to include all the degrees of inflammation, except a certain group of doubtful reactions which I think should be included in this division. In a mild reaction, there is seen a diffuse redness of the lower tarsal conjunctiva. The ocular conjunctiva near the inner canthus may also show a slight injection.

The patient usually experiences no local discomfort beyond slight lachrymation or a foreign body feeling in the eye. It is always well to compare the conjunctivæ of both eyes, having the patient abduct the eyeball as far as possible so as to show the caruncle plainly.

In the moderate form of the reaction, it begins as in the mild form, but the injection soon spreads and involves the vessels along the periphery of the bulbar conjunctiva. Lachrymation is more profuse, and a slight muco-purulent exudate collects in the inner canthus. The subjective local symptoms are slightly more marked than in the mild form of reaction.

The strong reaction manifests itself by a still more marked redness and injection of the conjunctivæ and vessels. The palpebral conjunctiva assumes a velvety appearance, the cul-de-sac folds are swollen and the eyeball is crossed by many vascular trunks. Lachrymation and purulent secretion are very abundant. Photophobia is marked and there is a subjective feeling as of grains of sand in the eye.

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* Read before Canal Zone Medical Association, Dec. 16 1908.

The reaction persists often for a week or longer. In none of our cases at the hospital were there any constitutional disturbances, and no rise of temperature was observed. Only a few cases have been reported where constitutional symptoms have occurred, and these symptoms have been regarded as doubtful by most observers.

It seems to be the concensus of opinion of the various individuals who have experimented with the conjunctival test that it is a harmless procedure where ordinary precautions are taken.

The contra-indications to the use of the ocular tuberculin test are acute and severe chronic conjunctivites, blepharitis, keratitis, trachoma, or any disease of the cornea and internal structures of the eye.

Wolf-Eisner has applied the ophthalmic test in more than twenty-five hundred cases and states that with ordinary care it is possible to avoid the mishaps observed by certain others. He has not had an instance of furunculosis such as Ropke has observed twice in his experience with a few hundred cases; he warns that the solution be made fresh each time.

A second instillation of tuberculin into the same eye often causes a reaction in non-tuberculous individuals, due to an increased susceptibility. It takes from three to seven weeks for this hypersusceptibility to disappear, according to the reports of a few investigators.

My own experiments on anaphylaxis or hypersusceptibility have not been completed, especially in regard to the number of days before the hypersusceptibility is developed and its duration.

Of several cases tested with a second instillation in the same eye, none reacted up to the sixteenth day. One case reacted positively thirty-one days after the first instillation, and two others thirty-seven and forty-two days after negative reactions gave negative responses to the test in the same eye.

Owing to the limited number of cases experimented with, I am unable to give any definite results with this phase of the subject.

METHOD OF ADMINISTRATION.

One drop of 1% solution of tuberculin is dropped into the conjunctival sac, preferably at the outer canthus. It is better to have the patient in the recumbent position, and caution him not to close the eye tightly after instillation, as the solution of tuberculin may be entirely squeezed out. No definite reason for the causation of the ophthalmic reaction has been shown.

Smithies and Walker explain the reaction as follows: That the inflammatory changes in the eyes of tuberculous individuals following the instillation of tuberculin suspensions is due to the slight stimulation of the hypersensitive cells forming protective substances with the production of an excess of antibodies. These antibodies so produced, by acting on the tubercle bacilli or fragments of such enmeshed in the conjunctiva, liberate endotoxins which are capable of producing the inflammatory changes commonly observed.

In the series of cases at Colon Hospital in which the ophthalmic reaction was tried, the test was applied to various diseases besides tuberculosis. Two hundred and sixty-three cases were tested, and the results have been quite satisfactory as compared with the reports of other observers.

PULMONARY TUBERCULOSIS.

Sixty-four cases of pulmonary tuberculosis were tested, with 54 positive reactions and 10 negative.

In the first stage of the disease 22 cases were tested and all were positive, 100%.

In the second stage, 12 were tested, with 11 positive and 1 negative reaction.

In the third stage, 30 were tested, with 21 positive and 9 negative reactions.

Forty-five cases had positive sputa.

Fifteen cases had negative sputa, and 4 raised no sputum.

Of 3 cases of miliary tuberculosis tested, 2 gave positive reactions and 1 negative.

The results obtained from this number of positive tuberculous cases correspond with those obtained by the vast majority of writers on this reaction.

In the incipient and moderately advanced cases, the reaction was present in every case except one, the reaction usually being moderate or strong in character.

In the advanced cases, owing to the lowered resistance of the individuals, and in cases of miliary tuberculosis, negative reactions occur in about one third of all cases.

Of 20 cases of clinically suspicious tuberculosis, 12 gave positive reactions, with 8 negative ones. Most of these cases had suspicious physical signs in the chest, some with slight temperature, emaciation, night-sweats and cough.

In 25 cases not considered tuberculous, but with obscure temperatures, and no signs of tuberculosis clinically present, 21 were negative and 4 positive to the test.

Of 8 cases of acute bronchitis and 6 of chronic bronchitis, no positive reactions occurred. This practically rules out any tuberculous origin to these pulmonary infections.

Of 9 cases with pleurisy with effusion and 7 cases of pleuritis sicca, 1 case of each failed to react, showing 14 positive reactions out of 16 cases.

There was 1 positive reaction in 3 cases of bronchial asthma tested, and in 2 cases of pneumothorax both reacted positively.

Fourteen cases of lobar pneumonia were tested, 4 of which were unresolved; negative results were obtained in every case.

One case of bronchopneumonia in an old man gave a positive reaction, although the sputum was negative.

In 16 cases of malarial fever, all complicated with bronchitis, amebiasis, uncinariasis and other conditions, 14 failed to react, with 1 positive result.

Of 19 cases of typhoid fever, 8 gave positive reactions and 11 negative.

Of the 8 positive cases there were 3 blood cultures taken, all showing the bacillus typhosus; in the other 5 no blood cultures were taken.

In the 11 negative cases of typhoid, all had blood cultures, 3 showing the paratyphoid bacillus, 3 the para-colon bacillus, 1 the bac-typhosus, and 3 bacilli in the typhoid group.

Cohn reports 8 positive reactions in 12 cases of typhoid fever. His explanation is that a specific hypersensibility to bacterial albumen in general is evolved in the course of typhoid fever as well as to typhoid bacillus extracts in particular.

If further investigations in typhoid fever show a still higher percentage of reactions, the ophthalmo-tuberculin test should be of some value as a diagnostic agent in typhoid.

In 4 cases of tuberculous bone disease, 2 of Pott's disease, 1 tuberculous knee and 1 tuberculous elbow, there were 4 positive reactions.

Of 3 cases diagnosed as tuberculous adenitis, 2 cervical and 1 inguinal, all gave positive reactions. In a group of miscellaneous diseases the following were negative: 1 tabes dorsalis, 1 syphilitic periostitis, 2 chronic nephritis, 1 cirrhosis of liver (with chronic diarrhea), 2 gonorrheal arthritis, 1 filiariasis with chronic nephritis, 1 hemoglobinuric fever, 1 empyema, 1 chronic heart, 1 traumatic rupture of lung with hemorrhage, 3 epidemic cerebrospinal meningitis, 1 leprosy, 1 syphilis (secondary), 3 acute nephritis, 3 amebic dysentery, 1 relapsing fever, 1 cystic kidneys, 2 chronic diarrhea, 4 uncinariasis, 4 liver abscess, 1 ulcer of foot, 2 arthritis (obscure), 1 alcoholic neuritis with temperature, 1 T. B. kidney, 1 chronic nephritis, pericarditis, 1 perinephritic abscess — 42 cases in all.

The 5 following miscellaneous cases gave positive reactions: 1 amebic dysentery with temperature, 1 post-typhoid arthritis, 1 blastomycosis dermatitis, 1 hematuria, 1 aortic aneurism with bronchiectasis.

Of 9 normal individuals, all gave negative reactions.

AUTOPSIES.

We had 22 autopsies in our group of cases, 13 of which showed active tuberculosis. Of the 13 cases, 8 showed a positive reaction prior to death, and 5 a negative reaction, the latter all being advanced cases.

Four cases showing healed foci of tuberculosis, occurring in a chronic cardiac and renal case, a case of lobar pneumonia, a case of pernicious malaria, and a case of cerebrospinal meningitis, all gave negative responses to the test.

Four cases showing no foci of tuberculosis, 2 pneumoniæ, 1 hemoglobinuric fever and 1 typhoid case, gave no reaction.

Most observers agree that the majority of cachectic, moribund, very advanced cases of tuberculosis, also miliary tuberculosis cases, fail to react. Our results at the hospital correspond with their findings.

In the advanced cases of pulmonary tuberculosis, the test is not indicated, and in miliary cases where the difficulty of making a positive diagnosis is well known, the ophthalmic test is of very little value.

The cause of the failure of the reaction in this class of case has been explained by Smithies and Walker, who believe that the blood is so laden with tubercle bacilli that they seize the available lysins and opsonins, leaving little or none to combine with the bacilli, or the fragments of such emeshed in the conjunctiva. As a consequence, the endotoxin is not released locally and no inflammation ensues.

The occasional occurrence of a positive reaction in healthy individuals may be dependent on some of the following factors, as mentioned by Wilson.[6]

(1) The great difficulty in demonstrating certain patients to be clinically tuberculous. This is well illustrated by autopsy records, which show a large number of cases to be tuberculous in which the condition was not apparent during life, and death caused by some other disease.

(2) The possibility of the patient rubbing and irritating the eye, thereby producing a pseudo reaction must always be borne in mind.

(3) Idiosyncrasy. It is possible that experience will show that certain individuals possess a marked susceptibility to tuberculin, as is frequently manifested to certain drugs.

The results obtained by Prof. A. Calmette, of Lille, France, with this test to date, follows:

Of 2,894 clinically tuberculous patients, 92.05% gave positive reactions to the conjunctival test.

Of 1,081 persons with clinical suspicion of tuberculosis, 57 were positive, and of 2,328 persons either apparently healthy or without suspicion of tuberculosis, 16.8% were positive with the same test.

Of 55 children or adults who had given positive conjunctival reactions, although not previously suspected of tuberculosis, and who came to postmortem, microscopic tuberculous lesions, most frequently in the tracheal bronchial glands, were detected in 49.

In 6,303 tests, the only complications noted were in 3, phlyctenular keratitis; in 20, conjunctivitis; and in 72, reactions prolonged beyond three weeks. In no instance did graver disturbances or permanent ocular lesions or visual defects occur.

Wolf-Eisner[7] regards the ophthalmic test of prognostic value. He distinguishes the normal reaction which runs its course in four days, the rapid reaction which is complete in twenty-four hours, and indicates an unfavorable prognosis, and the permanent reaction which persists for from six to twenty days and is a favorable prognostic sign. It is observed chiefly in cases of healed tuberculosis. He regards the prognostic significance of the reactions as very great.

CONCLUSIONS.

From the results obtained in the group of over two hundred and fifty cases:

(1) That the ophthalmo-tuberculin reaction is of considerable value in the diagnosis of tuberculosis.

(2) It is especially valuable in cases of incipient tuberculosis with only suspicious signs of the disease in the chest, with negative or no sputum. In these cases the reaction is usually marked.

(3) It is a safe test, easy of application, and produces no constitutional symptoms.

(4) A negative reaction does not rule out the presence of tuberculous disease, as a good many cases of advanced tuberculosis fail to react.

(5) The use of the conjunctival test, in my opinion, takes the place of the subcutaneous method; in many instances is just as accurate and less troublesome to the patient.

(6) In the great majority of cases no constitutional symptoms are associated with the reaction. No alteration occurs in the physical signs, such as frequently occurs following the administration of tuberculin subcutaneously.

(7) A certain proportion of typhoid fever cases give a positive reaction. None of the fevers of the typhoid group caused by the paratyphoid and para-colon bacilli gave the reaction.

(8) Healed cases of tuberculosis do not give the reaction.

In conclusion, I wish to thank Dr. Gorgas for permission to publish this paper, and to Dr. Brem, chief of staff Colon Hospital, for his aid and suggestions in the work accomplished.

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New Instrument.

A MODIFICATION OF THE THOMAS WRENCH FOR THE TREATMENT OF RIGID VALGUS.

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We have all met with cases of rigid valgus which do not yield as we should like by the manual manipulation, either with or without an anesthetic. In cases where the rigid valgus is of long standing, where strong ligamentous and fibrous contractures and adhesions have occurred, it is almost impossible to control the lateral motion entirely by manual force. The adhesions or contractures cannot be overcome manually, on account of the very short leverage which is afforded to the operator in the region of the os calcis and from the nature of the contractures, which in most instances are broad, thick and short obstructions which have gradually strengthened themselves for years. In cases of this nature, the external lateral ligaments hold the os calcis in such a position that it almost joins the styloid process of the fibula. In dissection it is usually found that the external lateral ligaments are very well blended with the calcaneo-cuboidal and astragaloid ligaments, as well as the surrounding fascia. This, as we see, forms a fan-shaped structure of tremendous strength, the greater part of which is posterior to the mediotarsal joint.

In breaking up the adhesions about the ankle-joint, it is our object to bring the os calcis and the astralagus in their upright positions. This cannot be brought about unless we use the posterior part of the os calcis as the place for the counter force. Where manual force has not accomplished the desired results, the Thomas and other similar wrenches have commonly been used and in many cases with uncertain results, no matter how skillfully applied. It seems to me that the reason for this is the fact that these wrenches must be applied over the midtarsal joints, so that when the traction is brought to bear upon the handle, the force is directed to the mediotarsal and midtarsal joints rather than to the astragaloid, calcaneo and tibio astragaloid. The wrenches immediately break up any adhesions in the midtarsal joints, but the chief force is exerted on the calcaneo-cuboidal ligaments rather than on those of the lateral ligaments.

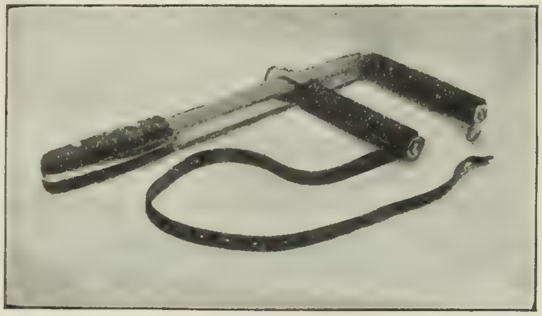

Fig. 1. Author's wrench for the treatment of rigid valgus.

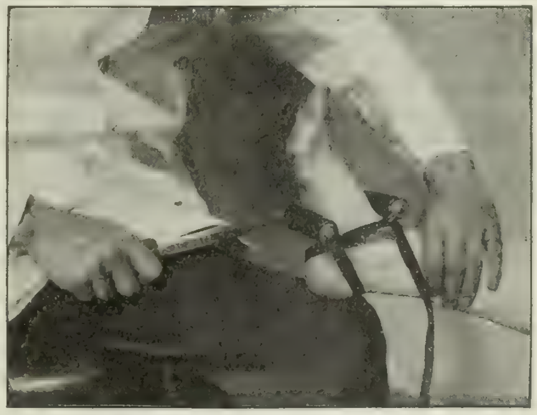

Fig. 2. Wrench applied so as to exert force on the external lateral tissues of the ankle. Note the force exerted upon the os calcis by means of the traction strap.

It is for cases of this type, which do not yield to either manual force or the ordinary wrench, that the author has devised a modification of the Thomas wrench whereby the os calcis, as well as the tarsal bones, is under the control of the operator and by means of which force can be exerted with as great accuracy and precision as is desired. The wrench (Fig. 1) is applied in a similar way to the Thomas, but, before the force is exerted, the strap is wound around the external aspect of the os calcis and tensely adjusted to the hook on the opposite arm of the wrench, as shown in Fig. 2. The wrench is applied from the external aspect of the foot, as shown in Fig. 2, when external force is desired, and vice-versa when internal force is the object. In applying the wrench, it should be firmly approximated to the foot and care should be taken to fasten the strap firmly before any force is applied. The wrench itself is made similar to the Thomas wrench, to the lower arm of which is attached a strap about 60 cm. long with holes. On the corresponding arm there is a hook whereby the strap may be attached at any length desired.

The author has used this wrench with great success in obstinate cases that have not yielded to other methods.

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Reports of Societies.

AMERICAN NEUROLOGICAL ASSOCIATION.

THIRTY-FIFTH ANNUAL MEETING, ACADEMY OF MEDICINE, NEW YORK CITY, MAY 27–29, 1909.

The President, DR. S. WEIR MITCHELL, Philadelphia, in the chair.

PRESIDENTIAL ADDRESS.

DR. S. WEIR MITCHELL delivered this address, saying that he would first discuss some matters of general interest to the association and then take up the questions of the nature of nerve force and the deep reflexes, dwelling especially on reinforcement and the theory of overflow. There was a comparative rarity in the proceedings of the neurological and other associations of matters of therapeutic interest. The present was the triumphant hour of diagnosis which was the parent of logical, legitimate therapeutics. The physiology and pathology of the negro should receive more attention from neurologists. There was a rarity in the negro of this country of such diseases as chorea, tabes, migraine and exophthalmic goiter. Considering the relation of the black skin to heat and light rays, there must be in the negro some automatic compensative mechanism for regulating the body temperature other than that which we possess. Therefore, we needed for the negro a new and complete study of the blood in order that we might get clearer ideas as to his immunity from such diseases as yellow fever and malaria and help to solve the problems of protection from such diseases by immunizing serum. The physiology of persons who had lost parts of the body by multiple amputations was a subject worthy of a commission of investigators. Long ago, he had studied diseases of stumps and the psychics of lost limbs, but the subject in recent years had been neglected. He next took up one of the two main subjects of his address: neural energy, its nature and modes of transmission. He used the term "neural energy" without committing himself to any special theory. The rate of transmission of nerve energy in the ameba and lowest forms of animal life, in which it was a general diffusion, was only about 3 ft. per second, whereas, in the higher vertebrates, where it moved along chosen pathways, it reached as high as 150 ft. per second.

There was an enormous output of energy relative to the small size of the productive sources of supply, as shown by Dr. H. H. Donaldson's contributions. In the adult human brain of 1,360 gm., the weight of nerve cell bodies was less than 27 gm. There were 9,200,000,000 nerve-cell bodies in the new-born babe and the same number in the adult. These occupied 1.37 of the volume of the cortex. Two per cent represented the proportional volume of the cortical cell bodies, including all the dendrons. Many agencies affected the delicately responsive neural conductors and their related centers, those which were most common being related to variations in atmospheric pressure and storm conditions.

The next question was that of the chemical changes which accompanied the transmission of neural energy along nerves. These living wires, the nerves, eat, drink and eject, and are fed and do work, and must, therefore, undergo chemical changes through loss and for repair.

Certain excito-contractile impulses were found in plants, and these were probably identical with those observed in animals, as was evidenced by observations upon the mimosa. He could well imagine a neurotic crusade against cruelty to plants after watching experiments on the mimosa. The analogue of the irrito-contractile muscle of animal life was in the plant cell walls, which, contracting, expelled fluid and thus caused in the leaves mechanical changes of position. Numerous observations and experiments had been made upon plants, especially the mimosa, with a view to determining the analogies between the movements of such plants and those occurring in the living animal.

He next directed attention to some facts and theories regarding what he designated the "symptom signals" which he created and called reflexes. As regarded the reinforcement of reflexes, the researches of Mitchell and Lewis, Bowditch, Howells and other American contributors to this subject showed that not only the hand grasp and other coarse movements tended to increase the muscle-muscle and the skin-muscle response, but that nearly every distinct sensation increased them. Sudden light or sound, remotely applied heat, abrupt cold, a pinch, the pull on a single hair, added to the response. The explanation of these reinforced phenomena appeared to be that the afflux of energy-giving increase of the reflex was due to the liberation of energy far in excess of the functional needs of the active organ, that is, an overflow of energy as was shown by observations and investigations. Speaking of the practical applications of this study of overflow, was it not conceivable that there were acquired conditions of the body, neurasthenic and hysteric, in which these endless normal overflows might be mischievously felt, and might account for suddenly visible symptoms of nervous excitement? An interesting clinical phenomenon which he believed illustrated the subject of overflow was to be seen in the case of violent facial neuralgia in which to talk, to laugh, to chew, evoked maddening pain. Were we not in such cases in the presence of an example of reinforcement from overflow of related motor centers affecting a sensory ganglion excitability ready to call forth the phenomenon called pain?

DISTRIBUTION OF ENCEPHALIC HEMORRHAGES.

DR. S. D. LUDLUM, Philadelphia read this paper.

A STUDY OF ERRORS IN THE DIAGNOSIS OF GENERAL PARESIS.

DR. E. E. SOUTHARD, Boston, read this paper, saying that 247 cases of mental disease had passed through the daily clinics of the Danvers Insane Hospital and later come to autopsy during the years 1904–1908. Sixty-one of these had been diagnosed clinically, with more or less certainty, as cases of general paresis, and 41 of the 61 as absolutely certain. Thirty-five of the 41 had been confirmed by autopsy, and 2 more had appeared at autopsy, although unsuspected during life. These 2 unsuspected cases and the 6 erroneously diagnosed cases had been specially studied. Tabes and cerebellar arteriosclerosis, in the presence of mental symptoms, had been shown to be two main causes of error in the positive diagnosis.

Dr. J. K. Mitchell, Philadelphia, asked if any of these cases had presented undoubted combination of tabes with general paresis.

Dr. Southard replied that only one of the cases had shown a combination of tabes and general paresis. He thought there was a pure tabes associated with paresis.

PSEUDOMEMBRANOUS INTERNAL PACHYMENINGITIS.

This paper by **Dr. D. J. McCarthy** and **Dr. W. W. Hawke**, Philadelphia, was read by title.

A CRITICAL STUDY OF THE SENSORY FUNCTIONS (ESPECIALLY STEREOGNOSIS) OF THE PRE-ROLANDIC AREA.

Dr. Herman Hoppe, Cincinnati, read this paper, saying that the object of his paper was to show how often astereognosis occurs in lesions of the motor zone, and whether the loss of stereognosis was in any way distinguishable from the loss of this function due to lesions of the parietal lobe. His first case had been one of loss of stereognostic sense combined with loss of muscle sense and sense of position. Autopsy had shown non-infiltrating tumor the size of a hen's egg situated subcortically in the superior parietal convolution. His second case had been one of subcortical solitary tubercle, involving the arm center in the ascending frontal convolution and the neighboring frontal lobe, demonstrated at operation. Prior to operation there had been some astereognosis in the right hand, and after operation, which involved the tumor site, astereognosis in the right hand had been marked. His third case had been one of left brachia monoplegia following Jacksonian seizures without any loss of sensation prior to operation. At operation no gross lesion had been found, but, after locating the center for flexion and extension of the hand, this center had been excised. Following operation there had been complete paralysis of the left arm with complete astereognosis, all other qualities of sensation being intact. The question which arose was whether astereognosis unassociated with loss of tactile and muscle sense would indicate a lesion of the motor zone, and astereognosis with loss of tactile sense, muscle sense and sense of position indicate a lesion of the parietal lobe. This question could not be decided by a study of recorded cases, although his cases seemed to answer in the affirmative.

Dr. Morton Prince, Boston, said that the whole question of stereognosis was a matter of fact and not of induction. Dr. Hoppe's cases were extremely interesting and they opened a new discussion on the subject. If there was a disturbance of muscle or tactile sense, it was impossible for any one to determine what an object was. There were a number of cases on record of asymbolia and astereognosis, meaning by asymbolia loss of power to recognize objects where there had been no loss of tactile sense. The important thing was to determine whether or not there was loss of the sense of position, localization, and so on. Very accurate and careful tests must be made, and they must be made by precise methods.

Dr. C. K. Mills, Philadelphia, said there were several interesting points in Dr. Hoppe's communication. A number of things in the paper seemed to contradict the views which some others, as well as he, held personally. In such cases we had to take information on various points before deciding as to their absolute value. The operative cases could not be absolutely depended upon with regard to the exact extent of the absolute section and also with regard to the extent of the influence of that section. We had to take into consideration the physiological reaction along certain anatomical-functional lines. Undoubtedly the motor region was connected by association fibers with the stereognostic region if it exists, and also doubtless with sensory regions in the post-central convolution. We have in these cases the abeyance or the loss of such a sense as stereognosis. Very rarely cases exist in which astereognosis exists without impairment of the muscle sense or sense of position. To a certain extent it proves, not that there is no astereognostic center in the parietal lobe, but that by the destruction of entering tracts astereognosis may be produced.

Dr. William G. Spiller, Philadelphia, said that Dr. Hoppe had said that these disturbances of stereognosis with pain had been present only for a short time after operation. They had not persisted. Dr. Hoppe had considered the results carefully. We must be careful after operation on the brain in reaching conclusions. Not only was there disturbance of associated areas, but there was also disturbance from handling the brain; there was disturbance in function of that part; and, what was more serious, in excising any portion of a brain it was necessary to tie the veins supplying that portion. As a result of this tying the circulation was disturbed in adjoining areas of the brain, and softening might occur from this, even if no great number of vessels were tied.

Dr. B. Sachs, New York City, stated that an experience he had recently had might throw a little light on this subject. A young woman had the general symptoms of brain tumor, with very slight involvement of the upper extremity. Aphasia had been complete and there had been not only asymbolia, but absolute loss of all sense of the muscular movements. In this case the aphasia had been by all means the most pronounced symptom. The paresis had been so slight that except for detailed examination it might have escaped altogether. Basing the location on that fact, he had suggested that the surgeon go in over the arm center, but that he keep as far posteriorly as possible. There was found a tumor which extended to the central fissure and invaded a considerable portion of the cortex into the parietal region.

Within twenty-four hours of the time of operation the aphasia had disappeared entirely. The paresis, however, had remained exactly the same as before the operation and was practically the same to this day.

THE TYPE AND DISTRIBUTION OF SENSORY DISTURBANCES FOLLOWING CEREBRAL LESIONS.

Dr. Carl D. Camp, Ann Arbor, Mich., read this paper, stating that dissociation of sensation frequently followed cerebral lesions. The type of dissociation was not constant, but probably depended on the location of the lesion. The disturbances of sensation were usually confined to one side of the body, but some cases apparently showed that there was re-representation in the cerebral cortex of the sensory distribution of spinal segments. A case which he had observed showed marked dissociation of sensation and strongly suggested spinal segmental sensory representation in the brain.

Adjourned 12.45 p.m.

Thursday, May 27, First Day, Afternoon Session.

The meeting was called to order at 2.45 p.m. by the President, Dr. Mitchell.

Dr. Mitchell said that he would suggest that the association appropriate a single hour or more, as they might desire, for discussion of therapeutic measures. This might be readily done and in an interesting fashion by choosing one subject, as the treatment of epilepsy, or some other form of disease, or perhaps two or three diseases. It might be found advisable to have each man discuss the subject for two or three minutes and so fill in the hour. For example, how did the members treat their ordinary cases of epilepsy? He would like to know the measures employed for chorea or what the members did to treat the spastic conditions that followed apoplectic seizures. There might be some ingenuities of thought which all the rest were not aware of. It would be better than listening to so many papers which were chiefly diagnostic or merely observational, without a single thought that was not surgical on the subject of therapeutics, for, after all, what we did in our clinics and consultation rooms was to tell people to do something. He wanted to know what the members said to people about certain diseases.

INVERSION AND INTERLACING OF THE COLOR FIELDS AN EARLY SYMPTOM OF BRAIN TUMOR.

Dr. Harvey Cushing, Baltimore, read this paper, saying that the report was a preliminary one and was based upon observations made in conjunction with Dr. James Bordley, Jr. The history of most brain tumors extended over a period of years rather than months. It was perhaps not surprising to find that almost every patient brought for operation after the diagnosis of brain tumor had been finally certified by the often long-delayed ophthalmoscopic changes had at an early stage of the trouble been regarded as hysterical or the subject of some psycho-neurosis.

Following Charcot, an impression still held sway that more or less contraction of the field for form with partial or complete color reversal (dyschromatopsia) was the great "essential sign of hysteria." These alterations of the visual fields were no less characteristic of brain tumors. We had found no definite relationship between the contraction of the field for form and that of the color field. Some patients had shown the typical hysterical concentric contraction with color reversal, but in many of them there had been a prompt return to the normal relations after a simple decompression. Other cases had shown peripheral limitations greater in fields for form than in color fields, the red being less affected than the blue. There had been other cases in which contraction for colors and form went hand in hand, though the blue was usually much more affected than the red field. The prominent feature of most of the authors' charts was not so much the preservation of the red field as the alteration of the blue. In several instances there had been a total achromatopsia and a more or less definite hemi-achromatopsia for blue alone.

The process seemed to be one related in some way to increased intracranial tension, the relief of which usually caused an early subsidence of the dyschromatopsia. These visual disturbances did not seem to be dependent upon neuro-retinal edema, since in a number of patients they had preceded any appreciable ophthalmoscopic changes.

He said they had seen nearly three hundred cases of tumor, or supposed tumor, in the past six years, since they have been affiliated in this work. Many of the patients were blind; many aphasic or too ill to permit of satisfactory perimetric examinations. Out of this series of cases they had selected 56 in which the color fields were taken both before and after the operation. In all of them there had been a more or less definite post-operative return to the normal color relations.

The color lines interlaced in 25 and were inverted in 9 cases. There was hemi-achromatopsia without change in the form field in 4 cases; blue blindness in 3 cases; total acromatopsia in 4 cases; acromatopsia for blue in 3 cases. In only 6 were there no definite disturbances with the visual fields present before operation, and these were all cases with very slight pressure symptoms and with small growths.

Fifty out of 56 cases, therefore, showed color changes, and in only 18 out of these were there definite changes in the form field. In 4 cases in which tumors were found and removed there was definite color interlacing without associated choked disk. In all of the 56 cases the boundaries of the color fields regained their normal position after the operation, whether it was radical or palliative. The blue field is the one most affected, varying in degree from slight concentric contraction or islands of blindness to complete loss of ability to recognize blue.

They have taken every possible precaution to eliminate errors in these observations, and particularly the personal element on the part of the examiners, by having occasional corroboration of the fields by different observers. It is important that pure spectroscopic blue be used for the tests. We have found that many of the blue disks furnished with perimeters contain traces of green which might cause apparent contraction of the blue field even for normal individuals.

Dr. M. Allen Starr, New York, asked if the interlacing of the color fields have been observed in ordinary choked disk following nephritis.

Dr. C. K. Mills, Philadelphia, said that Dr. Cushing's paper was most interesting and valuable. For a good many years he had noticed the occurrence of changes in the visual field similar to those which Dr. Cushing had called attention to in cases of brain tumor, and not only in cases of brain tumor, but a few cases of other organic lesion. He and Dr. de Schweinitz had personally, and in the Philadelphia Neurological Society, at times referred to this matter. In 1898 Dr. Keen had operated upon a parietal tumor, the report of which had been presented to the American Neurological Association in the same year or the year following, in which he had contended for the existence of a brain tumor in the parietal lobe, but some of the consultants believed that the case was hysterical, and one of the reasons for believing that it was hysterical was the observation of the ophthalmologist, Dr. Risley, that the reversals in the field and the contractions in the visual field were similar to those observed in hysteria, and a note of this fact had been made in the report which had been published years ago. In other cases this had been observed. Dr. de Schweinitz on two or three occasions had presented papers on hysteria in which the matter had been referred to. Dr. Cushing had indicated his belief that these changes should be ranked as among the general symptoms of brain tumor. Dr. Mills noted that most of the cases had been of growths in a region where one would naturally expect them to be, so that we might regard the symptom as in part, at least, a focal symptom. It is a matter of some importance whether the symptom was to be regarded as a focal or as a general symptom. Tumors and other lesions situated in the parieto-occipital and temporal regions were very likely, in his experience, to produce conditions similar to those to which Dr. Cushing had called attention, although he had never gone into the subject so fully as had Dr. Cushing.

Dr. B. Sachs, New York, said that in the five or six weeks since Dr. Cushing had called his attention to his work in color fields he had had five cases of intracranial tumor in which it had been put to a careful test. The eye examinations had been made by ophthalmologists who had not been told of his desire to test Dr. Cushing's work, but in every case what Dr. Cushing had claimed had been found. He had received the impression that this work of Cushing's would in all probability have to be taken as one of the general symptoms of brain tumor and not a symptom which must necessarily have to do with the visual tract. The importance of this symptom could not be overestimated, and, as it appears long before other symptoms, we should be doubly grateful for this contribution.

Dr. George L. Walton, Boston, said that the importance of this communication could hardly be overestimated as offering practical aid in the diagnosis of organic from so-called functional cases. He had not studied the reversal and interlacing of fields in brain tumor, but he had seen long-standing hemianopsia with acromatopsia with the field for form preserved in a case of tumor of the pituitary body. The visual symptoms long preceded those suggesting tumor and appeared many years before changes discoverable by the ophthalmoscope. They had been mistaken for an unusual form of ocular disturbance accompanying migraine, for the patient had been subject to recurring one-sided headaches for a long term of years.

Dr. James J. Putnam, Boston, thought that the peculiar distribution of disturbances in cerebral lesions might in reality be due, not to the anatomical lesion, but to an attempt of the organism to re-establish equilibrium which had been disturbed by lowering of function due to the lesion.

Dr. J. K. Mitchell, Philadelphia, said that in the course of examination of a great many cases, most of which were apparently hysterical, he found in at least two or three cases of spinal injury which had resulted from very small trauma, reversal and retraction of the color fields. None of them were patients who could have been said at the time to have hysteria, and the discovery was made accidentally. There were some cases of locomotor ataxia in which it appeared.

Dr. G. E. de Schweinitz, Philadelphia, said that he only wanted to add his high appreciation of Dr. Cushing's admirable paper. It was suggestive in every way. It was a perfectly well-known fact that concentric contraction of color field and color lines occurred in a number of conditions other than hysteria. The same condition of affairs occurred in lesions of the internal capsule and in brain tumor of which a number of examples had been quoted, and it was a very well-known symptom in certain toxemias, especially toxemias the result of alcohol, of lead, probably of tobacco, most remarkably in those cases of poisoning by dimethyl benzoate. This seemed interesting because it seemed to confirm that in many of these cases there must be a very great alteration in the intracranial pressure (particularly in the lead and alcohol). Another interesting fact brought out was in reference to the blue-blindness which Dr. Cushing had observed in many of these cases. That is, of course, a thing which might and does take place under various retinal conditions. This confirmed Cushing's views in regard to the production of albuminuric retinitis which he had himself so skillfully relieved by the decompression operation. The inversion of the color fields was due to intracranial pressure under such circumstances. It was a mistake to think that hysteria alone was capable of producing this peculiar condition when we know that it could be produced by the conditions recited.

Dr. Cushing said he wished first of all to give credit where credit was due. Dr. Bordley had discovered this constancy of color inversion, or interlacing of the color fields, in brain tumors. Dr. de Schweinitz had answered Dr. Starr's question. His view was that this condition was in some way associated with tension. Perhaps the albuminuric retinitis was partially due to cerebral edema, and one would expect to find these same changes in association with so-called albuminuric retinitis. They had not had a sufficient number of cases to speak dogmatically about it. He was sorry that he had not been aware that Dr. Mills had worked this point out as it would have saved a great deal of work. He was interested in what Dr. Mills had said as to whether this should be regarded as a general or a focal symptom, and believed he had said just what we would all say about it, that is, that it appeared to be a general symptom, but in certain cases there were focal signs which were suggestive of the nature of the lesion.

EXHIBITION OF A NUMBER OF LANTERN SLIDES ILLUSTRATING INTERESTING PATHOLOGIC CONDITIONS.

Dr. M. Allen Starr, New York, presented this subject and said that in the course of a year there accumulated in the pathological laboratory of the College of Physicians and Surgeons a number of very interesting specimens, photographs of which he presented, and for which he was indebted to Dr. Larkin. The first was a section of the spinal cord from a case of anterior poliomyelitis which had died on the fifth day of the disease. In this specimen could be seen enormous infiltration of the gray matter and distention of the capillaries. The motor cells of the cord, which should have come out in this figure perfectly, had practically disappeared. These acute cases were rather rare. The next specimen was a section from the first lumbar level of the spinal cord of anterior poliomyelitis in a child who had died six months after the onset of the disease, and showed bilateral infection of the anterior horns and a remarkable rarefaction of the anterior horns, resembling syringomyelia. The next was a section of multiple sclerosis of the spinal cord, the sclerotic patches being visible here and there and invading also the anterior horn of one side. Multiple sclerosis, as Dr. Spiller had brought out recently, was, in the pathological laboratory, a rare lesion. It was certainly a rare lesion in our clinical observation. In Dr. Starr's clinic he had found but 51 cases of multiple sclerosis in 31,000 consecutive cases. He was surprised to be told by one of his clinical assistants that in Berlin they saw as many cases of multiple sclerosis as they did of tabes. There had been nearly 500 cases of tabes during that time. The next specimen was from a patient dying twelve days after the onset of grippe. There was a condition of acute hemorrhagic infiltration of the cord, there being enormous distention of the capillaries everywhere and exudation from the capillaries of red blood corpuscles which were present throughout the entire cord, causing a disintegration. He had never before seen a specimen that presented just that appearance. There was a case of myelitis subsequent to typhoid fever, the patient dying on the eighteenth day, probably twenty-two days after the onset of the typhoid fever. There was enormous distention of the capillaries and hemorrhagic infiltration all through the cord. Since building big tunnels in New York very many cases of caisson disease had developed. He showed a specimen of the spinal cord from a patient who had died suddenly after coming from a caisson. The rapid change from the atmospheric pressure of four or five atmospheres to the ordinary atmosphere was accompanied by the evolution of gas in the blood vessels and also by apparently the same effect both in the blood and in the tissues generally seen in champagne when it is uncorked: there was a sudden evolution of gas. This was the condition that occurred in this man's spinal cord, practically blowing up his spinal cord and disintegrating it absolutely. The periphery of the cord had been somewhat preserved. The blood vessels of the brain had been filled with bubbles of air. The next condition shown he had never seen described in the books or pictured; it had been found by Dr. Larkin a number of times in autopsies of patients who had died in the alcoholic wards of the Bellevue Hospital apparently from alcoholism. There was an infiltration beneath the pia mater of blood in small amounts without any rupture of any visible blood vessel. If the pia was picked off, no clot was found under it; it was simply infiltrated everywhere with blood. Another case was that of hemorrhage into one of the lateral ventricles. The interesting feature of this case was that no rupture of any blood vessel could be found; it seemed to have been a gradual infiltration of blood into the ventricle secondary to a condition of leucocythemia. This patient had had a gradually increasing hemorrhage and went gradually into a state of coma and died, but there had been no visible rupture of any large vessels to be found. The next was a case of abscess of the temporal lobe subsequent to ear disease, showing that caries of the petrous portion of the temporal bone might give rise to a pretty extensive abscess. This case had been operated on for mastoid disease and subsequently died. The next was an abscess of the frontal lobe of the brain subsequent to operation upon the nose. The next was a rather extensive tumor of the middle lobe of the cerebellum, with a cyst in the center. This had been diagnosticated but no attempt was made to operate as the patient's condition did not warrant it. The next specimen confirmed a statement that Dr. Spiller had made not very long ago, to the effect that very extensive hemorrhages in the brain might occur without causing sudden death. This was a hemorrhage which involved nearly half of the left hemisphere of the brain, occurring just above the level of the basal ganglion, near to the corpus callosum, and the patient had lived three and one-half days after the onset of the disease. At autopsy cases of gumma as extensive as the one shown were not often found; it covered the whole half of the brain cortex, and could easily have been stripped up and taken off by an operation. It would be difficult to absorb as large a thing as that by mercurial inunctions and iodide of potassium. He saw no reason why in well-marked tumor of the brain in syphilitic individuals a very marked improvement was not obtained in the course of two months it would not be perfectly legitimate to go down and remove a gumma just as would be done with any other tumor of the brain. The next picture was one of an enormous aneurism of the basilar artery pressing upon the base of the brain and the medulla oblongata, and it would have been supposed that it would have involved some of its nerves. The interesting feature of the case was its history. The patient who had owned that brain had not been the patient of any one. He had been organist in one of the large churches, forty-five years of age, a man who had been known to the vestrymen as being a man in very good health. He had never failed at the rehearsals or services, and last Easter Day he had presided at the organ and had given an elaborate musical service. He had come out after the musical service and dropped dead on the street and had been taken to the morgue. An enormous aneurism of the basilar artery had been found though he had presented absolutely no symptoms during life. The next one was a large cystic tumor of the brain, involving the area of the pituitary body which must have been of embryonal character. The man who had owned the tumor was a longshoreman in perfect health, who had done his work in loading and unloading the White Star steamers. One day he had sat down on the edge of the dock to take his luncheon. His associates had not missed him that afternoon, but two hours later he had been found sitting there, and that was what he had in his head.

Dr. E. W. Taylor, Boston, was surprised to hear Dr. Starr make the statement that multiple sclerosis was a rare disease. Certainly it was not as rare in Boston. It was not so frequent in Boston as tabes, but certainly it was not so rare as Dr. Starr had described. Many cases failed of diagnosis because of obscurity of symptoms. He had no doubt it was one of the common structural nervous lesions in this country as it was abroad.

(To be continued.)

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Book Reviews.

Surgical Diagnosis. By Alexander Bryan Johnson, Ph.B., M.D., Professor of Clinical Surgery in the Columbia University Medical College; Attending Surgeon to the New York Hospital; Fellow of the American Medical Association, etc., etc. In three volumes. New York and London: D. Appleton & Co. 1909.

This is a large, all-embracing work and covers an immense field. The publishers inform us that it is intended for the general practitioner. It sells for $18 in cloth binding. Two volumes only have reached us as yet; the third is to follow in October next. These volumes represent an enormous amount of work, and the author and his associates unroll for us a complete review of the recent progress made in surgical diagnosis.

Further Advances in Physiology. Edited by Leonard Hill. Pp. 440. New York: Longmans, Green & Co. 1909.

The volume entitled "Recent Advances in Physiology," edited by Hill, has been noticed in these columns as a laudable effort to bring new facts of physiological research clearly before the general reader. That volume dealt mainly with problems of metabolism, secretion and excretion. The present volume is concerned with the results of physiological research on the circulation, respiration, the neuro-muscular system, and vision. In it the reader will find articles by experts in their respective subjects on the equilibrium of colloid and crystalloid in living cells, the myogenic and neurogenic theories of the heart-beat, the venous pulse and its relations to the cardiac cycle in man, blood pressure and its measurement in man, the mechanism of respiration, the physiology of muscular work, the nature of the nerve impulse, cortical localization and the functions of the cerebrum, including Marie's views concerning aphasia, and, finally, visual adaptation and color vision.

The articles are, in each case, based on the original sources, and there are abundant references to these sources. The volume, therefore, has a permanent value. It can be highly commended as a statement of the most recent views on the subjects with which it deals.

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THE PRESENT STATUS OF PELLAGRA.

The recent appearance and continued spread of pellagra in some of the Southern states have brought into considerable prominence this disease, hitherto rare in our country. Doubtless the newspaper reports of its extent are exaggerated, but the fact that the Public Health and Marine-Hospital Service has begun the issue of a weekly bulletin dealing with its progress and efforts at its control shows that it is a legitimate matter of medical as well as popular interest. The essential data of the disease are as follows:

Pellagra is a systemic affection, classed by Osler among the intoxications, with cutaneous and metabolic manifestations. It is extensively endemic in Lombardy, southern France and Spain, and occurs chiefly among adults of the poorer classes. In this country it has principally affected negroes and asylum inmates. It has usually been supposed due to poisoning from eating maize, diseased or fermented by the action of *bacteridium maidis*, the toxins being absorbed from the intestine, but cases have been reported among those who never use this food. Predisposing causes are apparently of considerable importance, especially alcoholism, insufficient nutrition, poor hygiene and excessive exposure to the sun's heat. The first symptoms are general debility, insomnia, vertigo, headache and digestive disturbances. After a variable length of time, and usually in the spring, appear the cutaneous phenomena: first, the pellagral erythema, principally on exposed and extensor surfaces; second, thickening and pigmentation of the skin, with which may be associated burning, itching and development of vesicles and petechiæ; third, desquamation, followed ultimately by atrophic thinning and wrinkling of the skin. In milder cases, under favorable environment, improvement in the general symptoms may begin after the second of these stages, and ultimate complete recovery may occur. More usually, however, temporary remissions are followed by repeated attacks, with progressive dyspepsia, emaciation and muscular weakness. There is frequently diarrhea, which may be dysenteric. The disease becomes chronic. The cerebrospinal system is involved, with symptoms of headache, backache and convulsions. Gradual paralysis of the legs appears and later leads to paraplegia. Finally, there are mental disturbances, the patient passes into melancholia and dies in cachexia and coma. The pathologic findings are essentially those of chronic degeneration. According to Stelwagon, there is pachymeningitis, sclerosis of the brain and cord, visceral anemia and atrophy, fatty degeneration and pigmentary changes. Diagnosis rests on recognition of the symptom-complex, especially in districts known to be affected and among persons using maize as a food, and involves differentiation of the other chronic cutaneous inflammations and of pseudopellagra, a rare condition sometimes occurring in alcoholics with peripheral neuritis. The prognosis is provisionally grave, though there is great discrepancy in the figures from different sources. Of the cases thus far observed in this country, the mortality is said to have been 67%. This is undoubtedly because relatively few cases, and those the most severe, have been recognized. In Italy, Lombroso sets the mortality at 13% and Wollenberg at only 4%. The outlook is much brighter when the disease is diagnosed and treated early in its course. Treatment consists in removal of the patient, if possible, from the affected locality and his establishment in good hygienic surroundings with a liberal, nutritious, corn-free diet. General tonics are indicated, especially iron and arsenic, the latter in the form of Fowler's solution. In this country, atoxyl and various forms of serum treatment have been tried, without notable success. From Mobile, a few cases are reported to have been benefited by direct blood transfusion. Prophylactically, infection of the corn supply should be guarded against and predisposing causes avoided. For the present, maize should be sparingly used as a food, especially by the debilitated, in asylums, and in districts where the disease is prevalent.

Pellagra, then, offers definite problems for medical study. Its etiology is not surely known, and should be investigated by experimental research into the nature and action of the toxins of the diseased maize, and by further pathologic examination of organs from autopsy. Guinea-pig inoculations with the blood of a pellagra patient are reported from North Carolina to have given negative results. In Tennessee, the State Board of Health is enforcing quarantine against the disease on the theory that it is communicable, though this belief is not borne out by European experience. Under government direction, a systematic study of pellagra is now being made, and in time sufficient evidence should be accumulated to warrant positive deductions. It is to be hoped that American medicine may succeed in determining finally the cause, treatment and prevention of this serious and hitherto not wholly understood malady.

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TWO PIECES OF PUBLIC SCHOOL RESEARCH.

THE public school is from many points of view one of our most valuable laboratories and offers extended opportunity for medical and other research. Last week, the Boston Board of Health, with the voluntary assistance of local physicians, completed an arduous piece of investigation among the school children of Brighton. Since the opening of the schools early in September two complete series of cultures have been taken from the throats and noses of 4,178 pupils in this district for the purpose of determining the number of diphtheria-carriers among them and the advisability of endeavoring to restrict the incidence of the disease by isolation of such carriers until further examination shows them free from the organism. The first series revealed the existence of 55 pupils, or 1.3%, who, without clinical signs or symptoms of disease, harbored the diphtheria bacillus and were presumably capable of communicating it to their fellows. The results of the second series of cultures have not yet been determined. Whatever the conclusions ultimately reached from this experiment as to indications for action, the data which it provides will surely be of value. The routine cultural examination of all school children, with isolation and subsequent observation of all diphtheria-carriers, presents obvious difficulties. Nor is it certain that this measure, if carried out, would reduce the incidence of diphtheria enough to make it worth while. For, in the first place, we are not positive that these carriers are a serious source of danger, since it seems possible that the diphtheria bacillus in more or less attenuated form may be an occasional transitory resident in the respiratory passages of many persons without acquiring sufficient virulence to cause disease. In the second place, even if the children were isolated, there are still to be considered the adult carriers, whose number is uncertain and whose detection and isolation would be even more difficult. Before ultimate results can be deduced from the work of the Board of Health, therefore, it remains to determine the percentage of adult diphtheria-carriers in the community, the relative infective capacity of latent diphtheria bacilli in adults and in children, and finally, the value or necessity of administering antitoxin to carriers, isolated or not isolated, to hasten elimination of the bacilli from them. These problems await further investigation in the schools and elsewhere.

Another piece of research, of somewhat different character, is about to be undertaken in the public schools of Philadelphia. Eight schools have been selected, with a total of 2,400 pupils. In four of these, the children will be provided with a nutritious midday lunch of soup, milk and rolls. In the other four, to be used as control, the children will continue to pick up food at haphazard or go without, as the case may be. Before this experiment, and after it has been in progress a few months, there will be held a thorough physical and mental examination of the two groups of pupils, to determine the relative gain or loss in bodily and intellectual efficiency of the systematically and uniformly fed as compared with the erratically fed, and to decide whether, on economic and humanitarian grounds, the difference warrants or makes advisable the future provision to all Philadelphia school children, by the Board of Education, of a wholesome lunch, free or at a minimal cost. Irrespective of the results of this particular investigation, or of opinion as to the socialistic tendencies of such a proposed measure, the problem of the school luncheon remains one of great medical importance. As provided from the home, these lunches are liable to be cold and unpalatable; as purchased by children at their own indiscretion, they are likely to consist largely of cake, candy and other unhygienic and undesirable articles. It is not at all certain that the official provision, perhaps at half cost, of a standard lunch for all public school children would not in the long run be an economy for the state without destroying the sense of responsibility of the individual. Light on this question is to be awaited from the Philadelphia experiment.

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AT a meeting of the Tennessee State Board of Health, Sept. 14, it is reported that it was decided to order the isolation of all cases of pellagra, the board expressing the opinion that the disease is communicable. — *Med. News.*

MEDICINE AND THE CLASSICS.

At a recent convention of the American Institute of American Engineers, Dr. Charles P. Steinmetz expressed his belief in the value of the study of Latin and Greek as part of an engineer's training. This opinion raises the familiar question of the place of the classics in scientific and professional education. It is the fashion nowadays to neglect the classics and to decry the study of them as a waste of time for those whose concern is to be with modern activities, on which these are alleged to have no bearing. Aside from the *humani nihil alienum* doctrine, the two chief arguments in favor of Greek and Latin are that they give a knowledge of the derivation and meaning of many scientific terms and that their literature and history afford pleasurable means of cultivated esthetic recreation. The first of these is utilitarian, and the practical value of etymology is probably less than enthusiasts assert. It is upon the second, in the long run, that the classics must stand or fall. For medical students particularly, it is growing more and more difficult to keep the classics in their scheme of education, so great has become the popular and professional prejudice against them. Doubtless survival of the more fit will settle this educational problem, as it may safely be trusted to settle all others. Meantime, those who still believe that a good physician ought to be more than a busy practitioner or a scientific investigator will probably continue to study and derive pleasure from the classics and from other non-scientific and non-professional subjects of human interest.

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MEDICAL NOTES.

Amebic Dysentery in San Francisco. — It is stated that cases of amebic dysentery are frequently admitted to the Marine Hospital in San Francisco. The total number of these cases from Dec. 1, 1908, to Aug. 9, 1909, was 55, 16 of which are supposed to have originated in California.

Medical Society of the Missouri Valley. — The following officers have been elected for the ensuing year by the Medical Society of the Missouri Valley:

President, Dr. A. B. Somers, Omaha. Vice-Presidents, Dr. C. R. Woodson, St. Joseph, and Dr. Flavell B. Tiffany, Kansas City. Treasurer, Dr. T. B. Lacey, Council Bluffs (re-elected). Secretary, Dr. Chas. Wood Fassett, St. Joseph (re-elected). Omaha was chosen as the place of meeting in March, 1910.

Seizures of Impure Foodstuffs. — In enforcement of the pure food law in the District of Columbia, it is reported that a number of extensive seizures have recently been made of raisins, peaches, wheat and corn flour destined for the manufacture of pie and biscuit, but found by officials of the Department of Agriculture to be wormy, mildewed or otherwise unfit for food. Similar seizures are being made in other parts of the country. It is to be hoped that such zealous prosecution of law in respect to maize may aid in checking the spread of pellagra in the South.

Early's Status as a Leper. — There seems to be still some uncertainty as to whether or no John Early, the North Carolina soldier, is a leper. Early was supposed to have contracted the disease while serving in the Philippines, and the clinical diagnosis was confirmed on microscopic examination by Dr. Ehlers, of Copenhagen. He was kept under isolation for many months, but recently the daily press reported his discharge as being considered after all not a leper. Meantime is reported the receipt, by the Treasury Department, of a letter from the American consul of Bergen stating that Dr. Hansen, of Norway, has again demonstrated the presence of the bacillus lepræ in a piece of Early's skin sent him for examination. Whether Early is still a leper, or never was one, or represents a cured case, the determination of his exact status is of obvious scientific and popular importance.

Decline in the Use of Drugs in Hospitals. — In his report for the Committee on Hospital Efficiency, Finance and Economics of Administration, presented at the recent meeting of the American Hospital Association, Dr. R. R. Ross, of Buffalo, commented on the striking and rapid decline in the amount of drugs used in hospitals throughout the country. In 1894 the annual cost of medicine for each patient in the Massachusetts General Hospital was two dollars; in 1908 it was ninety-one cents. A similar decrease has shown itself in the Buffalo General Hospital, of which Dr. Ross is superintendent. Commensurate with this decline has been a corresponding increase in the employment of fresh air, hydrotherapeutics, psychotherapy, massage, x-ray, physical exercises and mechanical methods of treatment. These statistics are encouraging evidence of the development of the new era of therapeutic rationalism.

State Anti-Tuberculosis League for Negroes. — In February last, Surgeon C. P. Wertenbaker, of the Public Health and Marine-Hospital

Service, in giving an illustrated lecture on tuberculosis before the Negro Farmer's Conference at Savannah, Ga., suggested the organization of a State Anti-Tuberculosis League for negroes. The idea was well received and a league was organized. The proposed plan of organization contemplated a league in each state, with a branch in every colored church. This plan, which has been followed, is given in detail in the Public Health Reports of May 28, 1909. The movement was indorsed by the last conference of State and Territorial Boards of Health. Up to Aug. 6, leagues had been formed in the following states: Georgia, Louisiana, Mississippi, North Carolina and Virginia. "A Working Plan" for these leagues has been published in the Public Health Reports of Sept. 3, 1909, giving in detail the method of organization of state leagues and of the local branch leagues.

BOSTON AND NEW ENGLAND.

ACUTE INFECTIOUS DISEASES IN BOSTON. — For the week ending at noon, Sept. 28, 1909, there were reported to the Board of Health of Boston the following cases of acute infectious diseases: Diphtheria 37, scarlatina 25, typhoid fever 34, measles 15, smallpox 0, tuberculosis 65.

The death-rate of the reported deaths for the week ending Sept. 28, 1909, was 17.07.

BOSTON MORTALITY STATISTICS. — The total number of deaths reported to the Board of Health for the week ending Saturday, noon, Sept. 25, 1909, was 205, against 253 the corresponding week of last year, showing a decrease of 48 deaths and making the death-rate for the week 17.16. Of this number 124 were males and 81 were females; 200 were white and 5 colored; 130 were born in the United States, 71 in foreign countries and 4 unknown; 44 were of American parentage, 127 of foreign parentage and 34 unknown. The number of cases and deaths from infectious diseases reported this week is as follows: Diphtheria, 33 cases and 3 deaths; scarlatina, 18 cases and 1 death; typhoid fever, 34 cases and 3 deaths; measles, 10 cases and 0 deaths; tuberculosis, 50 cases and 18 deaths; smallpox, 0 cases and 0 deaths. The deaths from pneumonia were 12, whooping cough 0, heart disease 17, bronchitis 1 and marasmus 1. There were 14 deaths from violent causes. The number of children who died under one year was 50; the number under five years 62. The number of persons who died over sixty years of age was 45. The deaths in public institutions were 84.

Of the above the following were non-residents: Consumption: 1 case and 1 death. Typhoid fever, 1 death.

Deducting deaths of non-residents, the total is 189. The corrected death-rate is then 15.32.

COMPLETION OF CONSUMPTIVES' HOSPITAL AT NORTH READING, MASS. — The first of the three consumptive hospitals in this state, authorized by a recent act of the Massachusetts Legislature, has been completed at North Reading. It is designed to accommodate 150 patients at a charge per patient of $4.00 a week. It is intended, eventually, that the new institution shall be used only by persons inhabiting the northeastern section of the state. The cost of building has been $100,000, and the cost of maintenance is estimated at $50,000 annually.

ELECTION OF DR. H. B. HOWARD TO PRESIDENCY OF AMERICAN HOSPITAL ASSOCIATION. — At the eleventh annual meeting of the American Hospital Association, held in Washington last week, Dr. Herbert B. Howard, of Boston, was elected president of the organization. Dr. Howard, who is a graduate of the Harvard Medical School, was formerly superintendent of the Massachusetts State Hospital at Tewksbury, later resident physician of the Massachusetts General Hospital, and is now superintendent of the proposed new Brigham Hospital.

NEW YORK.

BEQUESTS. — By the will of Dr. Benjamin Ellis Martin, the well-known author and traveler, who died at his home in New York on Aug. 15, the sum of $10,000 is left to the Darrach Home for Crippled Children.

Miss Edith Rebecca Lord, daughter of the late John Taylor Lord, of New York, who died at Zehlendorf, Germany, on July 7, leaving personal property to the value of $300,000, bequeathed her entire residuary estate to charities for the benefit of the blind of England.

By the will of the late Mrs. Emma A. Tillotson, widow of Luther G. Tillotson, of New York, $126,000 is left to local institutions. Among the beneficiaries are St. Luke's Hospital, the New York Skin and Cancer Hospital, St. Mary's Free Hospital for Children, the Home for Incurables, and the New York Institution for the Blind.

DEATHS AND BIRTHS. — The number of deaths reported in the state in the month of July was 675 less than in July of last year, and represented an annual death-rate of 15.4. The birth-rate was 22.2. The urban death- and birth-rates were 16.9 and 26.4 respectively, against 13.9 and 18.0 for the rural population.

Columbia University. — Columbia University entered upon its one hundred and fifty-sixth year on Sept. 22, and it is stated that the registration is the largest in its history. This season a change has been made in the physical training of the freshmen and sophomores in the Department of Arts, under the direction of Dr. Meylan. Instead of exclusive gymnasium work, they will exercise out of doors in the new South Field whenever the weather permits, and the athletic work will include various games.

New Hospital on Long Island. — At a meeting of the South Shore Hospital Association, held at the country home of Mrs. O. H. P. Belmont on Long Island, on Sept. 24, it was announced that plans had been completed for the building of a hospital between Freeport and Hempstead, about one mile from the latter place. It is to contain thirty beds, and the estimated cost is $30,000. Since April last a temporary hospital has been maintained at Freeport, on the Great South Bay, at which ninety patients have been received and a large number of operations performed.

Conference of Health Officers. — The Ninth Annual Conference of Health Officers is to be held in Rochester, on Nov. 10, 11 and 12, and among those who have been invited to make addresses are Dr. M. J. Rosenau, of the Harvard School of Sanitary Science; Professor Sedgwick, of the Massachusetts Institute of Technology; Surgeon-General Wyman, of the United States Marine-Hospital Service; Dr. Cresey L. Wilbur, chief statistician of the United States Census Bureau; and Drs. Marshall L. Price and Charles O. Probst, of the Ohio and Maryland State Boards of Health respectively.

Strauss Milk Stations. — The milk stations maintained through the generosity of Nathan Strauss have just entered upon their seventeenth year of existence, and now still another station is to be added to those kept open both winter and summer. This is located in Mount Morris Park, in Harlem, and makes eight stations which are open all the year round. In the year just ended 3,410,105 bottles of pasteurized milk were dispensed from the Strauss milk depots, as against 34,000 in 1893, the year the charity was started. The total number of bottles dispensed since the work began is 26,288,772.

Physicians' Legislative League. — The incorporation of the Physicians' Legislative League of New York, the objects of which are stated to be to promote a higher standard of medical ethics and to recommend the enactment and enforcement of laws tending to elevate the practice of medicine, was approved by Supreme Court Justice Amend on Sept. 23. The incorporators are among the younger men of the profession, and include Dr. Carl R. Keppler, of the Orthopedic Department of Harlem Hospital, and Dr. William R. Stone, assistant visiting obstetrician to the City Hospital.

Injunction against Pumping Carbonic Acid Gas. — Justice Andrews, in an extraordinary term of the Supreme Court held in Albany, has issued an injunction forbidding further pumping of carbonic acid gas from the Saratoga mineral springs. He was summoned to hold court by Governor Hughes for the reason that the companies engaged in this pumping were continuing their operations despite the law forbidding this practice passed by the legislature, and the decision of the Court of Appeals that the law is constitutional. The governor took this action at the instance of the commission appointed by him, in accordance with the act of legislature, to purchase the spring properties in Saratoga for a state reservation should such purchase be deemed advisable. The commission reported that as the springs were still being used for gas-extracting purposes, it was unable to place a value upon the property.

"The Teacher and Communicable Disease." The State Health Department has recently sent to the health officers throughout the state copies of a circular entitled "The Teacher and Communicable Disease," with the request that they be distributed among school teachers. In his accompanying letter the commissioner says: "In village and country schools the excellent measures of school inspection by trained nurses or physicians now carried out in so many city schools are not feasible. Yet the matter is of such great importance that something of this character should be introduced into even the remotest country district schools. The school teachers are the natural ones to appeal to for this further service in behalf of the children and the community. If a copy of this pamphlet were placed in the hands of every teacher in your community, it would, I believe, receive her intelligent attention and would put her in a position to help your board in the prevention and control of communicable diseases."

TYPHOID FEVER EPIDEMIC TRACED. — It has been learned that the Health Department has succeeded by systematic work in tracing the source of the infection in the recent localized outbreak of typhoid fever in the upper East Side section of the city. The inspectors employed in the matter ascertained that in almost every instance the milk used by the family was procured from one company, a rather small concern, doing business only in the section named. Further investigation showed that some of the cans of milk received by this company contained typhoid bacilli, and that all such cans came from one particular dairy farm up the state. An agent was then sent to this farm and found that one of the employees had recently had typhoid fever and that the attending physician, from a neighboring village, had failed to report the case. It was apparently at first a walking case of the disease, and even after the patient was forced to give up work he slept in the same building with the other milkmen, while little or nothing in the way of disinfection was done.

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Current Literature.

NEW YORK MEDICAL JOURNAL.
SEPT. 18, 1909.

1. RICKETTS, B. M. *Surgery of Cirrhosis of the Liver.*
2. GANT, S. G. *Treatment of Mechanical Constipation and Obstipation.*
3. VAN SLYKE, L. L., AND BOSWORTH, A. W. *A Simple Method for the Determination of Casein in Cow's Milk.*
4. *HIRSHBERG, L. K. *A New Diagnostic Skin Reaction in the Acute Infections.*
5. BASSLER, A. *An Apparatus for the Chemical and Bacteriological Examination of Gastric Contents and Feces.*
6. BRAV, A. *The Treatment of Recurrent Hordeolum.*
7. DENENHOLZ, A. *Mammary Fibro-adenoma.*
8. GARRISON, F. H. *Physiology and the Second Law of Thermodynamics.*

4. Hirshberg suggests multiple vaccination as a new diagnostic method in acute infections. After cleaning with ether a hairless portion of the arm, he makes a number of scarifications in parallel columns and inoculates each one with a different vaccine, e. g., 2,000,000 gonococci, 40,000,000 staphylococci aurei. If the patient is suffering from a pneumococcus infection, there will be a reaction at the site of the pneumococcus vaccination and there only. The reaction consists in edema, infiltration and hyperemia. The writer has used this method with encouraging results in cases of typhoid fever, pneumonia, erysipelas and infections with gonococcus, staphylococcus and colon bacillus. [L. D. C.]

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION.
SEPT. 18, 1909.

1. CHAPIN, H. D. *The Relation between Science and Art of Infant Feeding.*
2. *BREM, W. V. *Investigation of Blood for Tubercle Bacilli.*
3. GORDON, A. *Medical versus Legal Responsibility.*
4. *HESS, A. F. *The Stability of Type of the Tubercle Bacillus.*
5. *ROYSTER, L. T. *Syphilitic Pseudo Paralysis.*
6. GREEN, J., JR. *Nodular Opacity of the Cornea, with Special Reference to Its Etiology.*
7. *GERMAIN, H. H. *Osteomyelitis of the Lower Jaw.*
8. *SACHS, B. *The Wassermann Reaction in Its Relation to Diseases of the Central Nervous System.*
9. NOGUCHI, H. *The Sero-Diagnosis of Syphilis.*
10. *CASTELLI, E. *The Wassermann Reaction.*

2. Brem reports his work on the presence of the tubercle bacillus in the blood stream, done in November, 1908, without knowledge of Rosenberger's researches in the same line, and emphasizes the dangers of contamination by other acid-fast organisms present, especially in the sterile water used. Heat sterilization has no effect on the staining properties of tubercle bacilli or of the other acid-fast bacilli. Exposure for a few seconds to pure nitric acid or to direct flame, however, destroys their staining properties. He, therefore, treated all the slides, cover glasses and glassware used in his investigations with flame and nitric acid. And yet, many patients whose blood failed to produce lesions in guinea-pigs showed numerous acid-fast bacilli. The source of error was finally discovered in the distilled water used, and when this source of contamination was eradicated, negative results were obtained. The source of contamination was probably a grass bacillus and could be traced to the guinea pigs or horses nearby. Brem, therefore, believes that there is as yet no conclusive proof of the frequent, continued presence of tubercle bacilli in the circulating blood.

4. Hess emphatically believes from clinical and experimental evidence that the question of transmutation of types of tubercle bacilli, i. e., from bovine to human and *vice versa*, may well be disregarded, and we can safely continue to investigate the etiology of tuberculosis by means of differentiating the two types of bacilli.

5. Royster states that syphilitic pseudo-paralysis is a manifestation of inherited syphilis, which exhibits itself in the first few months of life by a failure, disinclination or inability to move one or all of the extremities. The gross appearances depend on the degree of cartilaginous inflammation. There may be a distinct ring or collar of proliferated bone at the epiphyseal site of the disease, or pus from secondary infection may form. These cases occurring in the arms resemble and are identical in appearance with Erb's or brachial birth paralysis. Usually, there is flaccidity, but this, together with spasticity and pain, are variable. The condition may be the only evidence of a syphilitic taint. Differentiation should be made from scurvy, infantile paralysis, septic epiphysitis and brachial birth paralysis. Treatment is best carried on by inunctions.

7. Germain treats of osteomyelitis of the lower jaw in a very thorough manner. Infection finds its entrance by way of the teeth in the majority of the cases. Other exciting causes may be trauma with or without fracture, pyorrhea alveolaris and hematogenous infection. This last is the only instance in which a pure infection with either the staphylococcus or streptococcus occurs; all others are mixed infections with bacteria from the mouth. In practically all cases the pus finds an outlet on the facial side of the mandible, either in the mouth or externally, probably due to the larger size of the marrow spaces on this side of the bone. X-rays are most valuable in localization and diagnosis. The gravity of the disease dsmands liberal external incisions rather than the ineffectual mouth incision.

8. Sachs is very enthusiastic about the value of the Wassermann reaction in diagnosis of diseases of the central nervous system, particularly as to their differentiation. He states that in tabes and general paresis it is of special use only in so far as it tends to corroborate the theory of the specific origin of these diseases, and in so far as it gives one good reason to adopt rigid anti-syphilitic measures. It is of value in differentiating multiple sclerosis from multiple cerebrospinal syphilis, and is used as a routine in all cases of question of brain tumor before operation is advised. Several brilliant differential diagnoses have been made in these instances. In hemiplegias, it may distinguish a specific endarteritis from a less amenable condition and is of especial value in determining the cause of some obscure epileptic attacks. Negative reactions are, of course, as valuable as positive ones in a differential diagnosis, especially in brain tumor. It is, when positive, an absolute indication for active antisyphilitic treatment.

10. Castelli also finds the Wassermann reaction of value in determining the obscure etiology in some cases of myxedema, scleroderma, lupus, cardiac and valvular diseases. [E. H. R.]

The American Journal of the Medical Sciences.
August, 1909.

1. *Stockton, C. G. *A Study of Achylia Gastrica.*
2. *Einhorn, M. *Duodenal Ulcer and Its Treatment.*
3. *Thompson, W. G. *Clinical Experiments with Homologous Vaccines in the Treatment of Septic Endocarditis and Pyemia.*
4. *Jurist, L. *Acute Gangrenous Pancreatitis.*
5. *Floyd, C., and Barker, W. W. *The Typhoid Cutaneous Reaction.*
6. *Clendening, L. *Sarcoma of the Stomach.*
7. *Patterson, H. S. *Endemic Amebic Dysentery in New York, with a Review of Its Distribution in North America.*
8. *Crohn, B. B. *Blood Cultures in Human Glanders.*
9. Feiss, H. O. *A Simple Method of Estimating the Common Variations and Deformities of the Foot.*
10. Illoway, H. *A Further Contribution to My "Simple" Method for the Quantitative Determination of Pepsin in a Given Gastric Juice.*
11. *Woodyatt, R. T. *Adenofibroma of the Male Breast.*
12. Chance, B. *Oculomotor Paralysis Accompanied by Facial Palsy, Neuroparalytic Keratitis, and Hemiplegia.*
13. *Walsh, J. J. *Insanity, Responsibility and Punishment for Crime.*

1. Stockton analyzes one hundred and thirty-two cases of achylia gastrica. This condition is characterized by a persistent absence of gastric secretion, neither acid nor ferments being present. It may follow gastritis or general infections, but in many cases no cause can be traced. In the cases recorded, the sexes were almost equally represented; the age in all but six cases was between thirty and seventy; no influence of occupation could be detected. Facts of possible significance in the previous histories were the presence of long-continued stomach trouble in 25%, of typhoid fever in 20%, of probable eyestrain in 50% and of pernicious anemia in 23%. Excessive use of tobacco figured in two cases, and alcoholic intoxication in one case. Tests of digestion showed that the stomach in most cases emptied itself more rapidly than normally. The bowels were constipated in 52% and loose in 31%. The urine contained albumen in 33%; indican was increased in but 13%. The most frequent symptoms were vomiting, eructation and gastric distress; hyperorexia was common. In many cases, the chief symptoms were general depression and fatigue, not traced by the patient to stomach disorder. In three cases, a return of normal secretion occurred. In some cases, the use of hydrochloric acid and pepsin gave marked relief.

2. Einhorn briefly reviews the more important recent contributions to the subject of duodenal ulcer and calls attention to the importance of modern operative findings in proving its frequent occurrence. Duodenal ulcer may exist almost without symptoms, but when symptoms are present, they are closely similar to those of gastric ulcer. The chief symptom which should lead one to suspect the duodenum rather than the stomach is the longer interval after eating before the occurrence of pain. Treatment should be at first medical, the same as that of gastric ulcer. But in severe and obstinate cases gastro-enterostomy should be performed with less delay than in gastric ulcer.

3. Thompson reports seven cases of septic endocarditis treated by homologous vaccines. Three of these recovered, and in the remaining four, there was distinct temporary benefit. One advanced case of pyemia was cured.

4. Jurist reports a case of acute gangrenous pancreatitis with operation and subsequent complete recovery.

5. Floyd and Barker report results of clinical studies of a cutaneous reaction obtained in cases of typhoid fever by means of extracts of sterile cultures of typhoid bacilli. The reaction when present is apparently distinctive. In 30 cases of typhoid fever, 19 reacted positively, 9 negatively and in 2 the result was rendered unsatisfactory by the patient. In 2 cases of B-paratyphoid infection, no reaction occurred. In 15 cases definitely not typhoid, no reaction occurred, except for a slight reaction in one case with pneumonia.

6. Clendenning reports 2 cases of sarcoma of the stomach, bringing the total of cases so far reported up to 73. The growth is usually of a mixed-cell type, reaching considerable size, but forming metastases in only 40%. A majority of the cases have been in individuals over forty years of age. Fifteen cases have been operated upon, of which 5 have been reported as well at from four to twenty-four months after operation. The disease is usually fatal within a year.

7. Patterson writes to overthrow the prevailing belief that amebic dysentery is essentially a disease of the tropics. He reports 3 cases of the disease encountered within a year in patients who had not been outside of New York, and cites cases of other authors detected in a majority of the states of the Union as well as in Canada.

8. Crohn has collected 16 cases of human glanders in which blood cultures were taken. Of the 14 acute cases, the culture was positive in 11 and negative in 3. Cultures taken early in the disease were less often positive than those taken later, especially after the appearance of the pustular rash. The 2 chronic cases both gave negative cultures. One original case is reported, showing a positive blood culture on the thirteenth day of the disease.

11. Woodyatt reports the histologic examination of 7 cases of non-malignant enlargement of the male breast. Six of these are classed as adenofibroma, the seventh showed only hypertrophy. The adenofibromata seemed to fall into two classes, the first occurring in young men, probably as a sequel of adolescent mastitis, and the second occurring at any age and probably as a result of trauma.

13. Walsh urges that insanity as a plea to enable the criminal to escape punishment should be abandoned; that responsibility is never quite eliminated, except in the absolute idiot, and that punishment as an influence to deter the individual from criminal acts is needed for those of lowered mentality as well as for the normal.

[F. W. P.]

Deutsche Medizinische Wochenschrift. No. 33.
Aug. 19, 1909.

1. Aschoff, L. *The Concept of Disease and Allied Concepts.*
2. Römer, P. *The Specific Treatment of Incipient Senile Cataract.*
3. Herzog, H. *Demonstration of the Trachoma Bodies in Sections.* (Preliminary communication.)
4. Grawitz. *Harmful Effects of Sun Baths.*
5. Bernhardt, G. *The Use of Antiformin and Ligroin in the Test for Tubercle Bacilli in the Sputum.*
6. Loele, W. *Typhoid Bacilli Carriers and Cholecystectomy.*
7. Dege. *The Surgical Treatment of Peritonitis and the Origin of Ileus after Inflammation of the Cecum.*
8. Rothschild, A. *In What Tissue Layer does the Exterpation of the Hypertrophied Parts take place in So-Called Prostatectomy, Especially Superpubic?*
9. *Bassenge, R. *The Disinfecting Action of Certain Commonly-Used Tooth and Mouth Washes on Pathogenic Bacteria.*
10. Bünte. *Anatomic Investigations of the Upper and Lower Jaw, with a View to Local Anesthesia in Dental Operations.*
11. Hartmann, A. *A Sterilizable Lunar Caustic Holder.*
12. Fehos, L. *A New Means for Staining and Washing Cover Glass Preparations.*
13. Sodemann, R. *Inaccurate Designations of Certain Pharmaceutical Preparations.*

9. Bassenge has noted the effect of many different kinds of mouth washes upon the typhoid bacillus and upon the cholera vibrios in different concentrations and at different temperatures. He finds that they are nearly all practically useless as regards their bactericidal power when mixed with the bacteria for a short while, and considers that any cleansing power they may have for the mouth is purely mechanical. He advises frequent visits to the dentist, rather than the use of mouth washes, to keep the teeth from decaying. [C. F., Jr.]

Münchener Medizinische Wochenschrift. No. 35.
Aug. 31, 1909.

1. *Bang, I., and Forssman, J. *Does the Side-Chain Theory of Ehrlich Conform to the Known Facts?*
2. *v. Oppel, W. A. *Experimental Foundations of Arterial Anesthesia.*

3. *Bittorf, A. *"Heart Disease Cells" in the Urine.*
4. *Fabry, J. *The Verrucous Form of Cutaneous Tuberculosis observed in Coal Miners.*
5. v. Stubenrauch. *The Formation of Cysts in Isolated Remains of the Appendix.*
6. *Iversen, J. *The Treatment of Russian Relapsing Fever with Arsacetin (Ehrlich).*
7. Hagen, W. *Gynecological Peritonitis.*
8. Ohly, A. *The Action of the Lactic Acid Bacillus Contained in Joghurt Buttermilk in Diseases of the Stomach, the Intestines, and in Diseases of Metabolism.*
10. Philippi, F. A. *Eucerin, a Good Modern Base for Salves.*
11. Plate, E. *Four Cases of Congenital Word-Blindness in One Family.*
12. Jurasz, A. *Cold Applications to the Neck for Nose-Bleed.*
13. Doerfler, H. *Report on the Work of Supervision of Infants in Weisenburg, for the Year 1908.*

1. The writers discuss the side-chain theory of Ehrlich in the light of the work of recent investigators. The evidence adduced seems to show that the theory is no longer tenable. The conclusions which they emphasize are as follows: That the identity of the toxin with the antigen has not been proven; that facts are against it, namely, that antibodies may be formed without permanent binding of the toxin and *vice versa;* that bodies which bind an antitoxin may be separated from those which cause its formation; that a binding in Ehrlich's sense does not necessarily lead to destruction of the receptor; that the cell receptor is not identical with the antitoxin in the blood; that consequently antitoxin in the blood cannot be receptors thrown off from cells; and that, therefore, Ehrlich's theory is wrong.

2. By experimenting on animals with intra-arterial injections of cocaine in large doses, Oppel has demonstrated the following facts: That the danger of cocaine poisoning, other things being equal, is inversely proportional to the width of capillary bed in the part to be anesthetized. For example, the minimal lethal dose by injection into the abdominal aorta is more than twice as large as that by injection into the femoral artery, and eight to ten times that by injection into the superior vena cava. The writer does not define clearly the indications for arterial cocainization, but thinks that it will prove of value in a limited field.

3. "Heart disease cells" similar to those found in chronic passive congestion of the lung have been seen by the writer in the urine. They have been described already by Ziegler and by Orth as occurring in the kidney. Those found in the urine are described as being somewhat swollen, polymorphic, frequently polygonal cells of considerable size, having a large round nucleus which is usually difficult to see. The cells, as a rule, are much larger than leucocytes. The pigment appears as granules of various sizes, yellow to brownish-yellow in color. It may surround the nucleus or be seen throughout the protoplasm. The Berlin-blue reaction by hemosiderin is generally negative. The writer has looked for similar cells in a case of pernicious anemia without finding any, but he does not feel sure that it never occurs in this disease. He says that the cells above described can be distinguished without difficulty from those seen in hemorrhage from the genito-urinary tract, hemoglobinuria and jaundice.

4. Fabry describes a form of tuberculosis verrucosa which he believes to be peculiar to coal-miners. He has observed one hundred and twenty-seven cases of the affection in the Rhenish and Westphalian coal-fields, and he asks those who have the opportunity to find out whether the same form of the disease occurs in coal-miners elsewhere.

6. Iversen claims that the use of arsacetin in the treatment of relapsing fever is an important step in advance. [G. C. S.]

Berliner Klinische Wochenschrift. No. 36.

Sept. 6, 1909.

1. Bashford, E. F. *Cancer in Men and in Animals.* (To be concluded.)
2. *Pförringer, O., and Landsbergen, F. *Cobra Venom Hemolysis in the Insane.*
3. Suzuki, S. *A Chromaffin Tumor of the Adrenal Medulla.*
4. Friedberger, E., and Hartoch, O. *The Influence of Intravenous Salt Injections on Active and Passive Anaphylaxis in Guinea Pigs.*
5. Warnekros. *Some Cases from Technical Dentistry.*
6. *Blanck. *The Value of the Wassermann Reaction in the Treatment of Syphilis.*
7. Kleinertz, R. *Tetanus from Catgut.*
8. de Dominicis, A. *New and Improved Method for Obtaining Hemochromogen Crystals.*
9. Goebel, C. *Two Cases of Prolapse of the Rectum.*
10. Goebel, C. *Symmetrical Swelling of the Parotid.*
11. Hoppe, F. *The Question of the Status of Physicians in Institutions for the Insane.*

2. From further experimental investigation of the hemolytic, so-called, psychoreaction with cobra venom, the authors conclude that the reaction is not specific for clinically circumscribed psychiatric symptom-complexes, such as dementia precox and manic-depressive insanity, but rather the expression of general fluctuations in metabolism, especially in the oxidative processes in which the red blood corpuscles are primarily concerned.

6. After a careful clinical study, Blanck reaches the following conclusions as to the value of the Wassermann reaction in syphilis:

(*a*) The diagnostic value of a positive reaction is undoubted.

(*b*) The diagnostic value of a negative reaction is in itself *nil*.

(*c*) The therapeutic value of a positive reaction, before the outbreak of general symptoms, is of no importance for the establishment of early treatment. When general clinical symptoms are present, it is of no importance in determining the quality or quantity of the treatment to be instituted. In the latent period of lues, it is in itself without decisive import. It is of import only in cases of doubtful diagnosis.

(*d*) The therapeutic value of a negative reaction is likewise *nil*.

(*e*) This one-sided value of the Wasserman reaction for the treatment of syphilis involves the great danger of mercury intoxication and the discrediting of mercury, besides the danger of developing syphilidophobes, neurasthenics, and hypochondriacs. [R. M. G.]

Die Therapie der Gegenwart.

August, 1909.

1. Finkelstein, H. *Disorders of Nutrition in Breast-Fed Infants.*
2. *Wassmuth, A. *The Question of Serous Expectoration after Aspiration of the Pleura.*
3. Schultze, O. *Qualitative and Quantitative Experiments on the Practical Value of Rumpel's Capsules.*
4. Goldschmidt, B. *Some Relations of the Nose to Other Organs of the Body.*
5. Schilling, F. *Meso- and Hypo-pharyngoscopy.*

2. Wassmuth made a critical study of a case of carcinomatosis involving especially the peritoneum and the pleuræ, in order to discover, if possible, whether serous expectoration after thoracentesis is due to acute pulmonary edema brought on by the rapid change in intrathoracic pressure or to the discharge of pleural exudate (or transudate) through the bronchi. An elaborate comparative analysis was made of the pleural fluid and the sputum obtained during the coughing spell induced by the aspiration. This analysis proves conclusively to him that the sputum was not derived from the effusion, and supports the older theory that serous expectoration means edema of the lung. [L. D. C.]

Annales de l'Institut Pasteur.

July 25, 1909.

1. *Marchoux, E., and Bourret, G. *Researches on the Transmission of Leprosy.*
2. *Sorel, F. *Iodide of Potassium and Tuberculin.*
3. Nicolle, M., and Alilaire, E. *The Growth of Bacteria in Large Numbers and Their Chemical Composition.*
4. Salimbeni, A. T. *The Modifications of the White Blood Corpuscles in Acquired Immunity.*

5. FAROY, G. *Anatomo-Pathologic Investigations on Hereditary Syphilis of the Pancreas and of the Parotid.*
6. YAMANOUCHI. *The Diminution of the Excitability of the Nerves in Animals Injected with the Serum of a Strange Species.*

2. Marchoux and Bourret mentioned in 1908 that potassium iodide caused febrile reactions in lepers. This reaction was thought due possibly to the fact that large numbers of the bacilli were killed and their endotoxins, thus liberated, caused the reaction. In order to carry this work further, Sorel has experimented with tuberculin and guinea pigs and K I, as the leprosy bacillus could not be cultivated or inoculated successfully. He first determined the fatal dose of K I for healthy and for tuberculous guinea pigs.

In healthy guinea pigs, non-lethal doses of potassium iodide cause a diminution of the red blood corpuscles and an increase first in the polynuclear leucocytes and later in the mononuclear leucocytes. In the guinea pigs that had been tuberculous for some weeks, he found practically the same phenomena. After prolonged administration, the effect on the red blood corpuscles wears off and they return to normal.

This increase of mononuclear cells, which act as carriers of the tubercle bacilli, facilitate the spread of the disease. Hence, guinea pigs treated with K I soon after inoculation, die more quickly with more diffuse tuberculosis.

Besides the changes in the blood picture, K I caused a thermic reaction in tuberculous guinea pigs similar to tuberculin. By careful experiments, however, he showed that this reaction was due to a specific action of the K I and not due to a liberation of tuberculin by the destruction of tubercle bacilli, for animals immune to considerable doses of tuberculin reacted after the K I administration

[C. F., JR.]

Miscellany.

THE ITALIAN LEAGUE AGAINST MALARIA.

ITALY has at length combined and mobilized her forces, pathological, clinical and hygienic, against one of her most formidable physical enemies; and at Milan, on Oct. 6 and 7 next, under the presidency of Dr. Guido Baccelli, she will declare "duly constituted" the *Lega Nazionale contro Malaria.* Her leading authorities in the three above-mentioned departments will be present, and before the formal declaration of the constitution of the "League," the special reports on the "*Questione Scientifica e Legislativa della Malara*" — reports prepared by experts deputed *ad hoc* — will be heard. Then will follow the discussions, to be closed with a summing up of the conclusions arrived at, and to be embodied in an "order of the day." Every care has been taken that the League shall be representative in the most authoritative sense. Three special organizing committees have been already formed, — at Naples, at Rome and at Milan,— the members of which are not confined to those several schools, but are reinforced from all the other centers, clinical and hygienic, throughout the kingdom. — *Lancet.*

Correspondence.

MODIFICATIONS OF GILLIAM'S OPERATION.

CHICAGO, Sept. 27, 1909.

Mr. Editor: In the JOURNAL of Sept. 2, 1909, page 322, appears an article under the heading of "Mayo's Modification of Gilliam's Operation for Shortening the Round Ligaments." I am enclosing a clipping from a reprint of an article published in *Surgery, Gynecology and Obstetrics*, November, 1905, which reads as follows:

"To secure all the advantages of the Alexander operation, and yet have an operation which could be combined with the median incision and still avoid the creation of pathological conditions, as in the Ferguson-Gilliam operation, the writer began in 1903 to perform the following operation:

"1. The abdomen is opened in the median line, through an incision one and one-half to two inches in length.

"2. Intra-abdominal complications are dealt with.

"3. The round ligaments are picked up with the author's rubber-jaw forceps and a control ligature is thrown around each ligament, about two and one-fourth to two and one-half inches from the angle of the uterus. If they are exceedingly well developed, a longitudinal slit is made over the ligament and the peritoneum not included.

"4. The edge of the aponeurosis over the rectus muscle is now grasped close to the lower angle of the wound, and the author's ligature forceps are carried between the aponeurosis and the rectus muscle, outward to the natural exit of the round ligament, the internal ring, where the forceps is guided into the abdomen by sight or by means of one or two fingers through the abdominal incision as a guide. It is not difficult to have the forceps follow the round ligament subperitoneally to the control ligature.

"5. The forceps now grasp the control ligature, and it is withdrawn, and along with it is a loop of round ligament.

"6. Each loop of round ligament, while being held by the control ligature, is sewed to the under side of the aponeurosis with catgut, about one inch from the median line, and should the loops prove long enough, as they frequently do, they are sutured together in the median line over the recti muscles.

"Tracing the round ligament, we now have it running from the uterus to its normal exit, the internal ring, then under the aponeurosis to the lower angle of the abdominal incision, close to the symphysis pubis, to the under side of which aponeurosis it is attached one inch from the incision. The ligament now retraces its steps to the internal ring, from whence it follows its normal course to the labium majus. This leaves no opening for strangulation of the bowel. The ligament leaves the abdomen at its normal place and utilizes the normal structures as a pulley for the round ligament. The uterus is now held by the very best part of the round ligament which has capacity for evolution during pregnancy and involution thereafter.

"The charge has been made against these internal operations on the round ligaments that they have no statistics in regard to pregnancy, but I maintain, and I think rightly, that anything which can be said of the Alexander operation as regards pregnancy can be said of this. The ligament carrying with it the peritoneum would hold some cases that would fail to be held by the stripped ligament, as we have in the Alexander operation

"The nature of the operation has led the author to term it 'intramural transplantation of the round ligaments.'

"The operation has seemed to present the following advantages:

"1. It may be employed where there are intra-abdominal complications of any extent, and through the best possible opening for dealing with these complications.

"2. It is easy of execution through even a very small opening.

"3. It creates the least possible pathology, forming no new ligament.

"4. It utilizes the very best part of the round ligament, acting through the internal ring.

"5. It has shown the highest efficiency in holding the uterus forward and yet allowing the normal range of movement."

Comparison of this description with Baker's description of Mayo's modification of Gilliam's operation shows this latter procedure to vary in no essential and scarcely in any non-essential from that published by me in 1905 and called at that time, "Intramural Transplantation of the Round Ligaments."

Truly yours,

CHANNING W. BARRETT, M.D.

RECORD OF MORTALITY

FOR THE WEEK ENDING SATURDAY, SEPT. 18, 1909.

CITIES.	Reported deaths in each.	Deaths under five years.	CITIES.	Reported deaths in each.	Deaths under five years.
New York	—	—	Waltham	12	1
Chicago	603	224	Pittsfield	10	4
Philadelphia	403	136	Brookline	4	2
St. Louis	—	—	Gloucester	13	4
Baltimore	186	52	North Adams	5	2
Cleveland	—	—	Northampton	5	0
Buffalo	—	—	Chicopee	5	—
Pittsburg	—	—	Medford	5	3
Cincinnati	—	—	Beverly	5	3
Milwaukee	—	—	Leominster	5	3
Washington	—	—	Hyde Park	3	2
Providence	—	—	Melrose	4	1
Boston	177	74	Newburyport	5	2
Worcester	34	15	Revere	1	1
Fall River	52	30	Westfield	—	—
Cambridge	28	9	Woburn	7	2
Lowell	45	19	Peabody	—	—
New Bedford	23	10	Marlboro	4	2
Lynn	19	7	Attleboro	10	4
Springfield	23	4	Adams	5	1
Lawrence	37	17	Clinton	—	—
Somerville	21	5	Gardner	6	4
Brockton	9	5	Milford	1	0
Holyoke	14	7	Watertown	1	0
Malden	11	2	Plymouth	—	—
Chelsea	7	3	Southbridge	4	2
Newton	7	1	Weymouth	2	0
Salem	20	3	Framingham	4	2
Haverhill	19	6	Wakefield	—	—
Fitchburg	6	4	Webster	—	—
Everett	7	5	Arlington	5	2
Quincy	—	—	Greenfield	1	—
Taunton	10	3			

LIST OF CHANGES OF STATIONS AND DUTIES OF COMMISSIONED AND OTHER OFFICERS OF THE PUBLIC HEALTH AND MARINE-HOSPITAL SERVICE FOR THE SEVEN DAYS ENDED SEPT. 15, 1909.

GLENNAN, A. H., assistant surgeon-general. Detailed to represent the Service at the meeting of the Association of Military Surgeons, to be held in Washington, D. C., Oct. 5–8, 1909. Sept. 14, 1909.

KERR, J. W., assistant surgeon-general. Directed to proceed to Chicago, Ill., and Springfield, Ill., upon special temporary duty. Sept. 2, 1909.

CARTER, H. R., surgeon. Bureau order of July 20, 1909, revoked. Directed to proceed to Louisville, Ky., and assume command of the Service. Sept. 14, 1909.

BANKS, CHARLES E., surgeon. Granted three days' leave of absence from Sept. 14, 1909.

MCINTOSH, W. P., surgeon. Leave of absence granted Aug. 11, 1909, for twenty-one days from Sept. 1, 1909, amended to read ten days from Sept. 1, 1909, and eleven days from Sept. 27, 1909.

WERTENBAKER, C. P., surgeon. Detailed to represent the Service at the meeting of the Association of Military Surgeons, to be held in Washington, D. C., Oct. 5–8, 1909. Sept. 14, 1909.

YOUNG; G. B., surgeon. Detailed to represent the Service at the meeting of the Association of Military Surgeons, to be held in Washington, D. C., Oct. 5–8, 1909. Sept. 14, 1909.

LUMSDEN, L. L., passed assistant surgeon. Detailed to represent the Service at the annual meeting of the Medical Society of the State of Virginia, to be held in Roanoke, Va., Oct. 5–8, 1909. Sept. 11, 1909.

FRICKS, L. D., passed assistant surgeon. Granted three months' leave of absence from Sept. 24, 1909.

CREEL, R. H., passed assistant surgeon. Upon the arrival of Surgeon H. R. Carter, relieved from duty at Louisville, Ky., and directed to proceed to Philadelphia, Pa., and assume temporary charge. Sept. 14, 1909.

ROBERTSON, H. MCG., passed assistant surgeon. Granted two months' leave of absence from Oct. 1, 1909.

SWEET, E. A., passed assistant surgeon. Granted twenty-one days' leave of absence from Sept. 9, 1909.

RIDLON, JOSEPH R., assistant surgeon. Granted six days' leave of absence from Sept. 11, 1909.

ELFERS, J. C., acting assistant surgeon. Granted twenty days' leave of absence from Sept. 11, 1909.

HAMILTON, H. J., acting assistant surgeon. Granted three days' leave of absence from Sept. 14, 1909.

HOUGH, J. S., acting assistant surgeon. Leave of absence granted April 1, 1909, amended to read three months and twenty-five days from April 1, 1909.

NUTE, A. J., acting assistant surgeon. Granted twenty-five days' leave of absence from Sept. 10, 1909.

TAPPAN, J. W., acting assistant surgeon. Leave of absence for thirty days from Aug. 2, 1909, amended to read twenty-six days from Aug. 2, 1909.

TARBELL, B. C., acting assistant surgeon. Leave of absence granted July 9, 1909, amended to read thirty days from Aug. 1, 1909, with pay, and thirteen days from Sept. 1, 1909, without pay.

STEVENSON, J. W., acting assistant surgeon. Leave of absence for thirty days from Aug. 20, 1909, without pay, revoked.

VILLOLDO, P., acting assistant surgeon. Granted twenty-one days' leave of absence from Sept. 20, 1909.

SLOUGH, C., pharmacist. Granted twenty-three days' leave of absence from Sept. 18, 1909.

SOUTHARD, F. A., pharmacist. Granted six days' leave of absence from Sept. 13, 1909, under Paragraph 210, Service Regulations.

BOARD CONVENED.

Board of medical officers convened to meet at the Marine Hospital Office, Seattle, Wash., Sept. 10, 1909, for the purpose of examining an alien. Detail for the board: Passed Assistant Surgeon M. W. Glover, chairman; Assistant Surgeon C. W. Chapin; Acting Assistant Surgeon H. S. McGee, recorder.

SOCIETY NOTICE.

MASSACHUSETTS MEDICO-LEGAL SOCIETY. — The Fall Meeting will be held in Sprague Hall, Medical Library, Boston, on Wednesday, Oct. 6, 1909, at *five* o'clock. The change in the hour of meeting is for the benefit of members desiring to attend the inauguration ceremonies at Cambridge. The following papers will be read and discussed: 1. "The Murder of Honora C. Jordan" (illustrated with stereopticon), by George Burgess Magrath, M.D., Medical Examiner, of Boston. 2. "How Far May a Medical Examiner Go in Employing Expert Assistance?" by W. N. Cowles, M.D., Associate Medical Examiner, of Ayer. 3. "A Case of Bullet Wound: Unusual Complications and Death Five Minutes after Injury," by Ernest L. Hunt, M.D., Associate Medical Examiner, of Worcester.

OLIVER H. HOWE, M.D.,
Recording Secretary.

RECENT DEATH.

COFFREY, WILLIAM FRANCIS, M.D., M.M.S.S., died in Westfield, Sept. 2, 1909, aged 35 years.

BOOKS AND PAMPHLETS RECEIVED.

A Text-Book of Practical Therapeutics. By Hobart Amory Hare, M.D., B.Sc. Thirteenth edition, enlarged, thoroughly revised and largely rewritten. Illustrated. Philadelphia and New York: Lea & Febiger. 1909.

The Great White Plague, Tuberculosis. By Edward O. Otis, M.D. New York: Thomas Y. Crowell & Co. 1909.

The Renewal of Life. By Thos. Bassett Keyes, M.D. Chicago: The Tubercle Press Bureau. 1909–10.

Text-Book of Anatomy and Physiology for Nurses. By Diana Clifford Kimber. Third edition revised by Carolyn E. Gray, R.N. Illustrated. New York: The Macmillan Co. 1909.

Dementia, Amentia, Destrumentia (or Destruomentia). By C. H. Hughes, M.D. Reprint.

The Neuraxis and Pelvic Strain of Present-Day Transportation Methods. By C. H. Hughes, M.D. Reprint.

Annual Report of the Department for the Insane of the Pennsylvania Hospital for the Year ending Fourth Month, Twenty-Second Day, 1909. Philadelphia.

The Insanity Defence for Crime. By John B. Chapin, M.D. Reprint.

Annual Report of the Mt. Sinai Hospital of Boston for the Seventh Year. Boston. 1909.

Original Articles.

A STUDY OF THE RETICULATED RED BLOOD CORPUSCLE BY MEANS OF VITAL STAINING METHODS. ITS RELATION TO POLYCHROMATOPHILIA AND STIPPLING.

BY JOHN B. HAWES, 2D, M.D.,

Assistant to Physicians to Out-Patients, Massachusetts General Hospital; Assistant Physician to Out-Patients, Carney Hospital, Boston.

(From the service of Dr. Frederick C. Shattuck, of the Massachusetts General Hospital, and the Pathological Laboratory of the Massachusetts General Hospital, Dr. James Homer Wright, Director.)

HISTORICAL.

That peculiar condition of the blood known as polychromatophilia has long been known to be characteristic of certain intoxications and grave anemias. Under various pathological conditions it has been found that certain red blood corpuscles have an affinity for basic stains instead of the ordinary acid stains. Such cells are called polychromatophilic. With the Wright modification of the Leishman stain the polychromatic cells are dark blue or gray, often distinguishable from the normal red cell merely by a slight difference in shade.

In 1890, Howell, in a most thorough and detailed investigation of the life history of the red blood corpuscle, described certain red cells in the fetal circulation and in the bone marrow of the cat, some nucleated and some without nuclei, which had a peculiar granulation. These granules in most instances were connected by a sort of net work. The blood and tissues in which he found these cells were stained fresh, without fixation. After severe hemorrhage he found these "erythroblasts" or "transitional forms," as he calls them, free in the circulation of the adult animal. These cells, which he was the first to describe, are undoubtedly the prototype of what is known as "stippling," or "granular degeneration of the red cells," as seen in blood under various conditions stained by ordinary methods.

In 1893, while studying the blood of pernicious anemia, Askanazy described a granulation in some of the red cells, particularly in the polychromatic cells. Later, Lazarus, Klein, Pappenheim and others found this condition in various forms of pernicious and other severe anemias. In certain intoxications, such as poisoning by copper, mercury, arsenic and especially lead, the same phenomenon was observed. Reitter, Ehrlich and others have found these granules in normal blood. Whether they are justified in calling such blood normal, however, is open to question. Grawitz made the first detailed study of this condition and its relation to lead poisoning, and in England and America these minute granulations are known as "Grawitz granules." They are supposed to be one of the earliest and most constant symptoms of lead poisoning. In this country the majority of observers regard this condition, as well as that of polychromatophilia, as a degenerative phenomenon.

During the past five years a group of investigators, Abrami, Brulé, Biffi, Chauffard, Feissinger, Pappenheim, Widal and others, in studying the blood in cases of hemolytic icterus by means of vital staining methods, or staining without fixation, have discovered another peculiar condition of the red cells which seems to be related to stippling and polychromatophilia in that it is found to any extent only in pathological conditions of the blood. These peculiar red cells, to be described later, they term "*hematies granuleuses*" or "*hematies à granulation.*" I shall refer to them as "reticulated red blood cells" or "reticulated forms."

The reason this condition has not been discovered before is quite plain. By ordinary staining methods, where the specimen is "fixed" either by heat or by alcohol so as to make it permanent, absolutely nothing is seen of this cell reticulum. Special staining methods, one or another of the various methods of vital staining, are required to demonstrate this. Vital staining has long been known. It consists merely in bringing fresh blood in contact with the stain before the cells are altered either by heat or alcohol. The various methods used are described below under "Technic."

TERMINOLOGY.

The writers who have investigated this subject use terms so different that it is necessary to come to some distinct understanding as to the exact significance of any given term.

What in America is known as "stippling," "Grawitz granules" or "granular degeneration (?) of the red cells," corresponds to the French "*erythrocytes ponctués*" or "*hematies ponctuées*" and the "*kernige degeneration*" or "*punktierung*" of the German writers. I shall refer to this condition as "stippling" or "stippled cells."

The condition of the red cells which we call "polychromatophilia" or the "polychromatic cell," which terms I shall use, Biffi, an Italian writer, speaks of as "heterochromatic erythrocytes" or "polychromasia," while Ehrlich calls it "anemic degeneration," and other German writers, "basophilic degeneration." The French term is the same as ours.

Various words or phrases are used to designate the third condition of the blood described in this paper. While the study of this subject is still young, it seems important to select some simple yet descriptive name for this peculiar phenomenon. Widal and his pupils call these cells "*les hematies à granulation,*" "*hematies granuleuses,*" "*hematies alterées,*" "*globules rouges granuleux.*" As the condition is not so much a red cell filled with "granules" or "granulations" as it is a real reticulum or net work in the red cell, I feel that any term used to describe it should convey this latter idea. Demel calls it "*substantia reticulo-filamentosa*"; Pappenheim speaks of it as "*Fadennetzstruktur.*" Dr. James H. Wright, who first called this subject to my attention, speaks of these cells as "reticulated forms" or "reticulated red cells." This term is simple and descriptive and is the one which I shall use.

TECHNIC.

To demonstrate polychromatophilia and stippling, no better stain can be found than Wright's modification of the Leishman blood stain. This method of blood staining is too well known to require any description.

To demonstrate the so-called reticulated forms, however, many stains have been devised. Chauffard and Feissinger use the following method: A cover slip dried at room temperature is covered for a few minutes with Pappenheim's solution. This consists of equal parts of aqueous saturated solution of pyronin and methyl green. After two or three minutes a few drops of water are added without washing or shaking, after which the preparation is mounted in water. A specimen thus prepared will keep five or six hours; surrounded with paraffin it will keep two or three days. Biffi modifies this by using Boracico blue of Gosio (methyl blue, gr. 3; sodium tetraborate, gr. 5; distilled water, 100 ccm.) instead of Pappenheim's reagent. After two to five minutes the stain is washed off with water without rinsing or shaking and the preparation is dried on filter paper and mounted in oil of vaseline. By this method the specimen can be kept five to six days. If a little iodine is added to the oil of vaseline a better contrast is obtained. Widal, Abrami and Brulé recommend the use of polychrome blue of Unna 1:10. A drop of fresh blood is placed on a cover slip, a second super-imposed and some of this stain is allowed to flow between the cover glasses. This it readily does until the entire specimen is stained. The cover slips are then drawn apart and mounted in water. Azure blue 1:1,000 also gives good results by this method. In a later paper the same writers advise a dilute solution of cresyl blue. The fact that none of these methods give permanent specimens is a great disadvantage in any attempt to make a careful study of the finer structures of the blood.

To obtain permanent specimens, Widal, Abrami and Brulé use a somewhat complicated method. Four or five drops of fresh blood are put into a tube in which has already been placed an isotonic dilute solution of blood stain. This is left ten minutes and then centrifugalized, after which the fluid is decanted and smears made of the remaining blood. These smears mounted in balsam are permanent.

Biondi proceeds as follows to obtain permanent specimens: An alcoholic solution of cresyl blue is spread on a slide and allowed to evaporate, leaving the stain. On this is spread a drop of the blood to be examined. Then the preparation is "fixed" with methyl alcohol, ether, etc., and after this may be counterstained with methylene blue or any other basic stain. Pappenheim recommends a method very similar to this, while others more complex have been described. My own methods of staining, which I have tried to make as simple as possible, have been as follows: To obtain fresh specimens which will last five or six hours I have used a method originally suggested by Demel and modified by Dr. Wright. A glass slide is covered with a thin layer of 1% aqueous solution of cresyl blue which is allowed to dry as evenly as possible. The stain should be freshly filtered and the slide cleaned in water, not alcohol. On a slide thus prepared a small drop of fresh blood is placed, and over this a cover glass. Occasionally slight pressure must be used to spread the blood to a sufficiently thin layer. This method is simple and quick. Success depends on finding out by experience, *first*, how thick to make the layer of dried stain; *second*, how large a drop of blood is needed; and *third*, how much pressure is required to spread the blood properly without distorting the cells. The cell reticulum is stained a very dark blue. An alcoholic solution of the stain can be used instead of an aqueous solution if preferred.

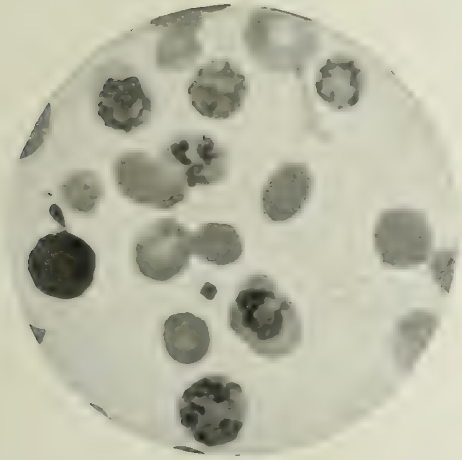
To obtain permanent specimens the methods described by Chauffard and Feissinger seemed far too complex for practical use. After considerable experimentation I have found a quick and simple method: A cover glass (not a slide as described above) is covered with a thin layer of dried cresyl blue. On this a small drop of fresh blood is placed and a second clean cover glass superimposed. After a short interval, generally about thirty seconds, the covers are quickly drawn apart and allowed to dry. The blood is then stained with Wright's stain in the usual way, washed in water, which removes all traces of the aqueous cresyl blue, dried and mounted in balsam. The presence of the cresyl blue on the cover slip does not seem to interfere in any way with the action of the Wright's stain. Specimens prepared in this way do not show either stippling or polychromatophilic forms. Here again it requires considerable experience to get good preparations without distortion of the red cells. The difficult point is to decide exactly how long to wait before pulling the two cover slips apart. This can be found out only by experience. Too short a period does not allow of proper staining of the cells; too long a time causes marked distortion. In studying the relation of these reticulated forms to stippling and polychromatophilia, I always prepare a second specimen of blood with Wright's stain alone. This shows the stippling and polychromatic cells if present, while the other shows the cell reticulation. By mounting the two specimens on the same slide it is easy to study both phenomena. In obtaining my percentages of these various forms I have always counted one thousand red cells in different parts of the field, using a small square diaphragm.

This method of obtaining permanent specimens, while by no means perfect, seems much simpler and fully as effective as any hitherto described.

APPEARANCE OF THE RETICULATED CELLS.

Accompanying microphotographs show the appearance of these reticulated cells far better than any description. As is evident, there is no possibility of mistaking this for stippling. It is a "reticulum," a fine network rather than a "granulation." The majority of such cells are larger

MICROPHOTOGRAPHS SHOWING RETICULATED RED BLOOD CORPUSCLES IN VARIOUS CONDITIONS—HAWES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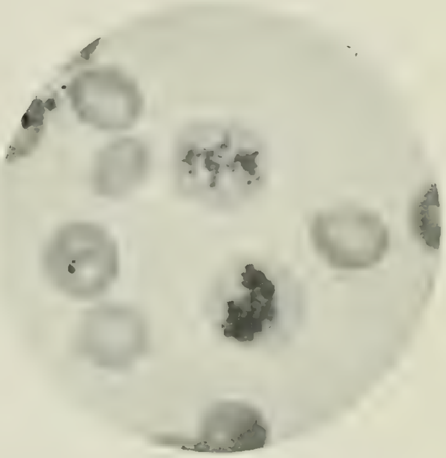
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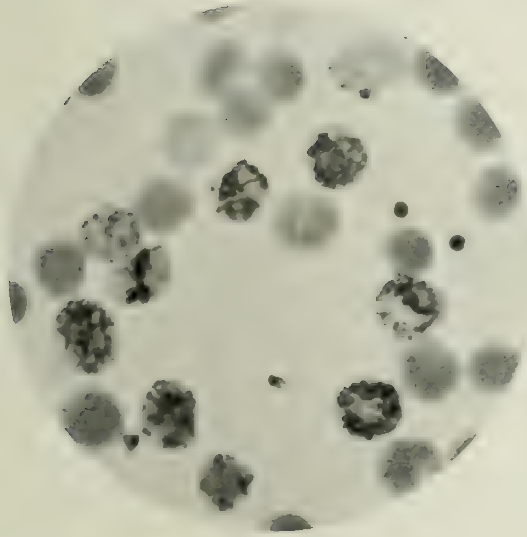
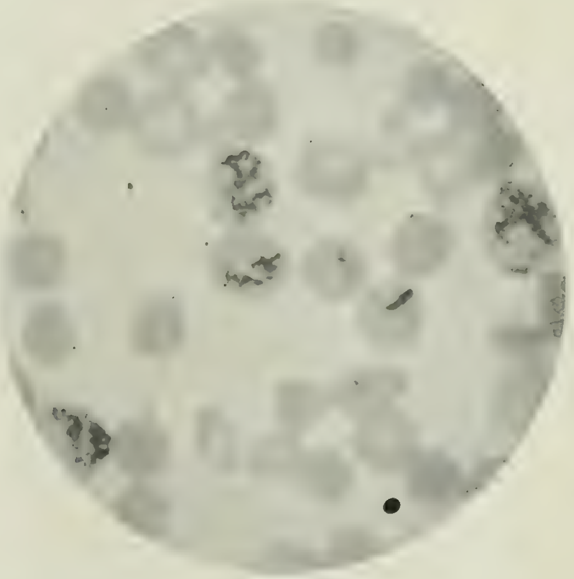

No. 3.


No. 4.

No. 1. Splenic anemia immediately before transfusion.
No. 2. Splenic anemia after transfusion. Note the size of the reticulated cells.
No. 3. Gastric ulcer with hemorrhage and severe secondary anemia.
No. 4. Splenic anemia, atrophic arthritis.

than normal. Biffi calls attention to this and to the fact that the polychromatic cells are also large. The cell reticulum may be limited to the periphery or gathered in a dense network in the center of the cell, so that at first glance it might be mistaken for a nucleus. It is usually in the form of delicate threads connecting larger particles scattered fairly evenly throughout the cell. In some instances the cell protoplasm is very deeply stained; more often it is very faint; in some cases the cell outline is barely visible as a faint line; occasionally it is invisible. Sometimes this reticulum can be seen in the act of extrusion from the cell, and often it lies quite outside, apparently broken up into small particles. Dr. Wright has suggested that perhaps these extruded particles form what is known as " blood dust."

OCCURRENCE OF RETICULATED FORMS.

In an examination of some eighty specimens of blood, normal and pathological, I have found these reticulated forms present as follows:

Normal blood. — In 15 examinations of normal blood I have found the average percentage of reticulated forms to be .85%. The lowest limit was .3%, and the highest, 1.4%. This was based on a count of one thousand red cells taken at random from different parts of the field. Chauffard and Feissinger state that the normal percentage of these reticulated forms is from 1% to 3%. This I consider too high. In no case were any polychromatic or stippled cells seen.

Infant blood. — The blood of eight infants was examined. In each case two preparations were stained, one with Wright's stain alone, the other by my own vital staining method. Two of these babies had had mild attacks of hemorrhage of the new born for which they had received injections of rabbit serum. In these two cases, however, aside from slightly diminished coagulability, the blood was normal. The youngest infant was delivered by Cæsarean section before the mother was in labor, but at approximately full term. On examining the blood by Wright's stain, four and one-half hours after birth, I found marked stippling and polychromatophilia, 3%, and 5.7% of reticulated forms. The blood of the next child, eleven hours old, showed 1.5% of polychromatophilic and an occasional stippled cell with 3.6% of the reticulated forms. Infants twelve days to two weeks old seemed to have perfectly normal blood, with no stippling or polychromatophilia, and a percentage of reticulated forms even below normal, while in two cases I was not able to find any evidence of cell reticulation.

PRIMARY ANEMIAS.

Pernicious anemia. — Ten examinations were made of the blood of five cases of pernicious anemia. In no case was the percentage of polychromatophilic and stippled cells over 1%, while the percentage of reticulated forms ranged from 1.9% to 10.7%.

Case No. 1. — Hemoglobin 60%, 750,000 reds. The blood showed 6% of reticulated forms, with .4% of polychromes. This patient died ten days later.

Case No. 2, on a down wave, in three examinations, showed about 2% of reticulated forms and .6% of polychromatophilic cells; there was practically no improvement in the condition of the patient.

Case No. 3, on an up wave, began with 2.8% of reticulated forms; two weeks later showed 10.7%, and a month later, with the blood nearly normal, 4.4%. The hemoglobin during this time rose from 25 to 80%, and the number of reds from 612,000 to 1,750,000. The two remaining cases showed nothing striking.

Splenic anemia. — Thirteen examinations were made of the blood of two cases of this disease. Case 1 on entrance had a hemoglobin of 25% and 612,000 red cells. The blood was first examined about an hour after direct transfusion. Polychromatophilia was present in only .9%, while there was 9.8% of reticulated cells, which four days later fell to 4.9%. Shortly after this she was again transfused; the blood immediately before the operation showed 7.7% of reticulated forms and 5.6% of polychromatophilia, while immediately after it showed 3.9% and 1.5% respectively. Soon after this a splenectomy was done. The patient gradually improved and two months after the first examination the blood became practically normal, with .5% of reticulated forms, hemoglobin of 80% and no abnormality in the red cells.

The second case was a girl of eighteen with extreme anemia, a greatly enlarged spleen and atrophic polyarthritis. In four examinations the blood showed reticulated forms from 4.7% to 13.3%, with a correspondingly large percentage of polychromatophilia and stippling. At entrance the hemoglobin was 60% and the number of red cells 3,000,000. At discharge this had only slightly increased.

Hodgkin's disease. — The blood of two cases was examined and showed practically no variation from the normal number of reticulated forms, although the hemoglobin was only 50%.

Chlorosis. — One case with a hemoglobin of 35% and 4,800,000 reds showed 7.4% of reticulated cells, while the fixed specimen showed only an occasional polychromatic cell.

Acute bone marrow disease (acute leukemia). — In this case, in which there was some doubt as to the exact diagnosis, the blood showed extraordinary variation from day to day. On the first examination there was .3% of reticulated forms and .1% of polychromatophilia; two days later the blood showed 20.2% of the reticulated forms and 12.1% of the polychromatic and stippled cells. The number of white cells varied correspondingly. The hemoglobin was 30% and the reds 1,000,000.

Hemophilia. — One case with a hemoglobin of 12% showed .6% of reticulated forms and .1% of polychromatic cells.

SECONDARY ANEMIAS.

Malignant disease. — Three cases were examined; one, of cancer of the uterus with a hemoglobin of 15%, due more to acute hemorrhage than to the new growth itself, showed 5.3% of reticulated forms; the other two cases showed .8% and 2.2% respectively.

Malaria. — In one case of moderate anemia from this cause there was 2.5% of reticulated cells.

Acute hemorrhage. — This patient had been the donor of blood in the cases of transfusion mentioned above. The blood two days after the operation showed 3.4% of reticulations.

Gastric ulcer. — Five cases. The first two are striking. One had practically normal blood, the other a hemoglobin of 25%, and each showed .6% of reticulated forms. The third case, which had previously not been gaining, was transfused and immediately after that the blood began to show improvement. Two examinations made after the transfusion showed 2.2% and 3.6% of reticulated forms. The fourth case, one of profuse hemorrhage in an otherwise strong and healthy man, hemoglobin 35%, at the first examination showed 17.6% of reticulated cells and .8% of polychromes and stippled cells; a second examination on the next day gave the same figures. From this time on, as the patient improved and the hemoglobin rose, the number of reticulated forms diminished 5.3%, 3.8%, 2.3%, while by Wright's stain the blood became perfectly normal. The fifth case, hemoglobin 35%, reds 1,112,000, a similar one of severe hemorrhage from the duodenum in an otherwise strong and healthy man showed the same condition of affairs. On the first examination there were 22.6% of reticulated forms, with 8.2% of polychromes and stippling; ten days later this figure fell to 2.6% and soon after the blood became practically normal.

Other cases of secondary anemias due to chronic diarrhea, typhoid fever with hemorrhages (not very recent, however), post-operative hemorrhage after nephrectomy, and anemia from sepsis, showed nothing very striking.

Lead and other poisons. — Three cases of lead poisoning and one each of morphine and coal tar poisoning were examined. The lead cases showed the characteristic stippling and some polychromatophilia, and the percentages of reticulated forms were correspondingly increased 4.6%, 6.2%, 3.5% and 2%.

In this series the highest percentage of reticulated forms was found in cases of gastric ulcer with recovery from an acute hemorrhage. In two instances there were 22.6%, 17.6% respectively. Chauffard, Feissinger and others, in the blood of cases of hemolytic icterus, found up to 65% of "*hematies granuleuses.*" I have not yet had the opportunity of studying such a case.

It is interesting to compare these results with those of Chauffard, Feissinger and other investigators. In no case in which they found the reticulated forms particularly abundant were they unable to find any stippling or polychromatophilia. With this statement I agree. In one case of pernicious anemia they found 20% of reticulated forms, a far greater percentage than in any of the six cases whose blood I examined. Aside from the cases of hemolytic icterus their highest percentages of "*hematies granuleuses*" were in cases of secondary anemia due to some acute hemorrhage. This accords with my results. In four cases of chlorosis they found no reticulated forms, while in my one case there were large numbers of them. In three cases of lead poisoning their percentages of reticulated forms agree with mine, 3% to 4%.

It is often very difficult to decide whether a given cell is normal or polychromatic, because the difference between the two is often only a matter of very slight variation in color; on the other hand, by vital staining methods it is always easy to decide whether a cell is or is not reticulated. The difference between the normal cell and the cell with any reticulum, however little, is very marked. This doubtless accounts for much of the discrepancy in the relative percentages of reticulated forms on the one hand and the polychromatic cells on the other.

NORMAL BLOOD.

	Reticulated Forms. Per Cent.		Reticulated Forms. Per Cent.
J. B. H.,	.8	B.,	.6
,,	.5	S.,	1.2
,,	1.1	J. H. W.,	.7
B. V.,	1.1	H. A.	.8
M.,	1.4	F. A.,	.5
M.,	1.2	N.,	.3
D.,	1	P.,	.7

Average, 85%.

INFANT BLOOD.

			Reticulated Forms. Per Cent.	Stippling and Polychromes. Per Cent.
1.	4½ hours,	Cæsarian,	5.7	.3 ±
2.	11 ,,	Normal infant,	3.6	1.5 ±
3.	15 ,,	,, ,,	1.5	1. +
4.	24 ,,	,, ,,	3.7	2. ±
5.	12 days,	Hemorrhagic disease and serum injections,	.1	0. [1]
6.	2 weeks,	Normal infant,	.1	0. [2]
7.	2 ,,	Hemorrhagic disease and serum injections,	0.	0.
8.	2 ,,	Normal infant,	0.	0.

[1] Blood normal except for fluidity.
[2] Normal blood.

PRIMARY ANEMIAS.

Pernicious Anemia.

			Per Cent.	Per Cent.
1.	Hgb., 30; R., 750,000,	Nov. 18, 1908,	6.1	.4
		,, 19, ,,	5.3	
2.	Occasional stippling,	,, 30, ,,	2.	.2 ±
		Dec. 16, ,,	1.9	.6
		Jan. 11, 1909,	2.9	.2
3.		Nov. 27, 1908,	2.8	
		Dec. 11, ,,	10.7	
		Jan. 8, 1909,	4.4	
4.			2.1	1.
5.			3.4	.5

Splenic Anemia.

		1909.	Per Cent.	Per Cent.
1.	One-half hour after transfusion,	Jan. 12,	9.8	.9
		,, 16,	4.9	.5
	Before transfusion,	,, 18,	7.7	5.6
	After ,,	,, 18,	3.9	1.5
	Splenectomy,	Feb. 4,	.6	.2
		,, 12,	1.1	1.
		March 9,	.5	Normal.

Splenic Anemia. Polyarthritis.

		Reticulated Forms. Per Cent.	Stippling and Polychromes. Per Cent.
2. Hgb.; R., 3,400,000; W., 14,300,	Jan. 14,	4.7	14.8
	,, 16,	9.6	6.9
	,, 18,	12.3	7.4
	,, 28,	6.9	1.5

Hodgkin's Disease.

	Per Cent.
1. Nov. 30, 1908,	1.9
2. Dec. 1, 1908,	1.1

Chlorosis.

	Per Cent.	Per Cent.
1. Hgb., 35%; R., 4,800,000,	7.4	.6

Acute Bone Marrow Disease (Acute Leukemia).

		Per Cent.	Per Cent.
1. Hgb., 30%; R., 1,000,000,	Dec. 12,	.3	.1
	,, 18,	20.2	12.1(?)

Hemophilia.

	Per Cent.	Per Cent.
1. Hgb., 12% ±	.6	.1

SECONDARY ANEMIAS.

Malignant.

		Per Cent.	Per Cent.
1. Hgb., 15%,	Uterus, Jan. 13,	5.3	2.1
2.	Liver,	.8	0.
	Abdomen,	2.2	0.

Malaria.

	Per Cent.	Per Cent.
1.	2.5	.2

Acute Hemorrhage.

	Per Cent.	Per Cent.
1. Donor for transfusion,	3.4	.1

Intoxications and Poisons.

		Per Cent.	Per Cent.
1. Morphine,		3.2	.1
2. Coal tar,		.3	.1
3. Lead,		4.6	5.4(?)
4. Lead,	Feb. 17, 1909,	6.2	1.7
	,, 24, ,,	3.3	.1
5. Lead,		2.	.01

Gastric Ulcer.

		Per Cent.	Per Cent.
1. Normal blood,		.6	0.
2. Hgb., 25%,		.6	.1
3. Gastric ulcer; Hem. transfusion,	Nov. 23,	2.2	0.
R., 3,000,000,	Dec. 12,	3.6	0.
4. Hgb., 50%,	,, 1,	17.6	8. ±
	,, 2,	17.	8. ±
	,, 16,	5.3	3.3
,, 65%,	,, 19,	3.8	.2
	,, 23,	2.3	0.
5. Gastric ulcer with hemorrhage,	Jan. 18,	22.6	8.2
	,, 28,	2.6	.1
	Feb. 4,	.8	0.
	,, 17,	.1	0.

MISCELLANEOUS SECONDARY ANEMIAS.

		Per Cent.	Per Cent.
1. Chronic diarrhea, Hgb., 75%,		.8	0.
2. Typhoid with hemorrhage (ten days ago),		1.	0.
3. Nephrectomy with hemorrhage		.8	.1
4. Anemia from sepsis, Hgb., 15%,	Nov. 18,	1.1	
	,, 19,	4.8	

THE RELATION OF STIPPLING, POLYCHROMATOPHILIA AND THE RETICULATED CELL TO ONE ANOTHER.

Stippling and polychromatophilia are generally associated. Both are characteristic of certain anemias and intoxications. The degree of anemia, however, seems to have no relation to the amount of stippling or polychromatophilia which may be present. The stippling is most often found in polychromatic cells. Both respond to basic and not to acid stains. In lead poisoning, stippling is the characteristic feature, while in chlorosis, stippling is rarely if ever found, although polychromatophilia is not uncommon. Despite a few minor discrepancies such as this, however, it is plain that a close and intimate relation exists between these two conditions. The granules of stippling may be large or small. Some stippled cells contain only a few large granules easily counted; others contain numberless very fine granules which, becoming finer and finer, shade off into typical polychromatic cells. Askanazy thinks the two conditions are different only in degree. Schmidt, using an ultra-microscope, claims that the polychromatic cell is composed of minute granules differing only in size from those found in the stippled cell. The evidence, then, seems largely in favor of the view that these two conditions are practically the same, both manifestations of the same process, differing slightly in form. The more complex question remains to be answered — the relation of these two conditions to the reticulated cells, the "*hematies granuleuses.*"

It is a fact that staining by means of so-called "vital methods," which are necessary to demonstrate the reticulated forms, is a more delicate process than staining preparations "fixed" by heat or alcohol. Apparently the blood must show at least .5% of the reticulated forms in the fresh specimen in order to demonstrate any stippling or polychromatophilia in the fixed specimen. Both conditions are found in the blood of normal infants, however. Case 1, four and one-half hours old, showed nearly 6% of reticulated forms and 3% of polychromatic and stippled cells. As age increases, the percentage of reticulated forms rapidly diminishes to normal and the polychromatic and stippled cells disappear altogether.

As mentioned above, Biffi has found that both the reticulated cell in the one specimen and the polychromatic cell in the other are very large. This statement I can confirm and the accompanying microphotographs show it to a marked degree.

In benign hemorrhages causing secondary anemia, the percentage of reticulated forms was very high and the percentage of polychromatophilia and stippling was likewise much increased. In some extreme anemias, such as the case of hemophilia, the percentage of reticulated forms was below even normal limits, while practically no stippling or polychromatophilia was found. From the evidence at hand, then, I believe that the following conclusions can be drawn:

First. The conditions known as polychromatophilia and stippling of the red cells are one and the same, differing only in form and are both manifestations of the same process.

Second. The two above-mentioned conditions, as seen in the fixed specimen, are shown by more delicate methods of "vital staining" as reticulated cells or the "*hematies granuleuses*" of Chauffard and Feissinger; the greater percentage of the reticulated forms over the polychromatic and stippled cells is due to the greater delicacy of the method of staining.

One question which has been much discussed deserves consideration. Do these stippled, polychromatic or reticulated cells, in whichever form they are seen, represent a degenerative or regenerative process? Until recently there would have been but one answer to this, namely, that these are degenerated red cells and furnish definite evidence of more or less rapid cell destruction. Indeed, to-day, in the various books in English on hematology, the term "granular degeneration of red corpuscles" frequently appears. Recent work, however, has thrown doubt on this view. German and French investigators seem to be about evenly divided. Maragliano, Castellano, Ehrlich, are persistent adherents of the "degenerative" theory, while Pappenheim, Gabritschewsky, Askanazy, Engel, Biffi and the French observers who have done much of the recent work on the study of these reticulated forms are as strongly of the opposite opinion. Ehrlich says that "one of the chief characteristics of anemic blood is an intermingling of degenerative and regenerative forms." The cells under discussion here, however, he believes to be evidence of a degenerative process.

There is considerable evidence to support each view. One fact in my opinion must definitely settle the matter. In the blood of infants less than twenty-four hours old, polychromatophilia, stippling and reticulation of the red cells are to be found in varying degrees, depending on the age of the infant. The blood of the normal healthy infant cannot be said to be degenerated. If, then, these cells are to be found here, they are evidence of cell regeneration and show that the blood-forming organs are active. The third conclusion can be made, then, that polychromatophilia, stippling and cell reticulation are one and the same process, a regenerative process, and, when present, are evidence that the blood-forming organs are actively at work.

Various theories have been formed as to the origin of the cell reticulum. Some consider it a "nuclear degeneration"; in other words, the remains of the nucleus of the red cell, normally present in the bone marrow, which gets into the circulation when blood formation is at its height. Some observers think it is due to cytoplasmic degeneration rather than of the nucleus. Howell is strongly of the opinion that these granulations and the connecting network are not nuclear remains left as a result of the breaking up of the nucleus, which, according to his ideas, is always extruded from the cell. He believes that this reticulum is part of the normal structure of the the embryonic red blood corpuscle, and that the granules, if they have anything at all to do with the nucleus, represent nuclear chromatin. Dr. J. H. Wright, under whose supervision this investigation has been carried on, believes that this cell reticulation is the remains of the normal cell structure as it is found in the bone marrow; not a nuclear fragmentation, but a cytoplasmic reticulation which, under certain conditions, shows itself in cells in the blood stream. More work on the examination of blood and of bone marrow in normal and pathological conditions must be done before this question can be satisfactorily answered.

From the foregoing figures it is evident that the number of reticulated cells in any given condition, as shown by vital staining methods, is nearly always greater than the number of stippled or polychromatic cells seen in the fixed specimen. This is probably due to the fact that unless the "fixed" specimen is stained most perfectly it is often very difficult to say exactly where the cell ceases to be normal and becomes polychromatic. Thus vital staining methods are more delicate and accurate, and, by means of the stain here described, very simple. In all blood diseases any means which will tell us whether or not the blood-forming organs are actively at work or inert will be of great value in deciding as to treatment, diagnosis and prognosis. Now that direct transfusion of blood is becoming a comparatively simple procedure, in many cases of obstinate anemia, particularly secondary anemia not due to malignant disease, a study of the percentage of reticulated forms will help to decide whether or not a transfusion is advisable. If there is a high percentage of reticulated forms, it seems to indicate that the blood-forming organs are actively at work and that improvement will soon be seen.

My highest percentages of reticulated forms were found in cases of hemorrhage from the bowel. These hemorrhages were apparently of benign and not malignant origin. In cases of secondary anemia due to malignant disease of equal or greater severity, the percentage of reticulated forms was very much lower. Thus it is possible that in cases of hemorrhage from the stomach or duodenum where the diagnosis is often difficult as to benign or malignant origin of the bleeding, an investigation of the number of reticulated forms may be of value.

In prognosis, a large increase in the number of reticulated cells both in primary and in secondary anemia is a favorable sign as an indication that the blood-forming organs are actively at work.

SUMMARY AND CONCLUSIONS.

1. The condition known as stippling of the red cells and that known as polychromatophilia, as described above, are probably but different forms of the same process.

2. Reticulated red cells, "*les hematies granuleuses*," of Chauffard and Feissinger, as shown by simple vital stains, either in temporary or permanent specimens, correspond to the stippled or

polychromatic cell as seen in the fixed preparation, and are due to the same causes.

3. Owing to the greater delicacy of the vital staining method, the reticulated forms will always be found in considerably greater percentages than stippled or polychromatophilic cells.

4. All these phenomena are evidences of cell regeneration and are indications of the activity of the blood-forming organs.

5. Reticulated forms occur in normal blood in slightly less than 1%; in certain pathological conditions they may be present up to 22% (J. B. H.) or even up to 65% (Chauffard and Feissinger).

6. A study of the reticulated forms in pathological conditions of the blood, especially in secondary anemias, is of value in diagnosis, prognosis and treatment.

I wish to express my indebtedness to Dr. F. C. Shattuck for the privilege of examining the blood of patients in his wards, on which this study is based. To other members of the staff who have allowed me to examine their patients, I am similarly indebted. Likewise I wish to thank Dr. James H. Wright, director of the Pathological Laboratory, who first suggested the investigation to me, and who has given me constant advice and many valuable suggestions. For the accompanying microphotographs I am indebted to Mr. L. S. Brown.

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THE POST-MORTEM DIAGNOSIS, PREVALENCE AND PREVENTION OF RABIES.*

BY LANGDON FROTHINGHAM, M.D.V., BOSTON.

Rabies is one of those diseases which destroys life without causing any gross anatomical pathological lesions which can be considered pathognomonic. There is but one condition in the dog which must be looked upon with much suspicion, and that is the presence of divers foreign bodies in the stomach; but this occurs in only a small percentage of cases, and, even when found, is not sufficient evidence to warrant a final expression of opinion. An autopsy, therefore, can only be of limited assistance to us in the diagnosis of rabies, and one must seek other more accurate methods.

POST-MORTEM DIAGNOSIS.

The oldest and, until recently, the only accurate method has been the inoculation of animals, and this must still be frequently employed. The animals used for this purpose are rabbits or guinea pigs. The material to be inoculated consists of an emulsion or suspension made by grinding portions of the brain or spinal cord in sterile water, bouillon or glycerine. A few drops of this fluid are injected under the dura or directly into the brain. It is astonishing how much can be introduced in this manner without the animals showing the slightest inconvenience; having recovered from the ether, they continue eating as before, and remain well; only when such material contains the virus of rabies do they show the characteristic symptoms of this disease. Such symptoms may be evident as early as the seventh day but rarely; usually not until between the sixteenth and thirtieth day, and occasionally not for three months or even longer. This is a long time to be kept in suspense if one has been bitten by a supposed rabid dog, and for many years more rapid and equally accurate means of diagnosis have been sought.

In 1903, an Italian observer named Negri discovered certain inclusions in the nerve cells of the brain and cord of animals and people who had died of rabies; he considered these protozoa and the cause of this disease. These inclusions are now known as Negri bodies, and, although they may not be the specific cause of rabies, and their exact nature is not yet established, their presence is certainly diagnostic of the disease; as diagnostic for rabies as the tubercle bacillus is for tuberculosis, and with the same exceptions. For example, one may not be able to demonstrate tubercle bacilli microscopically in a given tubercular material, but, if some of this material is inoculated into a susceptible animal, it becomes tuberculous. Similarly with rabies, one may not be able to demonstrate Negri bodies with the miscroscope in all cases, but inoculations prove positive. After many experiments by numerous investigators it is now considered quite unnecessary to inoculate animals for diagnostic purposes if these bodies have been discovered.

Negri bodies occur with the greatest frequency and in the greatest abundance in the Ammon's horn (hippocampus major), next in the cerebellum. We, therefore, seek for them in these regions first. There are numerous methods by which they may be clearly brought out. The section method, the only one at first known, consumes much time and necessitates much labor, although the peculiar arrangement of the cells of the Ammon's horn and the distribution of the bodies in these cells lessens the labor of the microscopic examination and the time expended therein. I have, therefore, found my impression preparations[1] of the Ammon's horn, and also of the cerebellum, of the greatest assistance, inasmuch as they are excellent substitutes for sections, especially those made from the hippocampus, in which maximum accuracy is combined with minimum expenditure of time and labor. [Demonstration by lantern slides of sections, impression preparations and Negri bodies.]

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* Read at the annual meeting of The Massachusetts Medical Society, June 16, 1909.

There is still another means of diagnosis, and one which often proves of great value when Negri bodies cannot be found or inoculations cannot be made, for it not infrequently happens that a dog's brain has been completely blown away by shooting with a shotgun at close range, or that a brain is so decomposed that it cannot be used either for microscopic examination or inoculation.

In such instances we may examine the nerve ganglia with profit. Any ganglion will suffice, such as the posterior root, plexiform or Gasserian. The lesions here found are usually very marked and characteristic. They consist of a multiplication of cells within the capsule of the ganglion cell, the ganglion cell itself becoming gradually destroyed and its place being finally occupied by the invading cells, thus forming a focus suggestive of a tubercle. Such lesions may be very extensive, involving most of the ganglion, or only a few ganglion cells may be attacked in this, the typical form. Another, the atypical form, consists of a more or less general infiltration of cells without such characteristic grouping, though usually, and especially when the lesions are extensive, the two forms exist together. Such lesions are not pathognomonic of rabies, for they rarely occur in other disorders, but from the study of more than seven hundred Gasserian ganglia from animals — mostly dogs — I find the percentage of error is very small, and I feel that one is justified in making a diagnosis by this means when others fail. [Lantern slides illustrating the lesions.]

To sum up, then, I adhere to the following rules in examining every case which is sent to me for diagnosis:

1. Seek for Negri bodies in impression preparations of Ammon's horn, cerebellum and cortex. If not found, sections are later studied as a control, and, I may add here, always with the same results as the impressions.

If bodies are found, no further study is necessary.

2. If bodies are not found, the Gasserian ganglia are examined for lesions, and, when possible, animals are inoculated, whether the ganglia are positive or not.

Thus you can see that a diagnosis is made only after careful study fully in accord with modern scientific methods; there is no jumping at conclusions.

PREVALENCE.

We now come to the prevalence of rabies. In Massachusetts, vital statistics in animals were not kept until recently, but we know that there must have been an outbreak of rabies between the years 1876 and 1882, for during that period 44 people died of this disease. Again between 1888 and 1894 there was another outbreak, for during this period 45 Massachusetts people died of rabies.

In 1895, vital statistics regarding rabies began to be recorded, and the following tables, made up or copied directly from the reports of the Cattle Commission (now called Cattle Bureau), and from my own records, show with the usual degree of accuracy the amount of rabies we have had in Massachusetts for the past dozen years. The figures do not exaggerate matters, for undoubtedly numerous cases of rabies, as well as many suspected cases, were never reported. Some of the tables are reproduced from the reports in order to give you some idea of this branch of the Cattle Bureau's work, and that you may note numerous interesting details regarding this disease, such as its distribution throughout the state, kind and number of animals affected and quarantined, period of incubation after inoculation, etc.

RABIES IN MASSACHUSETTS.

1895.

Dogs Reported to Cattle Commission.

Date.	Town.	No. of Cases.
Oct. 15,	Newton	1
Nov. 23,	,,	1 (Inoculations + Dr. Ernst.)
Dec. 20,	Millbury	1
,, 30,	Watertown	1 (Ran from Revere.)

1896.

Inoculation for Rabies.

Description of Rabid Animals.	Town.	Rabbits Inoculated.	Rabies, First Symptom.	Days Elapsed.
C. C. 432, Newfoundland dog, (*a*)	Waltham	Jan. 6	Jan. 20	14
455, poodle	Revere	,, 21	Feb. 4	15
489, setter	Hardwick	Feb. 21	March 11	19
494, black and tan	Chelsea	,, 29	,, 15	15
—— ——	Haverhill	March 1	,, 15	14
503, collie	Lowell	,, 14	June 11	89
509, spaniel	Salem	,, 18	April 2	15
—— ,,	Boston	April 1	July 1	91
532, dog	Cambridge	May 16	June 26	41
—— horse	Haverhill	April 14	,, 19	63
545, dog	Lynnfield	June 12	July 7	25
565, cat	Cambridge	July 23	Aug. 1	7
611, whippet	South Hadley	Nov. 9	Nov. 23	14
631, mongrel	,, ,,	,, 27		
632, pug	Haverhill	Dec. 3		
—— dog	Boston	,, 18		

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[1] Frothingham, Langdon: The Rapid Diagnosis of Rabies. Jour. Med. Research, 1906. Zur Schnellen Darstellung der Negrischen Körperchen. Zeitschr. für Tiermedizin, 1907. Impression Preparations and the Van Gieson Stain for Negri Bodies. Am. Jour. Pub. Hyg., 1908.

You will note in this table that, as usual, most of the cases of rabies occur in the dog, and that they are not more frequent in the warm months than in the cold; in fact, less so in this instance. Note also the extraordinary difference in the period of incubation after subdural inoculation, varying from seven to ninety-one days. From a dog bite the period is sometimes as long as five to eight months in the bitten animal, and exceptionally fifteen to twenty months. Instances of two-year periods have been reported, but may be open to criticism.

The inoculations recorded in the preceding table were mostly made by Dr. W. F. Whitney, who kindly permitted me to assist him from time to time.

The table opposite shows the number of cases reported during the year, either rabid or suspected of being so.

In this and the following laboratory reports, the number of cases marked "doubtful" means that at the time the report was made the laboratory work was still uncompleted, or there was no proof that the case was or was not one of rabies; either the brain was so decomposed that it could not be used to obtain further evidence, or inoculated animals were still under observation.

1897.

Month.	City or Town.	Animal.	Number of Cases.
January	Boston	Dog	3
,,	Holyoke	,,	2
,,	Waltham	,,	2
February	Holyoke	,,	3
March	,,	,,	1
May	Lynn	,,	1
July	Boston	,,	2
,,	Lynn	,,	1
August	Holyoke	,,	1
,,	South Hadley	Cow	2
September	,, ,,	,,	5
November	Sudbury	Dog	4
,,	Melrose	,,	1
,,	South Hadley	Cow	1
December	Wakefield	Dog	1
Total number of cases reported			27

Laboratory Report (Frothingham).

Positive, 8. Negative, 3. Doubtful, 1.

1898.

Month.	Town.	Species of Animal.	Result of Rabbit Test.	Remarks.
Jan.	Braintree	Dog	Positive (Dr. Frothingham)	
,,	Lynn	,,	,, ,, ,,	
,,	,,	,,	,, ,, ,,	Bit a man, a boy and five dogs.
,,	Salem	,,	Positive (at Pasteur Institute, New York)	Bit a man who went to Pasteur Institute, and a mare, that died of rabies. Four dogs were quarantined by local inspector for ninety days, but none of them have ever developed rabies, and may not have been bitten.
,,	Swampscott	,,	No test made	Shot as supposed case of rabies.
,,	Melrose	,,	Positive (Dr. Frothingham)	
,,	Lynn .	,,	No test made	Killed as supposed case of rabies.
,,	Salem	Mare	Positive (Dr. Frothingham)	Bitten by a dog as given above.
Feb.	Lynn	Dog	,, ,, ,,	Reported to have bitten owner and several dogs.
,,	Salem	,,	No test made	Killed by order of Board of Health.
,,	Danvers	,,	,, ,, ,,	Head when it arrived too decomposed to use.
,,	Lynn	,,	,, ,, ,,	Killed as rabid by dog officer.
,,	,,	,,	,, ,, ,,	Killed as rabid by dog officer.
March	Swampscott	,,	Positive (Dr. Frothingham)	Came from Ocean Street, Lynn. One dog bitten by him shot; eleven other dogs nearby quarantined ninety days, then released.
,,	Lynn	,,	No test made	Killed as rabid by dog officer.
,,	,,	,,	Positive (Dr. Frothingham)	
,,	,,	,,	,, ,, ,,	
,,	,,	,,	Negative (Dr. Frothingham)	Killed as supposed rabies by dog officer.
April	Watertown	,,	Positive ,, ,,	Killed by policeman after biting a child.
,,	Haverhill	,,	Negative ,, ,,	Killed by member of Board of Health.
June	Lynn	,,	Positive (Dr. W. F. Whitney, for Lynn Board of Health)	Came from Swampscott. Reported to have bitten several people and dogs. Two dogs quarantined for ninety days were released, having shown no symptoms of rabies.
July	,,	,,		Killed by member of Board of Health.
Sept.	,,	,,		Quarantined by inspector as tuberculous; probably chronic bronchitis.
,,	,,	,,		Was not a case of rabies, but viciousness. Killed by consent of owner.
,,	Boston	,,		Killed as case of rabies by inspector of animals.
,,	Newton	,,		Reported as rabid. Bit three people and several dogs. Twelve dogs in the neighborhood were quarantined, two have since been killed by their owners to avoid danger, and two have died of rabies. Eight are still in quarantine.
Oct.	,,	,,	Positive (Dr. W. F. Whitney, for Newton Board of Health)	Bitten by dog, as reported above.
,,	,,	,,	Positive (Dr. Frothingham)	Bitten by dog as reported above.
,,	Lynn	,,	Negative ,, ,,	Bit several people and dogs. Three dogs are still in quarantine as a matter of precaution.
,,	Quincy	Cat	Positive ,, ,,	Bit two or three persons.
,,	Boston	Dog	,, ,, ,,	
,,	,,	Brown rat	Negative ,, ,,	Bit a woman.
,,	Dracut	Dog	Positive ,, ,,	Bit a man; injury slight.
Nov.	Lowell	,,	,, ,, ,,	
Dec.	Doston	,,		Reported as case of rabies by inspector of animals.

1899.

LABORATORY REPORT (Frothingham).

Date.	Town.	Animal.	Result of Inoculation.
Jan. 16	Ipswich	Cow	Positive
,, 16	Melrose	Cat	0
Feb. 7	Swampscott	Dog	0
March 22	Ipswich	,,	0
,, 24	,,	,,	Positive
June 1	Lynn	,,	0
Nov. 14	Swampscott	,,	0
,, 28	Salem	,,	0

1900.

Date.	Town.	Animal.	Result of Inoculation.
Jan 8.	Newton	Dog	0
Dec. 12	Watertown	,,	Positive
,, 12	,,	,,	,,
,, 12	,,	,,	,,

You will note that a rabid dog, unaccounted for, probably passed through Ipswich, perhaps during the latter part of 1898, and bit this cow and dog.

During the year 1899 one person from Massachusetts took the Pasteur preventive treatment.

1901.

LABORATORY REPORT (Frothingham).

Date.	Town.	Animal.	Result of Inoculation.
Jan. 7	Waltham	Dog	Positive
,, 22	,,	,,	,,
Feb. 5	Chelsea	,,	0
March 29	?	,,	0
July 18	Waltham	,,	0
Oct. 12	Malden	,,	Positive
Nov. 18	West Dennis	,,	0

In addition to these, 15 cases were investigated by the Cattle Commission, 8 of which were undoubtedly rabid.

1902.

Date.	Town.	Animal.	Result of Inoculation.
Jan. 22	Cambridge	Dog	0
,, 22	Lowell	,,	Positive
June 3	Watertown	,,	0
Aug. 6	Lynn	,,	0
,, 22	Newton	,,	0
Dec. 19	Pittsfield	,,	Positive

1903.

Date.	Town.	Animal.	Result of Inoculation.
March 14	?	Dog	0
May 6	Ware	,,	0
,, 21	Cambridge	,,	0
June 24	Westboro	Horse	Positive
Sept. 30	Stoughton	Dog	0
,, —	Boston	,,	Positive (Dr. Burr)

1904.

Date.	Town.	Animal.	Result of Inoculation.
July 18	Lowell	Dog	0
Nov. 11	Somerville	,,	Positive
Dec. 20	Milton	,,	,,

During the year 1901, one Massachusetts person took the Pasteur treatment, and likewise one in 1902 and one in 1903.

The year 1904 marks the beginning of the present outbreak of rabies, with the two cases as shown in the above table. You can, therefore, see that Massachusetts has not been free from this disease for a great many years, although the number has not often been alarming. It must also be remembered that during all these years precautions have been taken to prevent the disease from spreading, such as local muzzling and quarantining, and destruction of dogs known to have been bitten by rabid ones.

1905.

The Cattle Bureau investigated nearly 300 cases of rabies, of which 100 were undoubtedly rabid.

LABORATORY REPORT (Frothingham).

Positive, 39. Negative, 13. Doubtful, 2.

During the year 12 persons took the Pasteur preventive treatment and 2 died of rabies resulting from dog bites. Two suspicious dogs were reported in the city of Boston, but examination at the laboratory of the Board of Health showed they were not rabid.

RABIES IN MASSACHUSETTS, EXCLUSIVE OF BOSTON.

1906.

	Dogs.	Cattle.	Horses.	Goats.	Pigs.	Cats.
Killed or died with rabies,	293	38	5			
Killed by owners or died in quarantine, not rabid, but exposed,	256				2	
Reported as rabid, but found free from the disease,	62					
Released from quarantine,	380	15	4	2		
Animals died, still undecided,			1		1	
Still in quarantine Dec. 1,	98	4	1			1
Totals,	1,089	57	11	2	3	1

Grand total, 1,163.

LABORATORY REPORT (Frothingham).

Positive, 139. Negative, 35. Doubtful, 13.

BOSTON BOARD OF HEALTH. (LABORATORY REPORT.)

Positive, 36. Negative, 11.

During the year 1906, 8 Massachusetts people died of rabies, and 133 took the preventive treatment. During this year cases in animals were reported from nearly every county in the state. By a legislative act the city of Boston has for some years been permitted to investigate cases of rabies occurring within its limits, and such cases need not be reported to the Cattle Bureau except by courtesy, and are not included in the above or subsequent tables from the Cattle Bureau reports.

1907.

	Dogs.	Cattle.	Horses.	Pigs.	Cats.	Persons.
Killed or died with rabies,	662	21	6	4	4	3
Killed by owners or died in quarantine, not rabid, but exposed,	522	2		10	11	
Reported as rabid, but found free from disease,	46	5			5	
Released from quarantine,	458	6	5	2	3	
Animals still in quarantine,	209	1	2		1	
Totals,	1,897	35	13	16	24	3

Grand total, 1,988.

In addition to the above, the veterinarian of the Boston Board of Health reported 79 cases of rabies in dogs and 2 in cattle that are not included in the table, making a total of 741 dogs and 23 cattle to have had rabies during the year.

Laboratory Report (Frothingham).
Positive, 203. Negative, 60. Doubtful, 15.

Boston Board of Health. (Laboratory Report.)
Positive, 41. Negative, 13.

In the year 1907, 3 Massachusetts people died of rabies and 165 took the preventive treatment.

You observe by the table that few of the animals reported as rabid were sent to the laboratory for confirmation of the diagnosis. In many cases it was quite unnecessary to do so, as the clinical symptoms with the history of a bite by a rabid or stray dog was sufficient evidence. It is, therefore, a commendable custom to send for a laboratory diagnosis only such animals as have bitten other animals or people, those appearing in an uninfected district and such others as it seems for the best interests of the community to have examined.

1908.

	Dogs.	Horses.	Cattle.	Swine.	Cats.	Goats.
Killed or died with rabies,	454	5	32	14	1	1
Killed or died in quarantine, not rabid, but exposed,	412		8	87	10	1
Reported as rabid, but found free from disease,	27		4		2	
Released from quarantine,	402	4	3	1	2	
Animals still in quarantine,	82		4	1	5	
	1,377	9	51	103	20	2
Grand total,			1,562.			

In addition to these animals, there have been at least 6 cases of rabies in human beings, 3 in Boston and the others in Newton, Southbridge and Bernardston. Five of these people had no idea that the dog which infected them had rabies and consequently received no special treatment. The sixth had ample warning, began the Pasteur treatment, then changed to Christian Science.

The veterinarian of the Boston Board of Health reports 50 cases of rabies in dogs in that city during the year.

1908.

Laboratory Report (Frothingham).
Positive, 120. Negative, 45. Doubtful, 6.

Boston Board of Health. (Laboratory Report.)
Positive, 26. Negative, 25. Doubtful, 2.

In 1908 probably more than 8 Massachusetts people died of rabies (complete reports not available when this was written) and 139 took the preventive treatment.

The unusually large number of pigs in the above table is accounted for by the fact that a rabid dog got into a herd of about 100 swine and bit several of them, how many was not known. Some time afterwards a few of these pigs became rabid and died or were killed, and as every now and then one would "go mad" and bite others, it was decided that the only sane method of handling the situation was to kill the whole herd.

The year 1909 has thus far shown a decided and very gratifying decrease in the number of rabid animals, although several people have died of rabies at the Boston City Hospital.

You are now familiar with the conditions as they are and have been in Massachusetts, and it is interesting to note in passing that few states in the union are not experiencing similar troubles to a greater or less degree, and this brings us naturally to the subject of prevention.

PREVENTION.

It is often impossible, or a very difficult matter, to cure an infectious disease; on the other hand, it is often a very simple matter to prevent it.

There is no known cure for rabies after symptoms have appeared; on the other hand, there is no infectious disease which is so absolutely simple to prevent (and yet so difficult owing to misdirected sympathy of the so-called humane).

Consider for a moment the chief source of infection! It is the bite of a rabid dog, who in certain conditions will run for twenty to eighty miles biting nearly every animal and person it meets. For practical purposes we can exclude all other possible sources of infection. It is perfectly safe to say that, if there were no dogs, there would be no rabies, at least in countries where the wolf does not have to be taken into consideration. Therefore, if you wish to prevent rabies, all you have to do is to prevent your dogs from biting, and the only way to prevent a dog from biting is to make him wear a muzzle.

The popular sentiment against the use of a proper, well-fitting, comfortable muzzle, which permits the dog perfect freedom to pant and lap water, and yet prevents him from biting, is the more extraordinary since it is very apt to come from a class of humane people sometimes called "dog-lovers";[2] people, often of intelligence, who have visited foreign countries where dogs are always muzzled when on the streets, and yet they never observed any more "suffering" or "annoyance" than among the horses in harness. Moreover, if these people really had the prevention of suffering at heart, they could read the history of rabies and find that wherever muzzling is properly enforced, there rabies is reduced to a minimum, and when the muzzles are removed too soon the maximum gradually returns.

Let me give you one instance of what proper muzzling will do, of course combined with proper enforcement of licensing laws and the destruction of all unlicensed and unmuzzled dogs.

This scheme is so readily grasped that explanation seems unnecessary. The number of cases of rabies here given refer *only to the dog*. Other animals are excluded, and I have only added the number of deaths in man to show how they rise and fall with the number in the dog. Remember that many English people annually took the preventive treatment; for example, 147 in the year 1892. These are the only figures that I have, but, if so many took the treatment that year when so few dogs were reported, it is fair to assume that the number increased when more dogs were affected.

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[2] I do not refer to that other large class who at bottom simply find the muzzle too much trouble to themselves and consequently flock to the "dog lovers'" banner.

Note that in 1892 there were but 38 rabid dogs in England. At this time the authorities listened to a petition of "dog lovers" and removed the "cruel muzzle," with the result that during the next five years 1,602 dogs, to say nothing of many other animals, and 51 *people* died of the most agonizing disease known to the medical world. In spite of this fearful lesson, the humanitarians (?) came again in 1899 with another petition signed by 50,000 of them asking once more to be relieved of the annoyance of the muzzle. Fearing a repetition of the above calamity, the authorities wisely remained obdurate, with the result that in 1903 no case of rabies occurred in England, and there has been none since. The sudden rise to 13 cases in 1902 is very instructive. These cases occurred in a wild, hilly district of Wales, where both people and dogs were difficult to control, but by rigid enforcement of the laws the trouble was stamped out.

The muzzles have been removed from the dogs in England, but will be resumed with the appearance of the first case of rabies. Moreover, there is a strict quarantine of six months imposed upon any dog brought into the country.

Many people argue that the matter was comparatively simple in England, but similar results cannot be accomplished in Massachusetts, as it is not a "little island." This is true to a certain extent only. If all Massachusetts dogs were muzzled and a rabid dog should come over the boundary from a neighboring state and bite a number of our dogs, a certain percentage of these dogs would certainly develop rabies if not destroyed, but our dogs being all muzzled, the disease would spread no further; in other words, it would be kept down to the minimum.

Even local muzzling may be of great value if properly enforced. For example, not long ago a rabid dog attacked a number of school children and bit several of them severely, necessitating their taking the Pasteur treatment. This dog ran from a neighboring town where a muzzling order existed at that time, and, had he been properly muzzled or immediately shot for not being so, this calamity could not have occurred. Many similar instances might be given.

Even inadequate muzzling sometimes does much good, for it may succeed in preventing an individual dog now and then from spreading this truly terrible disease.

The question of prevention rests very largely with you, gentlemen, for the advice of no large body of intelligent men is more eagerly sought and heeded than that of the physician, and indifference to any matter pertaining to preventive medicine is not a part of your training.

SOME OBSERVATIONS ON HUMAN RABIES.*

BY C. F. WITHINGTON, M.D., BOSTON.

FOR many hundred years so much of superstition and fable has attached itself to the subject of rabies that it is not surprising that the public mind is in a state of confusion and unreasonable variations between extreme terror and incredulity. The portion of the community which is specially interested in the protection of animals, and some of whom apparently hold animal life of more value than human life, have expressed and promulgated doubts and denials as to the existence of the disease. More strangely, this same skepticism has in a few instances been shared by medical men.

The strongest expression of disbelief in rabies in recent years was that given by Dr. Charles W. Dulles, of Philadelphia, before the Pennsylvania Medical Society, in 1884, and his denial of the existence of rabies was also shared in a discussion at about that time by at least one speaker, Dr. Mills. It will be noted that at that time and for a long time afterwards no distinctive pathogenic alterations in the nervous system of persons dying from rabies had been demonstrated. Dr. Dulles, in his paper, referred to cases of *hydrophobia* in the strict etymological sense of the word, that is to say, fear of (drinking) water, which, in his mind, was the diagnostic point of rabies, as occurring in many conditions, as, for example, angina of the fauces and other disorders of the alimentary canal, spasm of the glottis and other diseases of the respiratory passages, bronchitis, acute rheumatism, etc., but special stress was laid by him upon certain nervous diseases, one or the other of which he believed to be the actual cause of what had been diagnosticated as hydrophobia, namely, meningitis, cerebral tumors, acute mania with delirium, especially mania *a potu*, tetanus, epilepsy in its rarer maniacal forms, and, above all, hysteria.

The finding of the so-called Negri bodies, which are universally present in cases of true rabies, should set at rest forever the question of there being such a specific disease. While it is exceedingly rare, the universally fatal course of it after it has once developed, and the horror of its symptoms, make it important for us to recognize it as an actuality. Certain prevalent errors are responsible for some of the confusion as to rabies.

1. That killing a dog does any good to a patient whom he has bitten, Dr. Hart, of the United States Department of Agriculture, in a report of last year, showed that the saliva of a dog might become virulent as long as and no longer than six to eight days before the animal developed symptoms. Hence, if a suspected animal remain healthy for ten days after biting, there can be no danger to the bitten, even if the dog later does become rabid, while the consolation to be derived from the continuance of health in the dog is of the greatest value in relieving morbid apprehensions in the person who has been bitten.

2. That rabid dogs show fear of water. This appears to be never the case, although in a ma-

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* Read before The Massachusetts Medical Society, June 16, 1909.

jority of persons suffering from rabies there is some dread of drinking, from the experience that fluids in the mouth may produce pharyngeal spasm.

3. That the bites of non-rabid animals or human beings can ever produce rabies. Spontaneous generation has been disproved as conclusively regarding rabies as concerning any other disease. This does not deny the possible virulence of the saliva of non-rabid animals or even of human beings, but does deny that it may produce specific rabies.

4. That the period of incubation can be exceedingly prolonged. Great doubt is attached to any case in which the period of incubation has been reported to be a year or longer. For instance, in the somewhat celebrated case of Colin, two soldiers, companions in Algiers, in 1865, were bitten by a rabid dog. Both cases were cauterized with a hot iron. One died in a few days. The other died five years later, as was claimed, of acute hydrophobia. The French government felt itself liable for pension in case the second death was due to hydrophobia, because the man had acquired it in the line of his duty, and a careful investigation, therefore, was made. The government finally accepted the case as due to the bite five years before, but it is extremely doubtful if that view would now be entertained.

We have also the historical case referred to by Tuke, in his work on the "Influence of the Mind over Body," where two brothers were bitten by the same dog. They separated. One stayed in France, was seized with hydrophobia in a few days and died. The other went to Holland, heard nothing of the fate of his brother until his return after ten years, when he also developed hydrophobia and died.

It is probable that the incubation period in man has a minimum of about eleven days, a maximum not exceeding a year. Four fifths of the cases develop in the second month, and nine tenths within three months. It is unfortunate, as it is cruel, for a person who has been bitten by any suspected animal to be kept in a life-long state of dread and apprehension.

5. That because fright may cause death, as in the last-mentioned case, all reported rabic deaths are merely due to fright.

6. That the strap muzzle, as often applied, is thoroughly effective in preventing a dog from biting.

Dr. Frothingham, in the paper to which you have just listened, has wisely emphasized the great importance of muzzling as a preventive of rabies, and figures which he has presented, which are similar to those collected by other writers, should sufficiently prove that proper muzzling is almost a perfect preventive of rabies. But it requires little observation to see that the law recently enacted in Massachusetts has been in many cases very inefficiently enforced. The ordinary strap muzzle, as sometimes applied, leaves a dog almost as free to snap with his jaws as if he wore no muzzle, and in some cases, where police enforcement was extremely lukewarm, the majesty of the law has been satisfied if the dog "wore a muzzle" in the sense of having it tied around his neck.

7. The superstitions regarding treatment of rabies have in the minds of many sensible people brought some discredit on the very existence of the disease, which was assumed to be combated by such ridiculous measures as the so-called mad stone, which has long held a place in the popular esteem. These stones have been found to consist, usually, of balls of hair removed from stomachs of various wild and domesticated animals. Their users claim that if the "stone," on being applied to a bite, adheres to the wound, it is a sign that it is drawing out the virus and that the patient will get well, but that if it falls off, it will be powerless to relieve; the fact being, of course, that the porous mass of hair, if thoroughly saturated by blood or secretions, is likely to adhere, and if not, will fall off.

A medical family in Pennsylvania obtained fame as healers of rabies, and one of the pills which they furnished was found to consist of bread crumbs with a paper containing the word "abracadabra."

My own personal observation of rabies has been limited to two cases which have occurred in the City Hospital within the last year. One has been reported in detail in the Boston Medical and Surgical Journal.[1] I will refer to it only briefly.

The boy had a lacerated bite on the upper lip. He received no Pasteur treatment. He developed his first symptoms on the one hundred and second day. There was no hydrophobia, but great pharyngeal and laryngeal spasm, both recurring at decreasing intervals. The former was precipitated by an attempt to eat or drink, and showed itself by his jumping up in bed and spitting, with great violence, a frothy or viscid saliva. Spitting in each case followed a gasp for breath.

The first impression in watching this patient was one of hysteria, as the boy was aware that he had been bitten by a suspected dog and had been reported in the papers as being the victim of hydrophobia. For a time persuasion and suggestion appeared to mitigate the attacks, but they soon became much more violent. He fell out of bed, had clonic movements of hands and legs, with extreme salivation. Within the last two or three hours of life he was wildly delirious, with extreme clonic movements of arms and legs, nearly constant, laryngeal and pharyngeal spasm and marked cyanosis. Large amounts of reddish froth exuded from nose and mouth. He had extreme dyspnea, rolling of eyeballs and an intermittent sharp high-pitched cry. Etherization caused very slight and temporary relief. He had delusions of persecution, and in his less violent intervals said that everybody seemed to think he had hydrophobia, but he was sure he did not have it, and that if his hands were untied he would act quietly and behave himself. He also kept asking for water and stated he was sure he could drink it without trouble. An attempt to drink it brought on a much more violent paroxysm of convulsions and intense cyanosis, and was soon followed by death.

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[1] Vol. clvii, no. 16.

On Dec. 23 and 24, 1908, three persons were bitten by a dog not known to be rabid. The subsequent history of the dog was unknown. The patients were all cauterized by the same physician. One of these patients received Pasteur treatment, and, so far as known, has never had any symptoms. The cases of the other two persons will now be described.

Case I. George R., age thirty-four, married. Canvasser.

Entered hospital March 5, 1909, 11.30 a.m.

Dec. 24, 1908, was bitten on the forefinger of the right hand by a dog not known to be rabid (see next case). Subsequent history of the dog unknown. Wound bled freely. It was cauterized by a physician, but to what extent or in what manner is not known.

Treatment was begun with serum supplied by the Pasteur Institute of New York, Dec. 27. The fluid was sent by express daily from New York, with definite directions as to the dosage. It was injected daily by an externe under the supervision of the Out-Patient Department. Twenty-six injections were given, covering a full course of twenty-two days.

The dosage given was as follows:

First	4	days,	2	injections	daily,	3	ccm.	each.
Next	3	,,	1	,,	,,	2	,,	,,
,,	2	,,	1	,,	,,	2½	,,	,,
,,	13	,,	1	,,	,,	2	,,	,,

Treatments ended Jan. 17, 1909.

Patient returned Feb. 4, for inspection, and was without symptoms.

The patient felt about as usual, but had rather a poor appetite and constant chilliness.

March 3, sixty-nine days after the bite was received, he was tired and feverish and stayed in bed. Towards night he had sore throat and felt cold. During that night he awoke every half hour with twitching, especially of the arms.

March 4, throat worse, neck swollen, very thirsty, but could not drink. Shook violently every few minutes. Lips blue and eyes staring and glassy. He asked continually for water, but never could swallow it. The same symptoms continued through the night, becoming more intense. This morning he was irrational during the convulsions, but perfectly clear between them. All his senses seemed very acute. He had attacks of cough in which he became very blue. He has taken no food for four days. He has vomited considerable brown fluid without blood. Some pain and stiffness in back of neck; no headache. Slight incontinence of bladder and rectum.

I saw him immediately after he was admitted. He was in a state of great agitation. This, with the frequently recurring convulsions, prevented any formal physical examination. Pulse 150.

His mind was clear, and his speech, though rapid, perfectly intelligible. Being given a piece of bread, he held it in his hand, but would not put it in his mouth. When a morsel was put between his lips he held it a minute, then rejected it, usually with the onset of a convulsion. When water was presented to him he motioned it away and would not take it in his mouth.

The paroxysm occurred about once in two or three minutes. During these he was uncontrollable, mentally and physically. He gasped for breath, jumped up in bed, and threw himself so violently that he would certainly have gone onto the floor if he had not been held. He was deeply cyanosed, the eyes staring. The hands shook violently and the pieces of bread he had taken into his hand were crushed, partly thrown about, but partly retained in the clenched fingers.

After such an attack passed off, he relaxed, but, though he was manifestly frightened, answered to his name. He said he thought there was smoke in the room. He vomited some dark brown material. With the coming on of a new attack his mind clouded again, and possibly his sight. He turned, when spoken to, in the direction of the voice and spat toward it. There was less incessant spitting of saliva than in the case I have previously reported.

During the five hours that intervened before his death the attacks became more frequent and more violent. After the first half hour or so he was irrational even in the intervals. He talked incessantly and rapidly, but not even his wife could make out what he meant. He always gave the impression of being in mortal terror.

Death came to his release at 4.39 p.m.

Autopsy, twenty-one and one-half hours after death.

Marked lividity of the dependent parts. Dusky face. Pupils equal, 1 mm. Conjunctivæ red. Small vessels much dilated. No edema. Superficial abrasions over both elbows and right tibia. (These were probably due to the violence of the struggling in the paroxysms.)

A small punctured wound was found over the dorsal aspect of the fifth metacarpal bone, and an indistinct white scar on the second phalanx of the fourth right finger. (It will be noted that neither of these corresponded to the site, as described, of the bite.)

The left ventricle of the heart was contracted, the right ventricle and the auricles relaxed. The myocardium firm and of deep red color.

The parotid glands were apparently congested. The papillæ at the base of the tongue were larger than usual.

The diploe of the skull was fairly well marked; the dura tense and of light blue cast. The vessels of the pia moderately injected. Even the finest ramifications over the convolutions were to be seen. Considerable sub-pial edema. The brain substance slightly firmer than usual. Marked contrast between the gray and white substance. Surface of section moist. Lateral ventricles have slight excess of clear fluid. Serial sections of basal nuclei, pons, cerebellum and medulla appear normal. (Preliminary microscopical examinations made at this time showed the Negri bodies at the base of the brain, but the detail work to show the distribution of these bodies has not yet been completed.)

Vessels at the base normal. Gasserian ganglion, no gross change. Middle ears, the mucous membrane lining them is markedly congested. Otherwise, middle ears normal.

Cord, vessels markedly congested. Neural canal is of general red color to bluish, with marked congestion of blood vessels.

Case II. Jamon P. (Service of Dr. Sears.) Entered hospital May 20, 1909.

Was bitten on the left ring-finger, Dec. 23, 1908, by a dog, not known at that time to be rabid, and which was never found afterward. Of two other persons bitten at the same time and by the same dog who took the Pasteur treatment, one was Case I, just described, who died March 5. The second, so far as known, has developed no symptoms. The third case, the present patient, refused Pasteur treatment. The same doctor cauterized the wounds of this and Case I.

For two days before admission, the patient had been feeling nervous and excited. While working, May 20, had an attack of twitching and a spasm of the throat.

On entrance, conscious, rational, somewhat violent. Jaws held rigid. Neck not rigid nor tender. Many glands palpable. Eyes wild and staring. After entrance remained for a short time rational. Respiratory spasm increased. At times horribly terrified and crying out. Pulse soon began to fail. Cough, with tenacious sputum. The next morning, May 21, coughed and vomited blood, at 5 A.M. After this rapidly weakened but remained active to the end. Death on the one hundred and thirty-ninth day after the bite.

The Negri bodies were found at autopsy as in the other cases.

Case III. Thomas G. (Service of Dr. Ames.) Age, ten. Admitted Oct. 2, 1908.

Was bitten on lip by a dog, Aug. 27, 1908. Sister was also bitten by same dog, but as yet has developed no symptoms.

Thirty-four days after bite, viz., Oct. 1, pain in stomach, followed by headache. Slept none last night. At two o'clock in the morning of Oct. 2, became excited, refused water, saying it would make him have a fit. Delirium is increasing hourly. Examination. Frothing at the mouth. Rational between the attacks. Pupils dilated. Eyeballs rolling. Neck not rigid, tender or retracted. Heart, area normal, action rapid, irregular, no murmurs.

Extremities, no Kernig or Babinski.

Oct. 3, convulsions have continued through the night, patient gradually grew weaker and died at 1 P.M.

Autopsy. The summation of anatomical diagnosis was:

Rabies, Negri bodies found; hyperplasia of lymphoid bodies of intestine; persistent thymus; dilatation of heart; chronic pachymeningitis; congestion of brain and cord.

A special interest attaches to this case from the fact that the patient had the status lymphaticus, in which one is rather liable to sudden death.

It is particularly disappointing to have to record the death of the patient who was treated by Pasteur injections promptly and fully, treatment beginning on the third day. These injections were made in accordance with directions forwarded by the Pasteur Institute of New York, which was given the history of the cases, and in this case, as in several others which have been bitten by suspected animals in Boston, the injections were given under the direction of the Out-Patient Department of the City Hospital. The work was done by externes, and in no case, as far as is known, of the many injections given was there any local or constitutional disturbance. The material was forwarded daily by express from New York, the dosage for each successive day being clearly indicated. It may be interesting to say that the price required for material for such a course of treatment, including the sending by express of the daily dosage, is $25. In most cases this expense has been met by the City of Boston. The cost of the course of treatment at the Institute in New York, including board and room, is said to be from $100 to $150.

It is well known, of course, that the principle of these injections is that of attenuation by drying of the virus of spinal cords of rabbits which have died from the inoculation of the so-called "fixed virus" of rabies. The cord is removed aseptically and suspended in a glass jar whose floor is covered with pieces of caustic potash. These are kept in the dark, at a temperature of 68° or 72° F. for varying periods of time. The cord is cut off in sections and rubbed up in bouillon as required. The Pasteur method in wounds of the upper extremity is to give on

1st day,	3 ccm.	of 14–11 day old cord.
2d „	3 „	„ 10– 7 „ „ „
3d „	2 „	„ 6 „ „ „
4–5th „	2 „	„ 5 „ „ „
6th „	2 „	„ 4 „ „ „
7th „	1 „	„ 3 „ „ „
8th „	2 „	„ 3 „ „ „
9th „	1 „	„ 3 „ „ „
10–11th „	2 „	„ 5 „ „ „
12–13th „	2 „	„ 4 „ „ „
14–15th „	2 „	„ 3 „ „ „

In the so-called intensive method of Pasteur treatment, which is applicable in wolf bites and dog bites upon the face, the dosage is accelerated and is as follows:

Day of Treatment.	No. of Days Cord Desiccated.	Dose Injected.	
1, A.M.	14	3 ccm.	
	13		
P.M.	12		
	11		
2, A.M.	10	3 ccm.	
	9		
P.M.	8		
	7		
3, A.M.	6	2 ccm.	
P.M.	6		
4	5	2 „	(Same as on 5, 10, 11, 16, 19th days.)
5	5	2 „	(Same as on 8, 12, 13, 17, 20th days.)
6	4	2 „	
7	3	1 „	
8	4	2 „	
9	3	1.5 ccm.	
10	5	2 ccm.	
11	5	2 „	
12	4	2 „	
13	4	2 „	
14	3	2 „	(Same as on 15, 18, 21st days.)
		„	
15	3	2 „	
16	5	2 „	
17	4	2 „	
18	3	2 „	
19	5	2 „	
20	4	2 „	
21	3	2 „	

We all remember the dramatic incidents connected with Pasteur's first administration of his treatment to a human subject. Joseph Meister, a boy of nine, who was bitten on July 4, 1885, was, after much deliberation and consultation with the leading surgeons of Paris, and under their strong advice, subjected to his first inoculation July 6, 1885. We also recall the four American boys sent over by Dr. O'Gorman, of Newark, N. J., for treatment, in December, 1885. These all, with many others, escaped the disease.

Pasteur's first failure, in the case of Louise Pelletier, nearly caused the suspension of treatment by reason of the severe criticism to which he was subjected in that case, but her treatments were not begun till the thirty-seventh day after she was bitten. Immediately after this failure, there arrived nineteen wolf-bitten Russian cases, of whom, under ordinary circumstances, it was expected that all or nearly all would die, and sixteen of them remained well.

The total figures of the Pasteur Institute in Paris for the twenty years from 1885 to 1905 were that 20,201 persons were treated. The mortality of the first year was 0.94%; that of the last three years, 0.32%.

It has been conceded that the average mortality of all persons bitten by rabid dogs is about 16%; in other words, that 1 in 6 persons so bitten develops the disease. Practically all who develop it die of it. The mortality from bites of rabid wolves is much larger. The bites upon the face are much more serious in their prognosis than those elsewhere, and the hands come next. It is believed by many that the virus follows the nerve sheath rather than the vascular supply, and that hence localities having the richest nerve distribution are the most dangerous. Bites in portions of the body covered by clothing are much less dangerous by reason of the saliva being excluded from the wound through the clothing.

The figures quoted by Ravenal from Pasteur Institute in Kharkoff were, Of 8,430 persons bitten by rabid dogs and inoculated, 77, or 0.91%, died; and of 193 bitten by rabid wolves, 32, or 16½%, died. The figures of the Pasteur Institute at Odessa show that of cases beginning treatment in the first week, 0.56% died, and of cases beginning only in third week, 3% died.

A form of paralysis has sometimes been observed in patients subjected to Pasteur treatment. It always affects the lower limbs and often the bladder and rectum. It develops between the eighth and last days of the course of treatment. Sometimes the paralysis simulates Landry's. But little is known about it, except that it is not due to pneumococcus or streptococcus infection. All the patients are said to recover in from one to twenty days. No other ill-effects of Pasteur treatment have been shown.

Despite the unfortunate result in the case above referred to, we must conclude that results up to the present time indicate, on the whole, a favorable result from Pasteur treatment. Let me remind you of the report of a committee of inquiry appointed by the Local Government Board of Great Britain to inquire into the Pasteur treatment of hydrophobia. This report is signed by eight eminent British physicians, — James Paget, T. Lauder Brunton, George Fleming, Joseph Lister, Richard Quain, Henry E. Roscoe, J. Burdon Sanderson and Victor Horsley, and is dated June, 1887, two years after the Pasteur treatment had been in operation.

Mr. Victor Horsley made the experiments in confirmation of Pasteur's experiments, and says: "All the experiments performed by Mr. Horsley have confirmed those of M. Pasteur and have shown that animals may be protected from rabies by inoculation with material derived from spinal cords prepared after M. Pasteur's method. The protection may be deemed somewhat similar to that given by the inoculation for anthrax or by vaccination for smallpox."

The committee say: "We think it certain that the inoculations practiced by M. Pasteur on persons bitten by rabid animals have prevented the occurrence of hydrophobia in a large proportion of those who, if they had not been so inocutated, would have died of that disease."

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VARICOSE VEINS OF THE LEG.

BY HENRY MELVILLE CHASE, M.D.,
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A LARGE number of cases seek relief at our hospital clinics and, to a less extent, in private offices, who present changes in the venous channels in the legs of varying degree, from very slight dilatation of the small or large superficial veins to extreme dilatation even to the point of rupture and complication of necrosis of tissue. We are compelled to reflect from time to time and consider the question, "Is treatment in each of these cases being directed toward the removal of the cause or causes of the condition?"

It is wholesome and entirely practical to bring this subject to further detailed consideration because of the great frequency of these cases, because of the symptoms which may be slight to very distressing in character, because of danger from ulceration and hemorrhage, because of the disabling condition and its interruption in the individual's occupation. All of these conditions I believe can be practically controlled to conserve the patient's time and earning ability to its most practical proportions.

If nothing distinctly new is advanced, the article will have served its purpose if it can depict the practical side of the treatment of this condition, emphasizing the details of routine work, and stimulate an interest in a class of cases which, in the writer's observation, have been hurried along in many surgical clinics with ill-advised, inadequate or hurriedly applied dressings.

On realization that somewhat less time was allotted to the class of varicose veins than was due them, it became of interest to direct the details of the work so they should at once command the enthusiasm of the surgical dressers, stimulate their observation in detail changes in the conditions of the lesions, hasten the recognition of favorable or unfavorable factors, encourage the modification of dressing to carry out the principle along which their work was directed. In a word, to stimulate concentrated thought upon all the conditions under consideration, both general and local, followed by consistent and persistent treatment.

Physiological considerations. — Life and health are possible for tissues only when there is unimpaired circulation of the blood capable of supplying oxygen and nutrition to them. Disturbance of circulation, namely, deficiency in the provision for and passage of good blood through the tissues, endangers their integrity.

It is but a step from the physiological to the pathological, and there is no sharp line of differentiation. Increase in the quantity of blood in a part of the system, hyperemia, may result either from an excessive influx of blood to the part (active hyperemia) or from a diminished escape of blood from a part (passive hyperemia). In the condition of the varicose veins we have a passive hyperemia or venous engorgement. At first, the veins become distended to their physiological capacity. Some of the valves become incompetent, which makes an additional weight in the column of blood to be borne by the valves next adjacent. The thin and constantly distended vein wall loses its tone, gradual vein distension with increasing incompetency of the the valves continues until there exists a condition of marked impairment in the flow of the blood current through a large proportion if not all of the superficial veins.

When carried to an extreme degree, we find the arterial flow opposed in the capillaries by the weight of venous blood which has distended the capillary venules, resulting in a slowing of the circulation through the superficial tissues.

In many of the engorged and expanding veins and capillaries, stagnation or stasis of the blood takes place. The endothelium of the vessel walls remains intact only while it is bathed by moving blood, and as soon as the circulation is markedly slowed or stopped a disturbance of endothelial nutrition exists. The walls no longer hold the fluid blood, but allow it to escape more or less freely according to the amount and duration of the pressure, and may even rupture.

The pressure of the exuded fluid with the impediment to circulation may be followed by cessation of function, in the effected tissue, and finally by its death.

Local death, then, in the condition of varicose veins, is an interference with the nutrition of the cells and tissues which renders normal metabolic interchange between them and their surroundings impossible.

It is due directly to the change in the velocity of the blood stream and represents literally a starvation by the cells being deprived of the nutrition and oxygen brought to them by moving blood. Just as death of entire body follows the cessation of circulation, so death of a limited area results from entire local cessation of the circulation, though entire cessation locally is not necessary, as marked impairment is sufficient to bring about enough instability in cell repair to cause starvation of the cells, or, as we more frequently express it, necrosis, sloughing or death.

Factors in preserving normal circulation. — We are dealing, then, with a change in the velocity of the blood current and must consider for a moment what factors have a bearing upon the velocity of blood current in outlining any rational line of treatment for disturbance of circulation in disease. Cardiac force combined with elasticity of arteries, capillary vessels and surrounding tissue represents a force from behind in directing and maintaining an outward current. A force from in front, if we may call it that, is the aspiration of the blood by the negative thoracic pressure, to which is added the suction of the heart during diastole.

A third factor is the force given to venous blood by contracting muscles which gives an impetus in a centripetal direction.

A fourth factor may be the activity of the smooth muscle of the blood vessels comparable in their action to the smooth muscles of the intestine, but to this cannot be ascribed any measurable value.

A fifth factor which should be considered is whether the condition of varicose veins is a local expression (a paralytic form with vein distension) of a neurotrophic disturbance in certain diseases of the nervous system.

Undoubtedly, stasis in the venous system results from a combination of factors. We may not be able to remove the entire cause of the change in the circulation, but we can make an effort to change local conditions favorable to restoring functional activity and aid in maintaining an approximation to normal conditions.

Examination. — With the presentation of a case of varicose veins of the leg the analytical mind as well as the purely practical one considers its etiology, and necessarily so, before intelligent and well-directed treatment can be undertaken. All cases should be examined in regard to their circulatory condition, the condition of the heart, frequency of pulsation, regularity, quality of the valvular sounds. An estimation should be made of the condition of the blood vessels, whether soft or presenting fibrous or more advanced atheromatous changes. The blood pressure is a factor in diagnosis and treatment which may become more important as we learn to interpret its significance. Renal conditions should be estimated by careful examination of the urine.

In the male patient, a careful rectal, and, in the female, a vaginal, examination should supplement the abdominal examination for the presence of any cause of interference with the return flow of blood from the veins of the leg.

Treatment. — Treatment is undertaken to find the cause or causes of the condition as careful study and examination may determine them, to correct or improve such conditions as retard recovery, to apply rational local measures to correct pathological conditions of venous stasis and clear away the products of tissue necrosis, under the following conditions:

(*A*) Medical treatment to regulate and improve dietetic functions, to stimulate cardiac force, and increase the tone of the vessel walls, to moderate or delay fibrous or atheromatous changes.

(*B*) To continue normal muscular action which in contraction give a centripetal direction to the venous blood and aid in maintaining and continuing velocity of the blood current. In this connection must be recognized not only the necessity of not keeping the muscles at rest, but care must be especially directed toward giving the muscles of the leg their greatest physiological and mechanical advantage by correction of flat foot which is almost invariably present, and which, undoubtedly, is a contributing cause.

(*C*) Local treatment for varying conditions of tissue change resulting from venous stasis, such as eczematous conditions, serous and hemorrhagic blebs, active serous exudation, local fibrosis, edema, ulceration, necrosis.

(*D*) Mechanical support of the superficial blood vessels, which will direct a large part of the venous blood through the deep venous channels, will relieve the tension on the dilated superficial veins, will reduce edema and permit a restitution of the elasticity of subcutaneous tissue, which will diminish the pressure due to venous engorgement in the superficial veins and permit a greater capillary velocity of the blood current.

(*E*) Surgical treatment.

Consider now the objective conditions as we find them.

(*A*) Varicose veins of the leg *without ulceration.*

(*B*) Varicose veins of the leg *with ulceration.*

In the first class, varicose veins *without ulceration,* the question arises, Has the onset been gradual or rapid? Is there pain? Is interference necessary to enable the patient to successfully compete for a position which would be denied him with the condition of varicose veins present?

Whatever may be the object for intervention, it should be determined in a practical way that the *circulation through the deep veins is not markedly interfered with,* and for this purpose the leg should be carefully bandaged or a well-fitting elastic stocking should be worn for ten days to two weeks.

During this period digestive conditions can be studied and such changes made as would bring this part of the body functions as near co-operative assistance as is possible.

Having determined that there is a compensated venous circulation through the deep veins of the leg, consider the individual case.

Many patients present themselves because of the the fact that varicose veins exist, the presence of which prevent their successfully competing for a civil service position. These patients have had a thorough physical examination and no causal condition found. Objectively, we find a series of dilated subcutaneous veins due to congenital or acquired incompetency of the valves in the veins.

These cases can be operated upon with success, choosing preferably such modification of the Madelung operation as is best adapted to the individual case.

In this class of cases there are those who present themselves with varicose veins with the question, " Shall I have anything done for these until they begin to trouble me? "

The writer believes that such patients should expect to obtain a well-formed opinion from their medical adviser based upon an academic study of all the conditions and factors present in the individual case, relative not only to their immediate physical condition, but a consideration of the age, weight, family and personal characteristics, work, play and a shrewd estimate of the probable changes that are likely to take place, which is a quality in the advice only possible to obtain from men of extensive clinical experience and careful observation. They should not all be turned away with the hackneyed expression, " Let well enough alone," behind which many hide who are unqualified by temperament or training to give an opinion, or who are too indifferent to arouse themselves to grasp all phases of the question.

There are, unquestionably, cases without other symptoms than the presence of varicose veins who should be advised not to interfere for the present; there are certainly cases which should be advised to have an operation before further complications result and thereby postpone or entirely prevent further pathological changes and complications.

Another class of cases are those who have subjective symptoms, pain or discomfort along the course of the vein. Eliminating organic disease of the heart and arteries, of the kidneys, and constitutional conditions such as diabetes, and having determined the presence of satisfactory deep venous circulation, one can safely advise operation with every assurance of success. Cases with renal or heart complications should be operated upon under a very guarded prognosis or not at all.

In this consideration, the degree of arterio-fibrosis must be considered. It has become the custom of recent years to study arterial quality in the terms of manometer reading, which we designate as blood pressure; the writer has been accustomed to use the Cook sphygmomanometer with the 12 cm. Janeway cuff. A later article on this subject will detail the result of blood-pressure readings found in a series of cases. Without having formulated a more conclusive opinion thus far, the writer has accepted the belief that the value of blood pressure as a clinical factor in varicose veins will be the greatest as an indicator of the degree of arterio-fibrosis and not as a cardinal signal to interfere directly for a rise or fall of the pressure, except under special conditions and to a guarded extent. It will be a factor in determining the anesthetic and operative safety and in determining the question whether the mechanical changes brought about by the removal of the superficial veins will be sufficient to obtain the desired end result with the general condition of fibrosis present.

The removal of a tumor mass interfering with the venous return flow from the leg would give greater assurance of success than interference with the veins, which speaks strongly and plainly for careful abdominal and pelvic examination.

The presence of multiple markedly dilated venous capillaries of the skin in the foot and leg, in the absence of a corresponding dilatation of the larger veins, is an unfavorable condition for operation, and recourse should be taken to appropriate constitutional tonic treatment, exercises to increase muscle tone and activity, correction of any degree of lowered arch of the foot, and local application of pressure to control capillary dilatation. The presence of thrombosis or phlebitis should contra-indicate operation until these conditions have been removed.

Varicose veins of the leg with ulceration. — This type comprises a large class of chronic cases, treatment of which demands patience and ingenuity to control the factors adverse to healing of the lesion. Thoroughness of examination both general and local is the first requisite. The treatment is based upon the same general conditions previously outlined, with the additional local process of necrosis of tissue to be considered. This condition differs only in degree from the class of varicose veins without ulceration, for similar tissue changes take place in all cases.

We find many degrees of tissue change in the same individual, from simple impairment of tissue nutrition to actual necrosis and sloughing. If necrosis takes place the conditions for tissue repair must be obtained.

The dead tissue acts upon the surrounding structures as a foreign body causing both mechanical and chemical irritation; at the periphery of the necrosed area an inflammatory zone is observed marked by inflammatory hyperemia and an accumulation of leucocytes. By the action of fluid exudate and immigrated cells the necrotic substance is liquefied and softened into detritus which sloughs away; while this clearing away process is going on there is proceeding a proliferation of connective tissue cells and blood vessels. The area left by necrosis is gradually refilled by elements similar to those destroyed, or by cicatricial tissue, epithelium finally covering the surface.

Operation in cases of varicose veins complicated by ulceration must be considered according to conditions. There are selected cases in which operation is permissible and advisable in which the resection of enlarged venous channels has materially hastened the healing of the necrosed area and has added to the permanency of the cure; as a rule ulcers heal more rapidly after operation. Emphasis, however, must be placed upon the additional risk from resulting phlebitis, toxemia and death which have followed operations under the above conditions. When operation is contemplated during the presence of ulceration, especial attention must be given to the treatment of the general physical condition, to a long and thorough skin preparation, and the ulcer must be entirely and permanently shut off from the rest of the leg by a special dressing.

The advisability of operation especially applies to patients in hospitals or under ideal home conditions.

In a case, age forty-five, operated upon by Dr. Benjamin Tenney and myself in which there existed a large chronic ulceration and edema for a period of ten years, the enlarged superficial venous channels were resected and the ulceration was skingrafted. With appropriate pressure bandage the ulceration healed rapidly and all conditions have remained perfect now a year after operation. The epithelium is sound and there is no edema or other symptom. Another case, age sixty-five, had a history of operation fourteen years ago for varicose veins, edema and ulceration. The ulceration had healed promptly, edema disappeared and the patient had a period of fourteen years free from all annoyance. Gradually, during the last two years, there has been dilatation of other superficial veins, with return of pain and ulceration. Under these conditions we resected the enlarged veins. This was followed by rapid healing of the ulceration and the patient has been entirely free from all symptoms, now nine months since the operation.

A small minority of cases of varicose veins with ulceration cannot have an operation because of some contra-indicating physical condition or because of social or external circumstances.

They are a class who are further from permanent cure than any others of their kind, yet can least afford to be permanently disabled. These cases can, with all reasonable assurance, be encouraged to expect their pathological condition to so change that the ulceration will be healed, and that a regular persistent care on their part will enable them to alternate periods of local treatment with other periods of freedom from any dressing and in that way maintain an equilibrium that will result in their being practically well.

In this class of cases it is especially urgent that careful medicinal tonic treatment is instituted, that the muscles of the leg should have exercise, that there should be correction of any flat foot, that carefully selected local treatment should be applied for definite indications.

Non-operative treatment. — Referring to the last type of cases for whom non-operative treatment is the only alternative, and assuming that any indicated tonic treatment has been prescribed, the next factor to consider is the recognition and correction of a faulty weight-bearing position of the foot and ankle which will permit normal muscular action.

Our attention is now turned to local medicinal and local mechanical applications to induce a greater capillary velocity of the blood current and remove products of tissue necrosis.

(*a*) Medicinal local application. In approaching any form of local dressing, the parts should be carefully shaved, the surface washed with castile soap and water, and with alcohol; it is then in condition to receive further local treatment. It is distressing to see legs " smeared " with various kinds of ointment from $\frac{1}{16}$ to $\frac{1}{4}$ inch in thickness; it is absurd to go to the other extreme and decry the use of ointments because they fulfill a definitely indicated purpose. As a rule, ointments should be used as a means to carry out certain mechanical details, namely, the protection of an area from irritating secretions, the protection of new formed epithelium from being glued to a dressing or bandage by dried secretion and thereby partially or entirely destroyed at each change of dressing. It prevents the accumulation of secretion on the wound as a pocket of pus and enables the gauze to more perfectly perform the work for which it is applied; the presence of pus superficially will not retard healing; pus under pressure is detrimental. An ointment should not be spread over the entire dressing; in case of ulceration, the sterile gauze should be in contact with the wound and the ointment thinly applied on that portion covering and in contact with the healing borders of the wound. It should be applied as a thin smear with the tip of one's finger to the cleaned and dried borders of the wound, and over areas to be protected from irritation.

Boracic ointment will be found universally useful, occasionally zinc-oxide ointment. An ointment of copper sulphate gr. ii to gr. x to the ounce of vaseline or lanolin is a valuable stimulant over an indolent or necrotic area; occasionally a few small copper sulphate crystals are valuable for a few hours as a stimulant to sluggish ulceration.

The use of glycerin, plain or diluted with water, has been very valuable in many conditions, both to the skin and to the ulcerated area. Weak chlorinated soda solution and dilute hydrochloric acid, ⅕% to 1%, have given most valuable results in treatment.

Powders fulfill a very limited usefulness. In selected conditions they are valuable; the writer restricts their use entirely to those that are soluble in the secretion of the wound and restricts the quantity used by the same condition. Healing is at a disadvantage and the skin cannot resume its normal function with a layer of caked powder. The writer has worked one hour a day for ten days removing material of that kind from an area of the lower third of the leg into which the skin had grown by papillary formation.

In a word, local medicinal applications are not to be relied upon as curative agents if used alone, but as a means of allowing and assisting correctly applied mechanical forces to be used to their highest degree of efficiency.

(*b*) Mechanical local applications. Strapping of ulcerations has been done for years, but its value has not been generally appreciated.

The diachylon adhesive plaster is preferable, though zinc oxide plaster may be used with good results. An adhesive strap must not encircle the leg at any point; its function is to supply special local restriction to the blood channels at the point of ulceration and the immediately surrounding tissue, and to stimulate the ulceration by local contact. The straps may be applied diagonally or transversely according to the best mechanical advantage to be obtained. Straps ¾ to 1 inch in width should be applied, beginning fully 2 inches below the lesion and extending with even firm pressure to a corresponding distance above the lesion, extending far enough toward either side to get a firm grasp on the skin to give the desired pressure. The leg is then bandaged over all from the toes to the knees. Another very valuable dressing for the ulceration is to cleanse with soap, water and alcohol as suggested, then with the finger apply a thin smear of boracic ointment to the dried borders of the ulceration and to the surrounding skin. Then take ½-inch cotton roller bandage which has been saturated with a weak chlorinated soda solution, or ⅕% to 1% hydrochloric acid solution, and, laying the end of the bandage overlapping the lower margin of the ulceration, apply it backward and forward until the whole area is covered to ⅛-inch elevation, then apply a firm wet bandage over all from toe to knee.

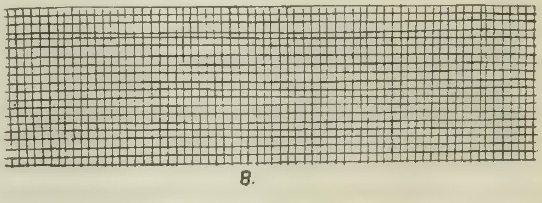
Bandaging is the most vital part of the whole treatment because, if properly done, it completes the application of mechanical principles absolutely demanded, and, if improperly done, destroys the benefits from all other parts of the dressing and is absolutely damaging to the tissues, leaving the patient in a worse condition than when he came for treatment.

If a physician knows that he is not naturally mechanical or is unwilling to put the necessary work and thought into each case that is required, he should not accept the patient and undertake the treatment.

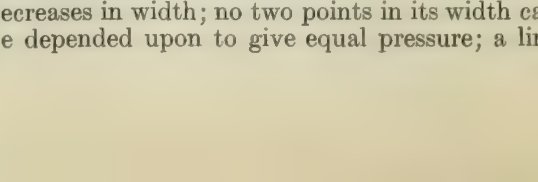
Bandaging must be considered synonymous with continuous and evenly distributed pressure and can be obtained by the use of several materials.

Continuous pressure is frequently obtained by the use of elastic stockings; these if well made have the advantage of needing but little attention, wear from a number of weeks to a number of months, exert a gradually diminishing pressure according to the durability of the elastic threads. They are comfortable for some people to wear and very uncomfortable for others. Their expense prevents their general use. When well made and fitted they do serve admirably in some cases. Bandaging in various ways and with various materials is the usual alternative.

The choice in the width of the bandage to be used depends upon the shape of the limb to be bandaged. Two factors must be obtained: it must be narrow enough to lie flat throughout its entire width and not have too tight edges with a relaxed central portion, nor a tight central portion with relaxed edges; it must be wide enough to allow overlapping and prevent the flesh from rolling out between the turns of bandages. The choice of material must be based upon firmness of texture, a mesh fine enough to give a smooth, firm surface, and coarse enough to allow change from a straight to an oblique direction without appreciable change in the tension of the threads. The material should be cut straight and not on the bias.



A



B.

Material (*A*), cut on the bias, is a constantly varying quantity; it increases in length and decreases in width; no two points in its width can be depended upon to give equal pressure; a line extending through its center lengthwise is the only known pressure at the time of application, and this is varied by its elasticity; from this central line toward either border there is constant variation. It will not launder.

Material (*B*) cut straight has threads running its entire length which insures as great a stability as is possible to obtain; there is slight elasticity and a tendency to stretch, which can be figured upon with considerable accuracy, the pressure across its width is approximately constant, the direction of its application can be changed, while maintaining an even pressure. It can be laundered many times without altering its usefulness.

Bandages may be applied wet or dry; certain mechanical advantages are obtained with a wet bandage; the tension can be more absolutely under control, there is less " slip " during application; as it dries it tends to retain its position more perfectly and for a longer period than when applied dry. The bandage should invariably be started at the toes, and a firm, even pressure should be maintained throughout the extent of the area bandaged.

The treatment of varicose veins resolves itself largely into the application of mechanical principles which will control abnormal circulatory conditions. It is a patient, painstaking study of details which vary greatly in different individuals and require a close observation to detect adverse and favorable conditions.

I acknowledge with much appreciation the kind co-operation of the members of the Surgical Staff and my associates, Dr. Albert Evans and Dr. Vernon H. C. Morse, in obtaining successful results in this work.

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REPORT OF A CASE OF ARTERIOVENOUS ANASTOMOSIS FOR SENILE GANGRENE.

BY J. C. HUBBARD, M.D., BOSTON,

Assistant Surgeon, Boston City Hospital; Assistant in Surgery, Harvard Medical School.

The following case is reported as it appears to demonstrate certain facts in regard to arteriovenous anastomosis for senile gangrene.

The patient, seventy-seven years of age, a light coffee-colored negro, was referred to me in May, 1909, by Dr. R. B. Osgood. There was no venereal history. He had always been well aside from grippe and severe colds. Three years ago last November, right foot began to swell and burn. Pain lasted all winter. Improvement came in the spring. The next winter the foot went through the same changes. This last winter foot became discolored and symptoms were more pronounced than ever before. At various times the toes have " gathered." Pain was severe enough to be unbearable. Patient was ready, because of the pain, for an amputation, if necessary.

Examination. — No pulsation in the dorsal pedis or posterior tibial arteries. The anterior half of foot on the dorsal surface was dark purple and mottled. The circulation returned only slowly after pressure had been removed. A fairly distinct line of demarcation was present, although there was some shading in color between the normal skin and the purple area. Foot easily kept warm when wrapped up. Urine, 1,012; contained no albumin or sugar.

May 18, 1909. — Ether. Operation. Incision over Scarpa's triangle. Incision carried down to the vessels which were dissected out. Not atheromatous macroscopically. Artery ligated two to two and a half inches below origin of the profunda. Vein ligated just below the profunda. Circulation controlled by a Crile clamp on the artery high up, and a clamp on the vein low down. Vessels divided. Ends of vessels smeared with sterile vaseline and sutured end to end by interrupted mattress stitches so placed that the walls were everted, bringing intima to intima. No. 2 silk in No. 12 cambric needles was used. The sutures had been prepared the day before by boiling them first in water and then in vaseline. They were allowed to remain in the vaseline as it cooled and became embedded in it. They were not removed until they were needed for the anastomosis. When the suture was complete, the Crile clamp from the vein was removed, and then from the artery. The blood passed through the anastomosis without any leak. Pulsation in the vein was distinct. The technic had been most satisfactory. Catgut sutures were placed to draw, as much as possible, the soft tissues about the vessels. Silkworm gut sutures in the skin. Sterile dressing and bandage. At the close of the operation, the circulation in the foot returned as quickly as before, as determined by pressure and change of color in the purple area. The superficial veins at the ankle appeared to have a flow in the upward direction, as shown by a filling up when stripped from below upwards. There was so much slack at the arteriovenous anastomosis that no great attempt was made to hold the thigh flexed. Foot and leg done up in absorbent cotton and sheet wadding. Patient put to bed in excellent condition. Heaters to feet. One eighth of a grain of morphia given subcutaneously.

May 19, 1909. — Has had pain in knee since operation requiring morphia. Circulation in the foot over the purple area returned, after removal of pressure, more quickly than before the operation.

May 20, 1909. — Patient volunteered the statement that his foot had been more comfortable since the operation than before. The mottled, purple discoloration decidedly less marked than before the operation. Line of demarcation less evident.

May 21, 1909. — There was no question but that the discoloration was distinctly less. The mottled appearance had disappeared. Complained of practically no pain in foot. Up in a wheel-chair.

May 23, 1909. — Allowed to hang foot down.

May 25, 1909. — More pain since foot had been down. The improvement which had been evident immediately after the operation was at a standstill (some of it, without doubt, was due to the recumbent position). Stitches out.

May 26, 1909. — For the first time the lower half of the leg was very slightly though distinctly edematous.

May 28, 1909. — Had begun to walk on foot. Edema of lower half of leg barely noticeable. No increase in amount from the time it was first noticed. Had considerable pain in one toe last night. Foot had been almost free from pain since operation, whereas before it was very painful.

June 3, 1909.— The discoloration had remained as at last note. Line of demarcation not so sharp as before operation. Slight edema of foot and lower part of leg. Aside from pain in the third toe, which suggested " gathering," foot distinctly less painful than before operation. No difference in appearance between the third toe and the others. Foot said to be at times warmer and at times cooler than normal foot.

June 7, 1909. — Two days ago, after using leg considerably, it became swollen. Had since then considerable pain. Examination showed marked edema of the leg and lower portion of the thigh. Skin shiney and evidently full. No increase or change in the amount of discoloration of the lower part of foot. Morphia necessary to insure night's rest.

June 15, 1909. — Very marked " woodeny " edema of the leg and lower part of the thigh. Leg so full that it felt stiff to the patient. Color of foot had distinctly improved. Circulation returned quickly. Second and third toes more blue than the surrounding parts, and very painful. Nothing could be seen wrong with them. Morphia really necessary.

June 24, 1909. — Entered the Massachusetts General Hospital on the service of Dr. D. F. Jones, as, for various reasons, I was unable to care for him. Because of the severe pain, amputation necessary. Thought best to do it above the knee. After the amputation, the tourniquet was loosened in order to test the anastomosis. From the femoral vein in the stump red arterial blood spurted. There appeared to be no narrowing of the vessel, judging by the size of the blood stream.

RÉSUMÉ.

The circulation in the foot was sufficiently improved by the operation so that the color of the area, originally purple, changed and became almost normal in appearance, with the exception of the toes. Edema of the leg, which was slight at first, became excessive. It made the leg seem stiff and full to the patient. Coincident with the appearance of this edema, pain, which had decreased since the operation, returned and from that time on became the most prominent symptom. Was this pain due to pressure exerted by the edema on nerves already in an enfeebled condition, or was it due to progress of the nerve changes started by the impending gangrene and not stopped by the apparent improvement in the circulation?

The case demonstrated beyond dispute, for the first time I think in man, that an anastomosis can be performed which will remain patent for some time. The lesson taught by it is that a single anastomosis between the artery and the vein renders the return of the venous blood too difficult. A complete reversal of the circulation is, therefore, to be recommended. Whether this will prevent edema, and if so, the pain, remains to be seen.

Reports of Societies.

AMERICAN NEUROLOGICAL ASSOCIATION.

THIRTY-FIFTH ANNUAL MEETING, ACADEMY OF MEDICINE, NEW YORK CITY, MAY 27-29, 1909.

(Continued from No. 14, p. 482.)

Dr. G. L. Walton, Boston, had recently seen a case which had seemed to be one of acute infectious myelitis. It had been that of a young man who had been operated on for appendicitis during the acute stage. In the course of the day of operation and the following day, and coincidently with an endocarditis, there had appeared a motor and sensory paralysis pointing to complete lesion of the cord in the lower dorsal region. Dr. Courtney had told him that he had seen two cases last winter following typhoid.

Dr. W. G. Spiller, Philadelphia, said that in the laboratory of neuro-pathology of the University of Pennsylvania there had been between four hundred and fifty and five hundred specimens of nervous disease, but only five cases of multiple sclerosis. If it had been such a common disease in this country he thought we would have had our mistakes corrected at the necropsy table. Dr. Taylor had had an extraordinary experience and different from what most others had. He had recently had Dr. Edward Martin operate on a gumma of the brain cortex, but these cases were not very favorable lesions for operation.

Dr. J. J. Putnam, Boston, said that it seemed to him that one reason for the removing of a gumma of the brain was that one got by simple decompression improved circulation which he would not get with iodide and mercury.

Dr. Philip Coombs Knapp, of Boston, said he was inclined to agree with Dr. Starr rather than with Dr. Taylor in regard to multiple sclerosis. It was certainly a diagnosis which he made only rarely, and then he did not feel that he would be justified in defending it very strongly. This past winter he had seen two well-defined cases and that seemed to be a most unusual number to see in a year. Acute infectious myelitis was not quite so rare as Dr. Starr seemed to think. He had occasion several times to make that diagnosis and thought that we should bear in mind that these cases were not always hopeless.

CLINICAL REPORT OF A CASE OF SARCOMA OF THE MOTOR AREA OF THE LEFT HEMISPHERE.

Dr. C. Eugene Riggs, St. Paul, Minn., read this paper, saying that a woman, aged forty, had awakened from a sound sleep on the night of Dec. 25, 1906, and found herself unable to speak for about five minutes. She had tonic spasms of the right side of the face, accompanied by a peculiar unintelligible noise. Afterwards she had spoken of her tongue as feeling thick. There had been four similar seizures in March and one in June, continuing irregularly until October, after which there had been almost complete cessation for five months. Troubles in speech had been first noticed in October. Also a poor memory and sluggish mentality. The latter part of March, 1908, there had been first noticed paresis of right hand and arm, which rapidly spread to the entire side; also marked double optic neuritis. The patient had never suffered any pain. An exploratory operation showed an infiltrating mass involving the left motor area which rendered a radical operation impossible. The mass proved at autopsy to be sarcomatous.

MAY 28, FRIDAY MORNING.

Dr. Pearce Bailey, first vice-president, called the meeting to order at 10.12 A.M.

TWO CASES OF TUMOR OF THE PONS.

Dr. Philip Zenner, Cincinnati, presented this paper. The first case was that of a boy five and one-half years of age, the son of a physician living in Kentucky. He saw him on four different occasions. The whole duration of his disease was less than five months. He first had paralysis of the left abducens, two weeks later initial headache, vomiting, lassitude, yawning and the like. A month after the symptoms began he came under Dr. Zenner's observation. At this time there was nothing to be seen but the paralysis of the external rectus of left eye. Two months later he saw him again. In the meantime, he had developed awkwardness of the right arm and leg. Occasionally, at night, he had convulsive movement of one side, sometimes the right, sometimes the left. Occasionally he had some difficulty in swallowing. Three months after the beginning of the symptoms slight weakness of the arm and leg developed; Babinski; no increase of tendon reflexes; still paralysis of left abducens and double optic neuritis. A month later the symptoms had all increased. There was decided choked disk and some impairment of vision of the left eye. He also had attacks of retraction of the head. It became apparent with the onset of blindness that if anything was to be done it must be done at once, and Dr. Zenner advised operation for tumor of the left lobe of cerebellum, explaining the symptoms in this way: that the tumor first pressed upon the left abducens and afterward upon the pyramids relating to the right side. The fact of the retraction of the head seemed to strengthen that, and at this time the father stated that before the paralysis appeared the child had reeled somewhat in walking, reminding him of a patient he had with tumor of the cerebellum. Two weeks later the symptoms had increased very much, swallowing was very difficult and there had been many attacks of retraction of the head and he could not hold up the head. The paralysis had considerably increased and there was ankle clonus on right side. Dr. Ransohoff operated for tumor of the left lobe of cerebellum, but found nothing, and the child died a few minutes after the operation. There was found, on the pia mater, a glioma affecting practically the whole pons symmetrically, particularly on the left side, and this could be traced into the crura and subdivisions of the left side. The second case did not come to a post mortem, so that there was always a possibility of doubt. It was characterized by the fact that the symptoms were so progressive, the difference being seen from day to day and affecting almost all the voluntary muscles before the end; the most complete paralysis in connection with consciousness, the mind remaining clear to the end; the whole duration of the case was only about ten weeks. This was a young man, twenty years of age, with a history of good habits, no syphilis, in whom the first symptom was paralysis of the left abducens. Ten days afterward, there was noticed a little weakness in the right arm and leg. Two weeks after the symptoms began, there was paralysis of the left abducens and the slightest weakness about the hand and foot. Two weeks later the right foot and hand were completely paralyzed and the muscles above in both extremities paretic. In addition to the abducens palsy, there was paresis of the left facial; also a little difficulty in swallowing and speech. About two weeks later all these symptoms increased and there was paralysis of the abducens of the right side. Two weeks later than this there was paralysis of facial of right side and paresis of left arm and leg, so that both extremities and arms and both facials and both abducens were paralyzed. There were some spastic manifestations; the arms and legs were completely paralyzed and were sometimes drawn forcibly against the body. Three days before his death, two weeks later, he was completely paralyzed in all these muscles and for the first time there was some impairment of hearing on the left side where the symptoms began. In this patient there was some discomfort about the head, but one cannot speak of definite headache. He was examined repeatedly with the ophthalmoscope, the last time ten days before death, and never had any change in the optic disk.

MONGOLIAN IDIOCY.

Dr. William N. Bullard, Boston, exhibited a number of x-ray plates of cases of mongolian idiocy to show the condition of the bones and cartilages. The plates included the hand, foot and head. The principal thing shown in these cases was the remarkable difference in size between the brain of the Mongolian idiot and that of the normal child of the same age. A peculiarity in this class of cases was that the bones and cartilages differ simply in size and very little in structure.

A CASE OF SUBCORTICAL AUDITORY APHASIA, WITH DESCRIPTION OF THE ANATOMICAL LESION.

Dr. Albert M. Barrett, Ann Arbor, Mich., presented this paper in which was reported the disturbances of speech in a man who, following an attack of apoplexy, had become unable to understand spoken words, and to repeat mechanically. Reading and writing had been preserved. Spontaneous speech was intact, except for a very slight paraphasia. Postmortem findings were softening in the right and left first and second temporal convolutions. The lesion was largely subcortical. There was preservation of the cortex of the inner half of the middle part of the left first temporal convolution and the entire root of this convolution.

DISTINCTION BETWEEN THE PSYCHONEUROSES NOT ALWAYS NECESSARY.

Dr. G. L. Walton, Boston, read this paper, saying that much confusion existed regarding the classification of cases presenting nervous symptoms without known organic basis. In well-marked cases there was little difficulty. Such symptoms as aphonia and anesthesia indicated hysteria; flight of ideas and pressure of activity, alternating with retardation of thought and profound depression, were easily recognized as meaning manic-depressive insanity, hysteria, hypochondria and neurasthenia. Much unnecessary effort was made to place each of these cases under one or the other category. The textbooks attempted without success to make clear the distinction between mild forms of these disorders. It should suffice to class these mild cases simply under the term "psychoneurosis" unless definite symptoms develop. Nothing was lost by including under this term most of the cases classed under neurasthenia, a misleading term since it implies an asthenic condition not always present, whereas "psychoneurosis" indicates the essential state of all patients now included under neurasthenia.

Dr. Morton Prince, Boston, said that it would be going back forty years in time to accept this classification. What we wanted to do was to differentiate, to acquire precision of knowledge, and not to dump everything together and say that we were dealing with only substantially the same thing.

Dr. Philip Coombs Knapp, Boston, said that there were many cases in which it was difficult to make a diagnosis. It was difficult to make a diagnosis sometimes between general paralysis and neurasthenia, between tabes and neuritis, between brain tumor and an ordinary epilepsy, but it did not seem that, because the diagnosis was difficult, we should throw up the sponge entirely and say there was no difference at all. There were certainly the well-defined types of mental and nervous disease; there were many borderland cases, but the more exact and the more thorough our study, the better we could differentiate between them and the better our treatment would be.

Dr. Adolf Meyer, New York, said that we knew that there was more than one group of facts to be interpreted in almost every case that we had to handle. The error arose from the habit of trying to classify our cases as patients. If we, then, in the actual performance of grouping our cases, throw an individual into one group, although he had something else in another group, we simply falsified our conceptions and did injustice to the actual work that we were doing.

Dr. J. J. Putnam, Boston, said that the diagnosis of psychoneuroses had been used a good deal more in the Massachusetts General Hospital than in other clinics. His own tendency of late years had been to endeavor to differentiate a great deal more between the different cases than formerly. He had used the term "psychoneurosis" simply as a convenient heading in hospital classification, realizing that if he took up these cases again to study them, he would analyze them a great deal further. We should recognize that we had to deal with patients, not cases, and with sick people who were sick at the same time in various ways.

Dr. C. B. Burr, Flint, Mich., said that if one had the patient alone to deal with it might do to act on Dr. Walton's suggestion, but, unfortunately, one had his friends to deal with. A patient came to you from another doctor, a friend. After a consultation you said the patient had a psychoneurosis. Presently you were going to hear from the patient's friends, "Why, Dr. —— said she had hysteria." You tried to compromise; you told them you were in accord with Dr. —— and endeavored to explain, and by and by you mix the ball up and what you had to say will fall flat. It was better to arrive at a conclusion even if you differed from everybody else, than to come to none at all.

Dr. J. W. Putnam, Buffalo, N. Y., said that it had always seemed to him that the great desire to find what kind of disease the patient had might be carried to an extreme and the tendency should also be to find out what kind of a patient was controlled by the disease. The same symptoms occurring in one individual led to much more serious disaster than the same group of symptoms occurring in another patient.

Dr. G. L. Walton, in closing, stated that his plea was not for merging such diseases as brain tumor and neurasthenia, but rather to reserve for such really important questions one effort at classification. His position was not like that of collecting the diseases of the various viscera under one head, but rather analogous to a protest against subclassifying those cases of heart disease without organic basis whose symptoms were common to all, such as palpitation, anxiety and the like.

Dr. Adolf Meyer demonstrated a number of illuminated glass reconstructions of brains and discussed a case of transcortical sensory aphasia with integrity of the transverse temporal gyrus and of the auditory radiations, and a case of complete word-deafness with destruction of these parts.

Dr. E. C. Spitzka, Philadelphia, said there had been no discussion on this admirable contribution because there could be none. It was one of the most perfect he had ever seen and was worthy of the highest commendation.

THE ORGANIC BASIS OF EMOTIONAL EXPRESSION ILLUSTRATED BY CASES OF INVOLUNTARY LAUGHING AND WEEPING.

Dr. Charles K. Mills, Philadelphia, read this paper, saying that the main object of his paper was to demonstrate the probable cerebral mechanism of emotional expression, or, in other words, to prove the existence in one of the basal ganglia of a reflex, emotive or mimetic center related by connecting tracts to both exciting and inhibiting emotive centers in the cerebral cortex, and by emissive tracts to the centers for facial expression in the bulb, and to spinal centers for movements of the limbs concerned with the expression of emotion. He referred to a series of cases, some without and some with necropsy, to illustrate the arguments advanced. He exhibited photographs illustrating various phases of the subject, as the appearance of pain and anguish in the face, and the facial contortions in cases of involuntary weeping and howling; the expression in a case in which, because of bilateral lesions, the patient's expression was that of a perpetual grin; and a case in which the ability of the patient to contract the muscles on either side of the face voluntarily was present, while only the left side was set in motion in the act of laughing.

Some of the conclusions which he believed to be warranted by the study of these cases were: (1) In the thalamus or lenticula or in some undetermined region at the base of the brain a center for mimetic expression was located, although von Bechterew's view as to the thalamic center could not be regarded absolutely demonstrated; (2) this center was connected with a prefrontal cortical evoking center, and also with an inhibitory motor center; (3) the pathway from the prefrontal center was probably by way of the anterior limb of the internal capsule and one of the segments of the lenticula; (4) the pathway for the motor inhibitory center was probably by way of a tract at or near the knee of the capsule; (5) the emissive tract from the basal emotive center to the nuclei of the bulb and spinal cord was probably independent of the pyramidal tracts, although passing in close contiguity with this tract; (6) the cortical centers, evoking and inhibitory, concerned with emotional expression were more highly developed in the right cerebral hemisphere than in the left, in this way contrasting with the speech centers with their high development in the left hemicerebrum.

Dr. Morton Prince stated that attempts had been made by psychologists and neurologists to solve this problem, but it was so large and had so many aspects that it was a very difficult one. We must assume that all automatic movements were organized somewhere. The only question was where. Recently, Roussi had undertaken to re-investigate this whole problem both by experimentation on animals and from the clinical material found in Dejerine's and Marie's and other clinics in Paris. His work seemed very careful. He had come to the conclusion that the sole function so far established in the optic thalamus was sensory. He contradicted strongly the location of movement of any kind, whether mimetic or otherwise, in the optic thalamus. He had gone over the work of others pretty carefully, and, if his experiments stood, the optic thalamus would have to be eliminated as a center.

Dr. M. Allen Starr, New York, stated that he hoped that in the review of the literature Dr. Mills would give due credit to Dr. Seguin, who had published a paper which had been reprinted in his Opera Minora, and which contained almost every fact that Dr. Mills had presented. Clinically, he had been accustomed to divide cases of disturbances of emotional expression into two separate and distinct classes: First, the cases to which Dr. Seguin had called especial attention, of emotional disturbances connected with the pons varolii with or without involvement of the optic thalamus. Second, the cases that show emotional disturbance where the lesion was above the level of the crus where we have distinct hemiplegia, usually transient and passing off, leaving a lack of emotional control. That Dr. Ernest Sachs, whose studies on the optic thalamus were more thorough and convincing than any one else's in the last ten years, was present, and he thought it would add to the proceedings to invite Dr. Sachs to express his opinion as to the emotional centers in the optic thalamus.

Dr. Ernest Sachs, New York, said that during the past year and a half he had been engaged on some experimental work on the thalamus in the laboratory of Sir Victor Horsley, and some of this work might throw light on the question Dr. Mills had raised. There was evidently a distinct connection between the thalamus and the cortical facial center, for a lesion in the lower part of the lateral nucleus of the thalamus led to degenerations which go exclusively to the facial center, while the region dorsal to this sent fibers to the arm and leg centers. Furthermore, his work had shown that only the lateral part of the thalamus, that portion outside of the lamina interna, was connected with the cortex. The median and anterior nuclei were only connected with the caudate nucleus. The center median seemed to be only an association center among the thalamic nuclei and gave origin to some of the fibers of the posterior longitudinal bundle. The hypothalamus was not intimately connected with the thalamus, as heretofore supposed, but bore a much closer relation to the globus pallidus of the lenticular nucleus. As to the functions of the thalamus, much still had to be done, but certain points already seemed to be disproved. There was no evidence of any lachrymation arising from thalamic stimulation, as the Russians under v. Bechterew had claimed. Screaming, when it did occur, was pronounced only when the termination of the fillet fibers were irritated, and this should probably be interpreted as meaning that the current had produced a strong sensory impulse in response to which the animal screamed. The motor phenomena in the median part of the thalamus were mainly concerned with movements of the eyes usually conjugate in type, and this might be a superior peduncle response. He thanked Dr. Starr for his kindness in giving him an opportunity to speak.

Dr. J. J. Putnam, of Boston, said that he wished particularly to corroborate Dr. Starr's opinion. He had seen the bulbar patients act in the manner described by Dr. Starr, yet with no particular emotion. There was a fairly close resemblance in some stages between the movements which went with pleasure and those which went with grief, and one seems to be an intensification of the other. In the other class of cases where one saw a lesion with somewhat similar state the emotion was certainly much more strongly present and yet the patient was not conscious of pleasure or the reverse.

Dr. Hugh T. Patrick, Chicago, stated that this group of symptoms was more apt to occur in bilateral or multiple lesions. One of the principal elements was probably a lack of inhibition. It was nearly always possible to start one of these patients to laughing or crying by appropriate suggestion. One might talk to one of these patients in a sympathetic or lugubrious tone and he would begin to weep, and change to the jocular vein and he would begin to laugh.

Dr. Charles L. Dana, New York, said that he had studied lately the syndrome of optic thalamus lesions and that we knew now quite definitely what happened in ordinary optic thalamus lesion. It seemed to him that the old idea that the thalamus had something to do with expression was certainly more correct and certainly not unless the thalamus was injured on both sides. Acute lesions of the pons were associated with explosive laughter and crying. In his experience the location of the lesion when there was an explosion of laughter or crying had been almost always in the lenticular zone. The disturbance was often associated with disturbance of speech, as certain forms of jargon aphasia. So far as clinical and pathological investigations went, we had to point to the lenticular zone and pons as being the places which were anatomically localized as the most important seats for the mechanism of expression.

Dr. F. X. Dercum, Philadelphia, said that he had had under observation for some time past a case of motor aphasia with forced laughter; the patient laughed almost continuously, as some of our cases of bulbar palsy laughed. Here, again, we had reason to infer that we had possibly a lesion of the lenticular zone.

Dr. C. K. Mills said that he had already in his notes given full recognition and consideration to the writings of Seguin and Roussi. His own views were that the part the mechanism had in evoking the control of emotion was a complicated one; that a center, concentrated part of the neural mechanism, did reside at the base of the brain. He was not sure that it was in the thalamus. He was inclined to think that it was in the lenticular zone. With regard to whether emotion itself preceded the evoking of the emotional expression, his own cases, at least several of them, seemed to indicate that emotion, as we ordinarily understood it, did not precede the expression of painful or of pleasurable emotion in either weeping or in laughter.

Friday, May 28, Afternoon Session.

The meeting was called to order at 3 p.m. by Dr. Pearce Bailey, vice-president.

Dr. L. Pierce Clark presented patients, illustrating his paper,

A CONTRIBUTION TO OUR KNOWLEDGE OF THE IDIOPATHIC OTALGIAS AND THEIR SURGICAL TREATMENT: TIC DOULOUREUX OF THE FACIAL NERVE WITH CURE BY PHYSIOLOGICAL EXTIRPATION OF THE GENICULATE GANGLION.

Dr. L. Pierce Clark and **Dr. Alfred S. Taylor**, New York, presented this communication. Dr. Clark said that it had been fairly well proved that the facial was a mixed nerve, that its sensory ganglion was the geniculate ganglion and its sensory root the pars intermedia of Wrisberg. This ganglion was of the spinal type and, therefore, eligible to inflammations, as herpes zoster; and degenerations, as tic douloureux. It was probable that not a few neuralgic conditions of the ear were derived from disease of the sensory part of the facialis, and not, as commonly supposed, of reflex origin from the teeth, nose or throat. The neuralgic area of the facial as concerns otalgia was the anterior wall of the external auditory canal and the skin just in front of the ear. This was also supplied by a branch of the trifacial, but, if all other parts of the trifacial were unaffected, pain in this area doubtless has its seat in the facial. When all other antineuralgic measures had been exhausted without relief it was logical to assume that, as in trifacial neuralgia, operation should be done, consisting, in case of the facial, of physiological extirpation of the geniculate ganglion by cutting the pars intermedia. A patient of his, Mrs. E. T., aged twenty-eight, had begun in February, 1907, to have stabbing pain just in front of the left ear which later became of daily occurrence and lasted two to three hours. Ear, eye, throat and general medical examination had given negative results, hence the conclusion had been reached that the pain was a true tic douloureux of the geniculate system, and physiological extirpation of the geniculate ganglion had been recommended. This had been performed by Dr. Alfred S. Taylor, whose report follows.

Dr. Taylor said that the patient had been referred to him by Dr. Clark with the request that the geniculate ganglion be removed, but researches on the cadaver had showed this to be impracticable on account of the danger of doing injury to surrounding structures; therefore it was decided to cut the sensory root in the posterior fossa of the skull. An osteoplastic flap was turned down in the occipital region, the dura incised with the base of the flap toward the middle and its upper border just below the lateral sinus; the cerebellum was retracted and the pars intermedia exposed at the internal auditory meatus and cut. The result was a complete facial palsy and deafness of the left ear, but the patient had complete relief of pain. The facial palsy was slowly improving and hearing had been completely restored.

Dr. L. Pearce Bailey, New York, presented a patient with recovery after operation for the removal of a tumor of the spinal cord.

THE REFLEXES IN HYSTERIA.

Dr. Philip Coombs Knapp, Boston, said that Babinski had claimed that hysteria was incapable of modifying the tendon reflexes, and some of his followers had also contended that the skin reflexes were not altered. This was contrary to the old teaching that the skin reflexes were diminished over the anesthetic area, and that the tendon reflexes were often exaggerated on the paralyzed side in hysterical hemiplegia. He had studied the reflexes in 100 cases of hysteria in which there had been a diminution of sensibility on one side of the body. He took exceptions to Babinski's claim that such a hemi-anesthesia was due to unconscious suggestion by the physician. He had found some exaggeration of the tendon reflexes in 86 cases, and considerable exaggeration in 41, a greater percentage than was found in normal persons. He felt very skeptical as to the existence of true ankle clonus, loss of knee-jerk or Babinski's reflex due to hysteria. The reflexes had been found to differ on the two sides in 76 cases. In 57 cases the tendon reflexes had differed on two sides, the knee-jerk differing in 37 and the ankle-jerk in 30. In 38 cases the tendon reflex had been greater on the anesthetic side, in 19 on the sound side. The plantar reflex had been absent in only 2 cases out of 24, and the abdominal reflex had been diminished or lost in the anesthetic side in 24 cases out of 51. These cases, therefore, showed that hysteria apparently modified both the skin and tendon reflexes.

Dr. Morton Prince, Boston, heartily agreed with Dr. Knapp in his statement in reference to Babinski's theory. He did not believe that hysteria was merely a matter of suggestion or that the anesthesia met with was entirely an imaginary condition. There was no question that in hysteria there was a great increase of suggestion and that, therefore, you could produce as many states as you pleased. You could produce anesthesia to modify it, you could draw the boundary line wherever you pleased, but that did not show that there was not an essential anesthesia in hysteria.

Dr. Charles L. Dana, New York, said he had made tests on the reflexes in hysteria and had come to conclusions quite opposite to those of Dr. Knapp. Many years ago he had reported a study of 13 cases of true hysteria, and in all of them he had found the reflexes lessened on the paralyzed hemi-anesthetic side. Since then he had noticed the same condition. He had always taught that in hysterical states the knee-jerks were rather diminished on the affected side.

Dr. F. X. Dercum, Philadelphia, said that he found the reflexes very commonly unequal on the two sides. Placing the legs in exactly the same position in the majority of his cases, he had found the knee jerks plus. Dr. Dana had found the opposite. The difference might be due to our methods of examination.

Dr. Hugh T. Patrick, Chicago, said that this matter of reflexes was ordinarily very difficult. We had all seen at different times a difference in the knee-jerks in the normal person, the difference depending upon the amount of clonus which the patient passed into the quadriceps at the time we struck the tendon. The same thing carried a bit further had satisfactorily explained the difference in deep reflexes in hysteria.

Dr. C. K. Mills, Philadelphia, said that he agreed entirely with Dr. Knapp in his presentation of this subject.

Dr. Knapp said that the statement that the reflexes might be made to vary with the method of our examination was far-fetched. The reflexes did vary according to the method employed, but many of us certainly were capable of examining the reflexes and determining whether they differed on the two sides in an ordinary case of hemiplegia and whether they were diminished in the case of tabes. That was something we were supposed to know as part of our art as neurologists.

(To be continued.)

Book Reviews.

The Production and Handling of Clean Milk, including Practical Milk Inspection. By Kenelm Winslow, M.D., M.D.V., B.A.S. (Harv.), formerly Instructor in Bussey Agricultural Institute and Assistant Professor in the Veterinary School of Harvard University; author of a textbook on Veterinary Materia Medica and Therapeutics; chairman of the Committee on Milk of the Washington State Medical Association, etc.; and

Essentials of Milk Bacteriology. By H. W. Hill, M.D., Minnesota State Board of Health Laboratories; Chairman of the Committee on Laboratories of the American Public Health Association; formerly Director Boston Board of Health Bacteriological Laboratory. New York: William R. Jenkins Company.

In this the second edition to appear in a little over a year, many chapters have been rewritten and expanded in order to keep pace with the rapid advances in the knowledge of this subject during this time. The aim of the first edition was to provide a working guide for those engaged in the production of clean milk. The scope has been extended in this revision in order to supply to veterinary, agricultural and dairy students and to health officers a textbook on practical milk inspection and dairy hygiene. While especially designed for these classes, it will well repay the perusal of every physician who feeds milk to his patients. There is much of it which every physician ought and every pediatrician must know. If more of them did, the struggle to get clean milk would be easier.

The authors take up first the general relation of bacteria to milk and the composition of milk and cream and their products. They then consider the feeding of cows for milk, their care and housing, and the handling of milk and cream. The cost of the production and distribution of clean milk is then taken up. They emphasize the facts that a good product is worth a good price, that the producer cannot be expected to conduct his business at a loss, and that the public must be made to understand that a good, clean milk costs more than a bad, dirty milk. Milk inspection is gone into in considerable detail, as is the bacteriological examination of milk. Finally, in an appendix, dairy cows, the construction of barns and milk houses, milking machines, the tuberculin test and other matters are considered.

The work should appeal to a large variety of readers and is worthy of a large sale.

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THE CITY BOY AND THE COUNTRY BOY.

In a recent newspaper article, Dr. John H. Finley, president of the University of the City of New York, expresses his belief that in the future the country-bred boy will not have the marked advantages over the city-bred boy that he has hitherto been supposed to possess. He points out that, although a city life presents dangerous possibilities of evil temptation not to be found in a country village, these are not necessarily irresistible or destructive and that, with increased understanding of the importance of hygiene, the improvement of sanitation and the development of facilities for athletic education, there is no longer any intrinsic reason why the city boy should grow up without the physical vigor which has been the country boy's principal asset in the struggle for supremacy. Moreover, he suggests that, since the large cities are of relatively recent growth, the rural population no longer has the extreme numerical preponderance over the urban which was doubtless a factor in the proportionately large number of country boys who have won success in the cities. These reasons seem good, but deserve criticism.

In the first place must be considered the change which a century has produced in the composition of our population. A hundred years ago the inhabitants of city and village alike were largely of native stock, the descendants of English-speaking immigrants prior to the Revolution. To-day the population of the large cities consists, on the one hand, of survivors of this native stock, whether city or country bred, who have successfully established and maintained themselves under the conditions of urban life, and, on the other, of foreign-born immigrants and their children, mostly of Latin or Semitic race. In the country districts, on the contrary, the native survivors represent the less enterprising portion of the original population, except in the West, where they became themselves immigrants and intermarried to some extent with the Scandinavian and Teutonic immigrants who form most of the foreign-born element of the population. In the cities, therefore, the native stock now composes a class in whom natural selection combined with continued possibilities of education tend to establish immunity to the evil effects of city life and thereby to remove the former handicap of the city-bred. Such a class is more likely to be able to meet competition from the country now than it was fifty years ago. Moreover, it seems that the foreign immigrants coming to our large cities possess a high degree of adaptability to the conditions of city life, and their descendants are likely to make good future showing in comparison with those of country breeding. Thus far, then, Dr. Finley's conclusions seem in part correct, but it is to be remembered that in the West the rural inhabitants, both native and foreign, still represent a very large preponderance, and probably the most vigorous portion of the total population. From them will doubtless come, for some time, a considerable number of the boys who are to succeed in the competition of the cities, both East and West.

A second consideration suggested by Dr. Finley's article is of the part played by endemic disease in determining the relative efficiency of different parts of our national population. In the cities, syphilis and gonorrhea are more extensively diffused and probably do more damage than in the country districts. Tuberculosis, though declining under modern methods of treatment and control, is still a scourge among overcrowded city dwellers. In certain sections, notably in the South, malaria is prevalent and impairs the health and efficiency of all classes of the population. Another disease, whose extent is not generally realized, but which incapacitates large numbers of people, is uncinariasis. According to a recent article in *McClure's Magazine*, describing the ravages of this disease in Mississippi, Alabama, Georgia, Florida and the Carolinas, it is estimated that probably two million individuals, over a fortieth of our total population, are infected with the hookworm and are thereby rendered not only a menace to others, but themselves unfit for the competitions of civilization. These people, who are mostly of the class known as poor whites, are country dwellers, crippled survivors of an original, native, English-speaking stock. Their cure and restoration to activity is one of the regenerative economic possibilities of medical science. Another problem which lies outside the field of medicine is that of the Southern negroes, who, in spite of emancipation, form a large class of the country population not on a footing to compete with city inhabitants of any kind.

It appears, then, that many deeper considerations, sociologic, medical and ethnologic, underlie the more superficial question of the relative capacity for success of the country boy and the city boy. Doubtless the cities will continue to be recruited by the more vigorous of the country bred. Doubtless the slow process of elimination, which we miscall race suicide, will continue to weed out those in both city and country who are unadaptable to their surroundings. The problems of success involved in the progress of American civilization are not to be solved off-hand; they can be worked out only by the experimental method in our great laboratory of racial and individual evolution.

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THE TREATMENT OF PELLAGRA.

Dr. Jean Nicolaidi read a paper at the recent International Medical Congress at Budapest, giving the results of his researches on the changes taking place in the nature of the soil produced by polymineralized radio-active solutions having a progressive acid reaction, and the use of this serotherapy in pellagra.

After detailing his animal experiments, undertaken with Bordon, on the action of complex mineralized injectable solutions containing increasing doses of phosphoric acid and glycerophosphoric acid, Nicolaidi, incited by various papers which have appeared on the therapeutic properties attributed to radio-activity, was led to radio-activate by Jaboin's procedure the abovementioned solutions. A second series of animal experiments demonstrated that, with a radio-activated solution, an increase in the metabolic activity, body weight and number of red blood corpuscles was more marked.

During the last year, Nicolaidi has given over seven hundred injections of the polymineralized radio-active solution, with a progressive acid reaction, a reaction that he designates by *A*, *B* and *C* radio-acidity. He obtained favorable results in cases of denutrition, demineralization, cachexia and certain infectious diseases. These effects appear to be due to changes in the humoral reaction, to changes in the nature of the soil and to a re-establishment of the balance of the physiological functions.

Nicolaidi brings confirmation to these data by reporting quite a number of cases communicated to him by physicians who resorted to this radio-acid serotherapy in the treatment of an essentially infectious and toxic disease, with cachexia, namely, pellagra. The results communicated are very favorable, and even several complete cures are reported.

These essays are of much interest, especially when the gravity and supposed incurability of pellagra are recalled, particularly at the time when the mental disturbances develop and the considerable ravage that the disease causes in countries where it is endemic.

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THE NEW HARVARD DENTAL SCHOOL.

The opening last week of the new building of the Harvard Dental School, with the enrollment of a larger entering class than ever before in the history of the institution, marks the beginning of an era in dental medical education. The science and the art of dentistry have been developed almost wholly in America, and American dentists are recognized throughout Europe as standing at the head of their profession in knowledge and craftsmanship. No small share of the credit for this progress and reputation belongs to Harvard, which established the first dental school in this country and has since maintained it at a high standard of efficiency. The new equipment of this school should make possible the continuance of its work not only in the technical training of students, but also in further promotion of the study of dentistry, a science whose application has contributed so beneficently towards improving the health and comfort of mankind.

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MEDICAL NOTES.

Cholera in Holland and Korea. — Just as Asiatic cholera was suppose to have been suppressed in the Netherlands comes report of several new cases from villages near the Hague, and also of two in the province of Utrecht. In Korea, the disease is at present epidemic. There are said to be over five hundred cases in Seoul alone, all, however, among the natives.

International Food Congress. — The second International Food Congress is to be held in Paris from Oct. 17 to Oct. 24. The object of this Congress is to discuss methods for the repression of adulteration in food, chemical products, drugs, essential oils, aromatic substances, mineral waters and other articles in any way used as food. The

Society of the White Cross of Geneva is forwarding this movement for the wider exploitation of the evils of food adulteration and the means of repression.

Literary Remains of Dr. George M. Beard. — If any readers of this notice have in their possession, or know of the whereabouts of, any books, pamphlets, magazine articles, manuscripts or letters written by the late Dr. George Miller Beard, of New York, will they kindly communicate with his daughter, Grace Alden Beard, 675 Flatbush Ave., Brooklyn, N. Y.? The object of this request is to obtain all possible data preliminary to a republication of some of Dr. Beard's neurological and psychological writings, and to a presentation of certain manuscripts never before printed.

National Conference on Pellagra. — A National Conference on Pellagra will be held in Columbia, S. C., on Nov. 3 and 4, 1909, under the auspices of the South Carolina State Board of Health. Physicians and sanitarians are cordially invited to unite in a study of the disease. Although the malady is of comparatively recent recognition in this country, it has already manifested itself in seventeen states and is assuming the proportions of a national public health problem. The conference will include not only addresses, papers and discussions, but a number of clinical cases will be presented, thus affording an excellent opportunity for a study of the disease. Information may be obtained by writing Dr. C. F. Williams, secretary of the Board.

Amebic Dysentery in California. — A recent report of the Public Health and Marine-Hospital Service states that during the past eight months, December to July, 1909, fifty-five cases of amebic dysentery were admitted to Marine Hospital in San Francisco, sixteen of which are supposed to have originated in California. — *Medical Record.*

BOSTON AND NEW ENGLAND.

Acute Infectious Diseases in Boston. — For the week ending at noon, Oct. 5, 1909, there were reported to the Board of Health of Boston the following cases of acute infectious diseases: Diphtheria 42, scarlatina 20, typhoid fever 46, measles 19, smallpox 1, tuberculosis 47.

The death-rate of the reported deaths for the week ending Oct. 5, 1909, was 16.41.

Boston Mortality Statistics. — The total number of deaths reported to the Board of Health for the week ending Saturday, noon, Oct. 2, 1909, was 183, against 212 the corresponding week of last year, showing a decrease of 29 deaths and making the death-rate for the week 15.32. Of this number 93 were males and 90 were females; 181 were white and 2 colored; 121 were born in the United States, 59 in foreign countries and 3 unknown; 41 were of American parentage, 114 of foreign parentage and 28 unknown. The number of cases and deaths from infectious diseases reported this week is as follows: Diphtheria, 35 cases and 2 deaths; scarlatina, 20 cases and 1 death; typhoid fever, 36 cases and 3 deaths; measles, 8 cases and 0 deaths; tuberculosis, 54 cases and 19 deaths; smallpox, 1 case and 0 deaths. The deaths from pneumonia were 9, whooping cough 1, heart disease 15, bronchitis 2 and marasmus 2. There were 17 deaths from violent causes. The number of children who died under one year was 44; the number under five years 53. The number of persons who died over sixty years of age was 46. The deaths in public institutions were 61.

Of the above the following were non-residents: Consumption: 1 case and 6 deaths. Typhoid fever, 3 cases and 1 death.

Deducting deaths of non-residents, the total is 158. The corrected death-rate is then 13.22.

Bequests. — By the will of the late Albert T. Whiting, the following, among other institutions, are beneficiaries: The Boston Home for Aged Couples, $5,000; the Industrial School for Crippled and Deformed Children, $2,500; and the Boston Children's Hospital, $1,500.

Smallpox Case in Boston. — Last week a case of smallpox was discovered in Boston in a recent Greek immigrant. The patient was isolated at the South Department, and all persons with whom he had come in contact, so far as could be ascertained, were vaccinated by the Board of Health.

NEW YORK.

Tuberculosis Sanitarium for Newburgh. — Ex-Governor Benjamin B. Odell, Jr., has announced his intention to erect and present to the city of Newburgh, where he resides, a tuberculosis sanitarium. The buildings, which are to cost about $60,000, will be commenced immediately on property in a desirable location on the outskirts of Newburgh which has been purchased for the purpose.

Columbia Students' Earnings. — In his report for the last fiscal year, Paul C. H. Holter, secretary of the committee for employment of students at Columbia University, gives the total amount earned by the students during the year as $100,223.38. For male students the average earnings were $209.97. For medical students these were $75.78. The report showed that many opportunities were offered to such students as chose to avail themselves of them.

Removal of Stomach; Gain in Weight. — William B. Smith, of Brooklyn, whose entire stomach was removed at the Bushwick Hospital, on Sept. 9, is reported to have gained ten pounds in weight since the operation, and to have expressed himself as feeling better now than at any time in the last five years. The patient has given his consent to be presented before the Surgical Congress meeting in Utica next month.

Amendment to Labor Law. — An amendment to the labor law which goes into effect on Oct. 1 reduces from eighteen to sixteen years the age of a child who may be permitted to operate machinery. No child under sixteen shall be allowed to operate either a freight or passenger elevator, and no person under the age of eighteen to operate an elevator running at a speed of over two hundred feet a minute. No male person under eighteen years old or woman under twenty-one years is to be permitted to clean machinery while in motion.

Closing of Sea Breeze Fresh Air Home. — The Sea Breeze Fresh Air Home at Coney Island, maintained by the Association for Improving the Condition of the Poor, was closed for the season on Oct. 1. Since the early part of September those entertained at the home have been elderly women and mothers with children below the school age or those in too poor health to return to school. During the past summer 22,687 women and children have been taken to Sea Breeze for one-day stays, and 4,171 for stays averaging between eight and ten days.

Bequests. — By the will of the late Adolf Scheftel, of New York, $13,000 is bequeathed to local charitable institutions and societies. Of this amount, $3,000 goes to the Hebrew Benevolent Orphan Asylum, and $2,500 each to the Mount Sinai Hospital and the Montefiore Home and Hospital for Chronic Invalids.

Of $20,000 left to charity by the will of the late Adolf Krebs, of New York, the German Hospital and Dispensary receives $5,000; Mount Sinai Hospital, $5,000; the Montefiore Home and Hospital for Chronic Invalids, $2,000; and St. John's Guild, $500.

Strauss Pasteurizers for Cassel Typhoid Epidemic. — The city of Cassel, Germany, which for some time has been suffering from a severe epidemic of typhoid fever, said to have been caused by infected milk, has now accepted the assistance of Nathan Strauss, of New York, in overcoming the disease. At the beginning of the outbreak, Mr. Strauss, who was then in Carlsbad, telegraphed to the mayor, offering to send two hundred home pasteurizers from Heidelberg. On Sept. 27, this offer was accepted by telegraph, and the pasteurizers were immediately sent to Cassel.

A Novel Method of Suicide. — On Oct. 2 a well-known citizen of Long Island City, Borough of Queens, attempted suicide in a novel manner, slashing himself five times in the abdomen with pieces of a mirror. He had become despondent in consequence of suffering from ill-health for some time, and in the temporary absence of his daughter, who had been carefully watching him, broke a hand-glass into pieces and with one of the sharp jagged fragments inflicted five deep wounds. He was removed as promptly as possible to St. John's Hospital, but little hope for his recovery was held out by the surgeons there.

Bequests to Hospitals. — By the will of Miss Phebe Ann Thorne, of New York, who died at Millbrook, N. Y., on Aug. 25, $100,000 is bequeathed to charity. The Women's Hospital, New York, the Society for the Relief of the Ruptured and Crippled and the Home for Incurables each receive $10,000: $5,000 for general purposes and $5,000 for the endowment of a free bed in memory of the mother of the testatrix, Lydia Ann Thorne; $10,000 goes also to the New York Skin and Cancer Hospital, while the Manhattan Eye and Ear Hospital, the New York Eye and Ear Infirmary and the Colored Home and Hospital (now known as the Lincoln Hospital) each receive $5,000. Ten thousand dollars is left to the American Museum of Natural History, to be so appropriated as in some manner to perpetuate the memory of her father, Jonathan Thorne.

A Chain of Drug Stores. — A plan contemplated for some time, to operate a chain of drug stores on the same system as the United Cigar Stores, has now been practically inaugurated by officers of the cigar corporation, who have opened three drug stores under the management of a company which is regarded as a subsidiary concern of the United Cigar Stores Company. This subsidiary company, the head of which is stated to be an expert pharmacist, was incorporated in the state of New Jersey, with an authorized capital of $10,000, and the three stores mentioned are respectively in Flushing, Borough of Queens, New York City, Jersey City and Perth Amboy, N. J. Negotiations are said to be under way for the leases on various New York stores to be absorbed. The United Drug Consumers' Company, which was incorporated under the laws of New York with a capital of $1,000, it is understood, has another plan for organizing the individual stores. With both of these corporations in the field, many independent drug store owners are perfecting a plan of their own which is also expected to operate throughout the city; while a committee of the New York Retail Druggists' Association has been appointed to investigate the plans for the new companies.

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Current Literature.

New York Medical Journal.
Sept. 25, 1909.

1. **Shoemaker, J. V.** *Abrus Precatorius in Epithelioma.*
2. **Robinson, B.** *Prevention and Cure.*
3. **Koenig, C. J.** *Symphysis by Immediate Prothesis.*
4. **Pomeranz, H.** *A Plea for the Advancement of the Study of Medical History.*
5. **Samuels, A.** *Uncontrollable Uterine Hemorrhage.*
6. **Stinson, C. M.** *Case of Tetanus with Recovery Following Injection of Antitetanic Serum into the Sciatic Nerve.*
7. **Sanders, W. E.** *Perforating Ulcers of the Feet in Two Brothers, Caused by Productive and Obliterative Endarteritis.*
8. **Garrison, F. H.** *Physiology and the Second Law of Thermodynamics*

The Journal of the American Medical Association.
Sept. 25, 1909.

1. ***Lambert, A.** *The Obliteration of the Craving for Narcotics.*
2. ***Kerr, J. W., and Stimson, A. M.** *The Prevalence of Rabies in the United States.*
3. **Knopf, A.** *A New Type of Phthisiophobia.*
4. ***Putnam, J. J.** *A Side Light on the Origin of Tabes, Drawn from a Comparison of Tabes with Spinal Degeneration as Seen in Certain Anemias and Kindred Disorders of Nutrition.*
5. ***Spalding, A. B.** *The Feeding of Immature and Atrophic Infants.*
6. **Hecht, D'O.** *A Teratoma of the Hypophysis Cerebri.*
7. **Iglauer, S.** *The Clinical Value of Radiography of the Mastoid Region.*
8. **Jackson, C.** *Bronchoscopy and Esophagoscopy; Gleanings from Experience.*
9. **Orendorf, O.** *Clinical Manifestations of Adenoids in Adults.*
10. **Loeb, H. W.** *Suppurative Accessory Sinus Diseases in which Intranasal Operation is Indicated.*
11. **Kyle, D. B.** *Acute Inflammations of the Accessory Sinuses. Symptoms, Diagnosis and Treatment.*
12. **Coakley, C. G.** *Diseased Conditions Involving Accessory Sinuses in which External Operation is Indicated.*

1. Lambert claims to have discovered a combination of drugs which, when properly used, will cure a case of morphine, cocaine or alcohol habit within five days. His prescription is: Tincturæ belladonnæ, gm. 62, ℥ii; fluid extracti xanthoxyli, fluid extracti hyoscyami, aa gm. 31, aa ℥i. While this is being given, the patients suffer from obstinate constipation rather than the profuse diarrhea that is common with the withdrawal of morphia. Some narcotic has to be given in small lessening doses, together with strong cathartic pills. He describes his treatment in detail. It is interesting and seems worth trying.

2. Kerr and Stimson made a thorough inquiry into the prevalence of rabies in the United States and find that there were 111 deaths in human beings reported from 30 states in 1908. It was reported in 534 localities in animals. Nearly 1,500 persons took Pasteur treatment on account of exposure. The disease is disseminated throughout the eastern three quarters of the country and is unknown in the Rocky Mountain and Pacific slope regions. Suppression of rabies in man means the elimination of the disease in lower animals.

4. Putnam has seen many cases with symptoms almost exactly resembling tabes due to physiologic fatigue or to anemia, and thinks from the analysis of the subject that the argument for a special toxin as the essential cause of the disease, while not proved or to be asserted as positive for every case, is nevertheless a very strong one and deserves especial recognition as a guide to treatment.

5. Spalding shows great common sense in emphasizing the importance of the proper care and food of the mother in pregnancy that she may give birth to a fully developed and nourished child. He lays the occurrence of immature and atrophic infants to (1) hereditary taints, (2) anemia or toxemia in the mother during pregnancy, and (3) improper care of the pregnant mother. [E. H. R.]

Annals of Surgery.
September, 1909.

1. ***Phelps, C.** *An Analytical and Statistical Review of One Thousand Cases of Head Injury.*
2. **Davis, J. S.** *Skin Grafting at the Johns Hopkins Hospital.*
3. **Henderson, M. S.** *Cyst of the Round Ligament of the Liver.*
4. ***Downes, W. A.** *Hour-Glass Stomach.*
5. **Smith, E. A.** *Diagnosis and Treatment of Carcinoma of the Cecum.*
6. ***Gibbon, J. H.** *Resection of the Colon for Cancer and Tuberculosis.*
7. **Luckett, W. H.** *Large Phagedenic Ulcer of Abdomen.*
8. ***Coley, W. B.** *Inguinal Hernia in the Female.*
9. **Muller, G. P.** *Surgical Aspects of Chronic Hypertrophic Arthritis.*

1. Phelps, in this article, considers one thousand cases of head injury with reference to mental state, temperature, pulse and respiration. He states that loss of consciousness immediately succeeding cephalic injury always results from diffuse cerebral contusion; if it is succeeded by a conscious interval, however brief, there is some form of intracranial hemorrhage. If primary unconsciousness is permanent or greatly prolonged, there is either a severe cerebral lesion or complicating hemorrhage. Temperature affords the most distinctive indication of the lesion. If there is unconsciousness after a lapse of hours, with a temperature elevated but one or two degrees, hemorrhage of some profusion without serious cerebral lesion is indicated, but if the temperature be higher and increasing, with possible recessions, a visceral lesion is indicated. A low primary temperature gives no assurance of the result, but an elevation above 100° is unfavorable, as it approaches the limit of 102°. None of the patients with a primary temperature of 102° or a subsequent temperature of 105° recovered. Variation of the two axillary temperatures was the rule, but there was no relation between the high temperature side and the side of injury. Primary pulse *per se* offers no basis for prognosis, but 75% of the cases with primary pulse of 66 or less and temperature of 97° or less died. The blood pressure in cases with evident increased intracranial tension was increased in a small minority, diminished in a greater number, and normal or slightly diminished in the great majority. Respiration is ordinarily not characteristic, and, regardless of issue, is often

primarily normal. It is of diagnostic importance, however, if shallow, with cyanosis and pulmonary edema, or if it suddenly ceases or becomes progressively retarded to one or two per minute. Either indicates a subdural hemorrhage into one or both posterior basal fossæ.

4. Downes reports a case of hour-glass stomach upon which he did a gastro-gastrostomy with excellent result. He then considers the frequency, etiology and diagnosis of this condition and the indications for and relative merits of several operations for its relief.

6. Gibbon presents 10 cases of resection of the colon, 8 for carcinoma and 2 for tuberculosis. He considers the site of incision, the inadvisability of primary resection and anastomosis in the presence of acute obstruction, the relative merits of end-to-end and lateral anastomosis, the question of abdominal drainage, the causes of operative mortality and the relation of ultimate mortality to limited excision of the growth. In a case with obstruction he strongly advocates primary drainage of the bowel, because the patient's resistance is reduced, owing to intestinal absorption, and because, with primary anastomosis, necrosis and leakage are apt to occur, owing to the poor condition of the bowel.

8. Coley devotes considerable attention to the etiology of oblique inguinal hernia in the female. He considers the question from an embryologic viewpoint and believes that the canal of Nuck is a normal, not an anomalous, development, and that this hernia is due to the persistance of this peritoneal process. In 353 cases he has encountered 2 with hernia of the bladder and 1 with multiple cysts of the sac. He adds to the literature 2 cases of interstitial hernia, 1 falling under the head of inguino-properitoneal in Göbell's classification, 1 under the head of inguino-interstitial. Coley reviews the literature on this subject. Owing to his experience that in infancy and early childhood cure occasionally results spontaneously or with use of a truss, he rarely operates before the third or fourth year. After this period, he advises operation in practically all cases. He has operated upon 353 cases of inguinal hernia in the female with no deaths and only two relapses. His operation is a modified Bassini, the round ligament is always separated and saved, but not transplanted. In Coley's series of 353 cases of inguinal hernia in the female and 1,776 in the male, he finds the direct type almost five times commoner in male than female adult cases. If children, in whom the condition is very rare, be included, direct hernia is exactly five times as common in the male as in the female. [T. W. H.]

Surgery, Gynecology and Obstetrics.

September, 1909.

1. *Hartwell, H. F., Streeter, E. C., and Green, R. M. *Treatment of Sepsis with Bacterial Vaccines. A Report of Ninety-Seven Cases.*
2. Jackson, J. N. *Membranous Pericolitis.*
3. Morison, R. *A Case in which Both Patellæ were Sutured on the Same Day for Double Fracture, with the Notes of a Displacement which is against Bony Union.*
4. *Brewer, G. E., and Leggett, N. B. *Direct Blood Transfusion by Means of Paraffin-Coated Glass Tubes.*
5. Martin, G. A. *Remarks on the Treatment of Inoperable Carcinoma of the Uterus.*
6. *Allen, D. P. *Late Manifestations of Intracranial Hemorrhage of Traumatic Origin.*
7. *Auspach, B. M. *Hemorrhagic Uteri; Myopathic Uterine Hemorrhage.*
8. Dolby, R. V. *Rôle of the Lymphoid Tissue in Inflammatory Conditions of the Alimentary Canal — a Suggestion.*
9. Novack, E. *The Hormone Theory and the Female Generative Organs.*

1. Hartwell, Streeter and Green report on the treatment of surgical sepsis by vaccines, and conclude that the success or failure in treatment seems to depend on the condition of the case and the severity of the infection rather than on the variety of the infecting organism. Most of their cases were given autogenous vaccines. Intervals of three days were taken arbitrarily between inoculations, and cases seemed to do best with this interval. In general infections, doses of smaller amount were given more frequently. Reactions with malaise, chill, temperature and even nausea were rare and followed by no ill results. The vaccines seem to be of varying value, evidently doing much good in some cases and none in others. In general infections, no claims to benefit can be made. Vaccines should be employed in puerperal infections which do not immediately respond to routine treatment. They are of much value in that type of sepsis which has remained stationary for some time.

4. Brewer and Leggett have had almost uniformly successful results in direct transfusion, using paraffin-coated small glass tubes. Tubes can be easily made of varying size and shape, are dropped into boiling paraffin and rapidly dried in the air, leaving a thin coating both outside and inside the tube. The outer coat may be scraped off to facilitate handling. The tube is notched at either end to allow of a ligature being applied after the tube is in the vessel. Thirty-one dogs were transfused with these tubes. Three dogs only died from too rapid transfusion, causing over-distension of the right heart. This can be prevented by digital pressure on the donor's artery. In only one case did blood clot in the tube, and this was apparently due to the extremely small caliber of the tube. In one case, clotting occurred in the vein near the extremity of the tube where the paraffin had been rubbed off accidentally. The writers believe that this is the simplest method of transfusion so far proposed; that it can be done by the ordinary surgeon without previous training; that considerable time is saved also.

6. Allen writes an interesting and practical article on the late manifestations of intracranial hemorrhage of traumatic origin and appends twenty-eight illustrative cases. The article is worthy of study, but too long to be reviewed here.

7. Auspach illustrates his article with brief histories of sixty-five cases, to which are added fifteen more, all with report of specimens. [E. H. R.]

Deutsche Medizinische Wochenschrift. No. 34.

Aug. 26, 1909.

1. Neumann, A. *The Pathology and Treatment of Circulatory Disturbances in the Mesenteric Vessels.*
2. v. Kóssa, J. *A Method for the Demonstration of Blood.*
3. v. Torday, A., and Klier, A. *New Tests for Bile Pigment in the Urine.*
4. v. Ritoók, S. *A Contribution on Functional Heart Diagnosis.*
5. *Vas, B. *The Question of Lordosis and Albuminuria.*
6. Sándor, S. *The Treatment of Penetrating Lung Wounds.*
7. Näcke, P. *Genuine Congenital Homosexuality and Pseudo-Homosexuality.*
8. Middeldorpf, and Moses, S. *A Case of Mikulicz's Disease (Symmetrical Affection of the Lachrymal and Salivary Glands).*
9. Blos, E. *The Operative Treatment of Hay Fever.*
10. Baron, L. *The Cutting of Windows in Plaster Bandages.*
11. Popowski, N. *The Technic of the Wassermann Reaction.*
12. Fermi, C. *Immunization of Mice against Rabies by Means of Normal Nerve Substance, and the Action of Carbolic Acid on Rabic Virus.*
13. Portner, E. *Advances in the Domain of Urology.*

5. A recent theory advanced by Jehle claims that the cause of orthostatic albuminuria rests upon a lordosis, and he went so far as to claim that this form of albuminuria did not exist without the lordosis. Vas, in this work, has taken up this claim of Jehle and endeavored to prove or disprove it. His results do not permit of such a positive statement as Jehle makes. Vas finds that about as many of his cases of orthostatic albuminuria are free from lordosis as have it. Also, he shows that lordosis is very frequent without albuminuria. [C. F., Jr.]

Münchener Medizinische Wochenschrift. No. 36.

Sept. 7, 1909.

1. *Much, H. *Nastin, a Reactive Fat-Body Considered in the Light of the Science of Immunity.*
2. *Kreuter. *The Sero-Diagnosis of Echinococcus Infection.*
3. Reiche, F. *The Senile Type of Infectious Meningitis.*
4. Lissaüer, M. *Histologic Studies of Hypertrophic, Insufficient Heart Muscle.*

5. *SEIBERT, A. *Camphor and Pneumococci.*
6. HAYWARD, E. *Further Clinical Experience with the Use of "Scharlach R" and Its Components to Hasten the Epithelialization of Granulating Surfaces.*
7. ALTVATER, W. *Clinical Experiments and Experiences with Bromglidine.*
8. HERMKES, C. *Psychic Infection.*
9. RIMPAU, W. *Typhoid Agglutination in Infection with the Bacillus Enteritidis of Gärtner.*
10. KNEISE, O. *The Question of Extra-Peritoneal Cæsarian Section.*
11. BENDIG, P. *An Endemic of Gonorrhea in School Children Spread by a Salt Bath.*
12. SUDECK, P. *A Case of General Infection with Pyocyaneus.*
13. STEIN, P. *Significance of Diastolic Murmurs in the Third Left Intercostal Space for Diagnosis of Dilatation of the Aorta.*
14. VOGT, E. *Observations with the Staining Method of Demetrius Gasis for Tubercle Bacilli.*
15. POTOLSKY, C. *The Vibration Electrode.*

1. The writer has made many tests with nastin on leprous, tuberculous, luetic and other patients. Nastin is a neutral fat, or lipoid, closely allied to substances found in certain acid-fast bacilli. The work shows that after treatment with nastin, complement-binding substances can be demonstrated in the blood of lepers.

2. Kreuter's results confirm those of other observers, showing that complement-binding occurs when the fluid from a hydatid cyst is mixed with the serum of a patient having the disease, and also that an alcoholic extract of the dried contents of a cyst gives a similar reaction, that a watery extract gives no reaction, and that the above-mentioned antigens do not bind the complement when mixed with normal serum.

5. In a series of twenty-one cases of pneumonia treated with large injections of camphor oil, the writer made the following remarkable observations: That no crisis occurred in any case, but that gradual improvement followed immediately after the first injection and continued to recovery in every case, and that "the duration of the disease was considerably shortened." The dose of camphor oil recommended is 2.16 gr. every twelve hours until pulse, temperature and respiration are normal, and then once in twenty-four hours until the lungs are clear. No untoward results were noted. The age of the youngest patient was four years and of the oldest, seventy-two years. Detailed reports of the cases are not given, nor is the average duration of the disease under this treatment stated. [G. C. S.]

BERLINER KLINISCHE WOCHENSCHRIFT. No. 37.
SEPT. 13, 1909.

1. EYCHMÜLLER, H. *The Cardiac and Vascular Action of Digalen on Man in Health and in Disease.*
2. BASHFORD, E. F. *Cancer in Men and in Animals.* (Conclusion.)
3. STERN, K. *Ileocolic Invagination of a Sarcoma of the Ileum.*
4. SCHINDLER, C. *The Importance of Involuntary Muscle Contractions and Their Dependence on Atropine in the Pathology and Treatment of Gonorrhea in Man.*
5. HATANO, S. *Combined Methods of Staining for Tubercle Bacilli.*
6. SCHMIDT, H. E. *The Röntgen Treatment of Nervous, Cutaneous Itching.*
7. LIESKE, H. *Morbid Disturbance of Mental Activity, Insanity and Psychasthenia in Their Relations to Civil Right.*
8. GILLET. *Technical Novelties.*
9. *RITTER, C. *Total Anesthesia by Intravenous Injection of Cocaine.*

9. While investigating the sensitiveness of the abdominal organs, Ritter observed that the accidental injection of some cocaine into a mesenteric vein produced total general anesthesia in the animal. He then performed a series of experiments on dogs, and found that the injection into a superficial vein of 10 ccm. of a 1% solution or 5 ccm. of a 3% or 5% solution of cocaine would produce complete anesthesia with muscular relaxation, though consciousness and the power of motion were fully preserved. This anesthesia lasted fifteen minutes to half an hour or more, and its duration could be extended by repeated injection. No death occurred and no subsequent untoward results except occasional transitory motor incoordination. The possibility of applying this procedure in human surgery as well as in animal experimentation is of obvious importance. [R. M. G.]

DEUTSCHES ARCHIV FÜR KLINISCHE MEDIZIN. BD. 97.
HEFT. 1 AND 2. AUGUST, 1909.

1. SCHREIBER, J. *Albuminuria from Palpation of the Abdomen.*
2. HAMBURGER, W. W. *Contributions to Arteriosclerosis of the Gastric Arteries.*
3. *STRAUB, H. *Acute Addison's Disease after Thrombosis of Both Suprarenal Veins.*
4. *GLAESSNER, K. *Clinical Experiments on the Capillary Pulse.*
5. THACHER, H. C. *The Influence of Cardiac Stasis on Blood Distribution in the Organs.*
6. *DIETLEN, H. *The Clinical Importance of Changes in the Circulatory System, Especially Variation in Size of the Heart, in Various Postures (Prone and Erect).*
7. *WEBER, A. *The Treatment of Severe Anemias with Human Blood Transfusion.*
8. CHRISTEN, T. *A Criticism of Albert Müller's "Systolic Volume."*
9. MÜLLER, A. *An Answer to the Above Criticism of Dr. Christen.*
10. *Book Notices.*

3. Straub reports a case of cancer of the stomach with metastases in which symptoms of acute Addison's disease appeared twelve days before death. First came a brownish-red pigmentation of the skin, most marked on the dependent parts; three days later, asthenia and adynamia were marked, and psychic manifestations were noted — first excitement, later apathy. The blood pressure fell steadily from 120 mm. to 99 mm. during these twelve days. Death was sudden. Autopsy showed carcinoma of the pylorus, lungs, pleuræ and the retroperitoneal tissue surrounding the hilus of the left kidney. The left renal and both suprarenal veins were plugged with thrombi.

In the suprarenal bodies, metastasis was slight and confined to the cortices. In both, all the veins were filled with thrombus masses, the capillaries were abnormally full and the parenchymal cells were necrotic. These anatomical changes had the appearance of being about twelve days old.

It is evident, concludes the writer, that complete obstruction of both suprarenal veins may be followed in a few hours or days by symptoms of Addison's disease. This case supports the theory that suprarenal products enter the general circulation through the veins rather than the lymphatics. It is surprising that the blood pressure did not fall to a lower level; possibly the extreme dyspnea from the pulmonary metastases kept it up. The mental disturbance may well have been due to retained toxic substances which the adrenals are said to produce.

4. Glaessner has observed and studied capillary pulse in a surprising variety of affections, viz., Aortic insufficiency, arteriosclerosis, acute and subacute nephritis, cerebral embolism, exophthalmic goiter, pneumonia, tabes, neurasthenia and poisoning from atropine, pilocarpine and sausages. The phenomenon, he finds, depends upon one or more of three factors, viz., blood pressure (Type I), the condition of the arteries (Type II), and the condition of the capillaries (Type III).

The purest example of Type I is seen in aortic insufficiency, where the pulse tension is a little high, the vessels themselves are normal and there is great fluctuation between systole and diastole. In Graves' disease, there is the combination of increased blood pressure and dilated blood vessels, large and small. Capillary pulse in nephritis is also of this type; tension is very high, the arteries are generally somewhat constricted, and differences in blood volume cannot manifest themselves until the blood reaches the capillaries.

To Type II belongs the pulse of arteriosclerosis, where the path from left ventricle to capillaries is an inflexible tube.

The case of belladonna poisoning was the best example of Type III — capillary pulse depending upon atony of the peripheral vessels. In this group are placed also the cases of pneumonia (convalescence), hemiplegia and neurasthenia.

6. Dietlen has made an interesting study of the effect on the heart of changes in position of the body. He presents an analysis of sixty-six medical cases, representing all degrees of cardiac decompensation as well as the normal heart. In the cases with normal hearts, he found a decrease in size of the organ to be almost constant when the patient got up and stood on his feet. It was more constant in youth than in older persons. The average decrease was 20.5 ccm. In cardiac insufficiency, this decrease in size was slight or absent, varying inversely with the degree of decompensation. Similarly, the change from the prone to the erect posture markedly accelerated the pulse-rate in normal hearts, the pulse volume diminished, and there was a fall in systolic with a rise in diastolic blood pressure. In broken compensation, these effects were lessened, the amount of difference following closely that in size of the heart.

Such an examination as that outlined by this work furnishes the physician with a reliable index of the functional power of the heart. No cardiac examination is exhaustive unless it is made with the patient on his back as well as on his feet. In general, the former is the position of choice.

7. Weber reports seven cases of severe primary anemias which he treated by blood transfusion. His method was as follows: About 25 ccm. of blood obtained by aspiration from the median basilic vein of a healthy young man was stirred for ten minutes with a glass rod in a sterile vessel and then filtered. This defibrinated blood was used as a stock solution, the maximum dose of which was 5 ccm. It was injected from a syringe into the median basilic vein of the patient.

All of the cases received at least three transfusions during a period of six weeks or more. There was some improvement in all; the percentage of hemoglobin and the number of red corpuscles increased, petechiæ and other hemorrhages were absorbed, and symptoms were lessened. Untoward effects after transfusion were frequent, but of short duration and not serious; the most common symptoms were moderate fever (sometimes ushered in by chill), headache, ringing in the ears, malaise and dyspnea. In one case, transfusion was followed by a febrile period of four days, with a small area of consolidation in the right lung — probably an infarction.

The writer used only 5 ccm. of blood at each transfusion, believing that beneficial effects are due, not to increase in blood volume, but to stimulation of the blood-making cells of the bone marrow. In his cases, there was always after injection a great increase in the number of blasts. He claims for this treatment simplicity, safety and better results than can be obtained with arsenic or larger transfusions. [L. D. C.]

Bulletino delle Scienze Mediche.

August, 1909.

1. *Vannini, G. *Chronic Primary Articular Rheumatism and Bodily Metabolism.*
2. Sabbatani, L. *Animal Carbon as an Antidote for Strychnine.*
3. *Lussana, F., and Roli, V. *Effects of Chloroform, Ether and the Other Anesthetics on the Respiration of Tissues.*

1. Vannini reports a series of careful metabolic determinations in a patient with chronic primary progressive articular rheumatism, considering successively the intestinal absorption, the urine, the equilibria of proteid, water, ash, chlorine, sulphur, phosphorus, sodium, potassium, calcium and magnesium. He compares his data with those obtained from similar experiments by other investigators, and concludes that retention of the substances examined is always present in such cases, particularly of phosphorus, calcium and magnesium, and is probably a factor in the etiology of the profound modifications of bony tissue which occur in this disease.

3. The authors report a series of experiments made to determine the protoplasmic action of various narcotics on animal tissues and conclude: (*a*) That chloroform and chloral markedly depress the respiration of liver and muscle cells, and, therefore, by their gaseous exchange, have a depressive protoplasmic action. (*b*) That ether, on the contrary, increases the respiratory exchange of tissues, and may, therefore, be regarded as a protoplasmic cellular stimulant. (*c*) That alcohol, in moderate doses, does not diminish the respiration of the tissues. They believe that these conclusions favor the preference of ether to chloroform as an anesthetic. [R. M. G.]

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Obituaries.

WILLIAM THAYER SMITH, M.D.

Dr. William T. Smith, dean of the Dartmouth Medical School, died at his home in Hanover, Sept. 17. He had been in ill health for some time, but his final illness was a short one so that not all of his immediate family were with him at his death.

Dr. Smith was born in New York, March 30, 1839, the son of Rev. A. B. Smith, who was the seventh president of Dartmouth College. He was graduated from Yale College in the class of 1860, and eighteen years later took his degree in medicine at Dartmouth and the following year from the University of New York. He later became connected with the Dartmouth Medical School, first as assistant lecturer in anatomy and physiology, then as associate professor, and, finally, as professor of physiology from 1885 to 1907. He received the honorary degree of LL.D. from Dartmouth in 1897 and had been Dean of the Medical School since 1896. He held membership in various medical and scientific societies and was, undoubtedly, one of the most widely known and respected members of the profession in New Hampshire.

The funeral services were held in Hanover, partly at the college church, where seats were reserved for the faculty and medical students and the nurses of the hospital. On this occasion his former colleague and friend, Prof. Edwin J. Bartlett, delivered an appreciative address. He said in part:

" Dr. Smith was an ardent teacher and his interest went out to the man as well as the lesson, so that he has left an indelible impress for good upon every medical student who has passed through the school. Hundreds now hold him in affectionate and sorrowful remembrance. To the hospital, during its sixteen years of operation, he has been a tower of strength, and especially during those stringent years of difficult maintenance. He has of late been interested in legislation tending to ameliorate the relations of lawyers and the medical witnesses in the courts, work that will fail of its purpose unless another takes it up. Most important has been his relation to that strong and honorable body, the State Medical Society of New Hampshire. All its honors he has held, — as a member of the House of Delegates, for years one of its councillors, its vice-president, and its president; but even greater has been the honor of his personal power and influence in bringing it to its present estate. I am told by another of its presidents that he accomplished what it seemed that no other could in its effective reorganization and that a strong motive in bringing many to its annual meetings has been the pleasure of renewed friendship with him."

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BARNARD DOUGLAS EASTMAN, M.D.

Barnard Douglas Eastman, M.D., died at his home in Topeka, Kan., on Sept. 11.

He was born in North Conway, N. H., Feb. 5, 1836; graduated from the College of Physicians and Surgeons, New York City, and a few months after graduation was appointed assistant physician at the New Hampshire Asylum for the Insane at Concord, from which he went to the Government Hospital for the Insane, Washington, D. C. He was an assistant at the latter institution for seven years, and made a special study of hospital plans and construction. He went from Washington to the superintendency of the Worcester Lunatic Hospital and during his service of seven years the new Worcester Insane Hospital at Lake Quinsigamond was planned and built and was occupied for two years. The superintendency at Worcester was resigned March 1, 1879, and he was elected superintendent of the State Asylum at Topeka, Kan., and assumed his duties there April 1, 1879. He was in charge of the Topeka institution, with the exception of two short intervals due to political conditions, for eighteen years.

Dr. Eastman was professor of psychiatry and professor of materia medica and therapeutics in the Kansas Medical College from the founding of that institution until 1907, when failing health necessitated his retirement. He was an able administrator, an authority on hospital construction, and his aim in all his work was to benefit the state and improve the condition of the insane.

In 1865, Dr. Eastman was married to Caroline W. Ely, of St. Johnsbury, Vt., and three children were born of this union. His first wife died in 1899, and in 1902 he married Maria L. Warren, who survives him. He is also survived by one child, Philip, who is managing editor of the Topeka *Daily Capital*, the leading newspaper of the state.

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GEORGE EDWARD POST, M.D.

Dr. George Edward Post, the son of the eminent New York surgeon, the late Dr. Alfred E. Post, died in Beirut, Asia Minor, on Sept. 30. For many years he was the head of the medical school of the Syrian Protestant College at Beirut, and he was also surgeon to the Johanniret Hospital there. Dr. Post was born in New York City on Dec. 17, 1838. He was graduated from the New York Free Academy, now the College of the City of New York, in 1854, and took his master's degree three years later. He was graduated from the medical department of the University of the City of New York, where his father was professor of surgery, in 1860, and also studied for a time in the Union Theological Seminary, New York. He was the author of numerous works on medical, botanical and Biblical subjects, and these won for him many honors and decorations from European governments. He was also member of the Linnæan Society of London, the Torrey Botanical Club of New York, and the Botanical Society of Edinburgh, as well as the New York Academy of Medicine.

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Miscellany.

A TESTIMONIAL OF DR. E. H. BRIGHAM.

At the next annual meeting of the Boston Medical Library, the Assistant Librarian, Dr. Edwin Howard Brigham, will tender his resignation; illness necessitates this step on his part and compels the Corporation to accept it.

Dr. Brigham has served the Library as Assistant Librarian without interruption since its foundation, thirty-four years ago. His whole time has been devoted to the work and he has given his best services for its development in spite of the fact that the salary which the Library has been able to pay him has scarcely sufficed for the support of his family and has permitted no accumulation for his advancing years.

It seems fitting, therefore, that the members of the Library and such of the medical public as have profited by his services should bear witness to their appreciation in some substantial manner.

A committee representing the Library has been appointed to receive contributions for this purpose. Of the committee, Dr. J. Collins Warren is the chairman, and other members are Drs. S. B. Woodward, W. H. Prescott and David Cheever. It is proposed to raise a considerable fund, the income to be paid to Dr. and Mrs. Brigham, and the principal to revert to the Library as a memorial to be known as the Edwin Howard Brigham Book Fund. Contributions may be sent to the Treasurer, Dr. W. H. Prescott, whose address is 285 Marlboro Street.

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PLAGUE AMONG GROUND SQUIRRELS.

In the Public Health Reports for Aug. 27, 1909, appears an article on "Plague among Ground Squirrels in Contra Costa County, California." In 1894, plague began to spread from Central Asia. Since then it has been carried to practically all parts of the world, including the Pacific Coast of the United States, where the disease has appeared in man, in rats and in ground squirrels. The infection in ground squirrels has so far appeared in Contra Costa and Almeda counties, California, chiefly in the former, where, up to Sept. 10, 1909, 220 plague-infected squirrels had been found. The Public Health and Marine-Hospital Service is attempting to destroy all the ground squirrels in the involved area, or at least to so reduce them in number that the plague infection among them will die out of its own accord. This article gives a detailed account of plague infection among the ground squirrels in Contra Costa County, and the relation of squirrel plague to plague in man. It also describes the means employed for the destruction of the squirrels, and gives a serial list of infected squirrels with the location where found.

RECORD OF MORTALITY

FOR THE WEEK ENDING SATURDAY, SEPT. 25, 1909.

CITIES.	Reported deaths in each.	Deaths under five years.	CITIES.	Reported deaths in each.	Deaths under five years.
New York	—	—	Waltham	7	4
Chicago	600	229	Pittsfield	7	—
Philadelphia	440	162	Brookline	5	1
St. Louis	—	—	Gloucester	2	1
Baltimore	173	63	North Adams	4	2
Cleveland	—	—	Northampton	6	4
Buffalo	—	—	Chicopee	1	1
Pittsburg	—	—	Medford	4	2
Cincinnati	—	—	Beverly	4	1
Milwaukee	—	—	Leominster	0	—
Washington	—	—	Hyde Park	4	1
Providence	—	—	Melrose	2	0
Boston	205	62	Newburyport	4	2
Worcester	42	12	Revere	4	1
Fall River	38	19	Westfield	5	3
Cambridge	30	6	Woburn	2	0
Lowell	51	22	Peabody	—	—
New Bedford	30	19	Marlboro	5	3
Lynn	21	8	Attleboro	3	1
Springfield	20	5	Adams	3	2
Lawrence	35	19	Clinton	1	0
Somerville	16	4	Gardner	3	2
Brockton	7	4	Milford	3	0
Holyoke	18	7	Watertown	2	2
Malden	8	1	Plymouth	—	—
Chelsea	6	1	Southbridge	3	—
Newton	7	1	Weymouth	—	—
Salem	11	6	Framingham	—	—
Haverhill	11	4	Wakefield	—	—
Fitchburg	11	7	Webster	—	—
Everett	6	2	Arlington	1	—
Quincy	9	4	Greenfield	4	—
Taunton	11	6			

LIST OF CHANGES OF STATIONS AND DUTIES OF COMMISSIONED AND OTHER OFFICERS OF THE PUBLIC HEALTH AND MARINE-HOSPITAL SERVICE FOR THE SEVEN DAYS ENDED SEPT. 22, 1909.

WHITE, J. H., surgeon. Granted seven days' leave of absence from Sept. 18, 1909, under paragraph 189, Service Regulations.

LAVINDER, C. H., passed assistant surgeon. Granted three days' leave of absence en route to station.

GOLDBERGER, JOSEPH, passed assistant surgeon. Reassigned to duty in the Hygienic Laboratory, to date from Oct. 31, 1908. Sept. 16, 1909.

FROST, W. H., passed assistant surgeon. Granted one day's leave of absence, Sept. 13, 1909, under paragraph 191, Service Regulations.

WARNER, H. J., assistant surgeon. Granted five days' leave of absence from Sept. 25, 1909.

BROWNE, R. W., acting assistant surgeon. Granted sixteen days' leave of absence from Sept. 16, 1909.

BURLAND, B. W., acting assistant surgeon. Granted fourteen days' leave of absence from Sept. 13, 1909.

CURLEY, C. P., acting assistant surgeon. Granted twenty-one days' leave of absence from Sept. 25, 1909.

DUFFY, FRANCIS, acting assistant surgeon. Granted three days' leave of absence from Sept. 21, 1909.

DYNAN, N. J., acting assistant surgeon. Granted sixteen days' leave of absence from Sept. 13, 1909.

LIGHT, S. D. W., acting assistant surgeon. Granted thirty days' leave of absence from Oct. 5, 1909.

MARSH, W. H., acting assistant surgeon. Granted thirteen days' leave of absence from Oct. 2, 1909.

MASON, WM. C., acting assistant surgeon. Granted five days' leave of absence from Oct. 4, 1909.

ROBERTSON, HERMAN, acting assistant surgeon. Granted fourteen days' leave of absence from Sept. 17, 1909.

SEAVEY, L. T., acting assistant surgeon. Granted three days' leave of absence from Sept. 15, 1909, under paragraph 210, Service Regulations.

SMALL, E. M., acting assistant surgeon. Granted fourteen days' extension of annual leave on account of sickness from Aug. 30, 1909.

THORNTON, M. J., acting assistant surgeon. Granted thirteen days' leave of absence from Oct. 1, 1909.

WETMORE, W. O., acting assistant surgeon. Granted one day's extension of annual leave on account of sickness, Sept. 4, 1909.

RYDER, L. W., pharmacist. Granted four days' leave of absence from Sept. 21, 1909, under paragraph 210, Service Regulations.

CARLTON, CHARLES G., pharmacist. Relieved from duty at Cairo, Ill., and directed to proceed to Detroit, Mich., and report to the medical officer in command for duty and assignment to quarters. Sept. 17, 1909.

ILTIS, G. W., pharmacist. Upon the arrival of Pharmacist Charles G. Carlton, directed to proceed to Boston, Mass., and report to the medical officer in command for duty and assignment to quarters. Sept. 17, 1909.

KEEN, W. H., pharmacist. Granted three days' leave of absence from Sept. 7, 1909, under paragraph 210, Service Regulations.

APPOINTMENT.

THE Massachusetts State Board of Insanity has recently appointed as Assistant to the Executive Officer Dr. Daniel H. Fuller, former superintendent of the Adams Nervine Asylum and previously for six years assistant physician at the McLean Hospital.

SOCIETY NOTICE.

AT the annual meeting of the American Electro-Therapeutic Association, held at New York, Sept. 28, 29 and 30, 1909, the following officers were elected: Dr. Thos. D. Crothers, Hartford, Conn., President; Dr. T. H. Cannon, Baltimore, Md., and Dr. F. E. Peckham, Providence, R. I., Vice-Presidents; Dr. J. W. Travell, New York, Secretary; Dr. R. J. Nunn, Savannah, Ga., Treasurer.

The next annual meeting is to be held at Saratoga early in September, 1910.

RECENT DEATHS.

DR. JOHN J. BABINGTON, of Brooklyn, N. Y., died on Sept. 28, from cardiac disease. He was a native of New York City and fifty-four years of age and was graduated from the Long Island College Hospital in 1894.

DR. E. MILLS BAKER, a well-known physician of Jersey City, N. J., died suddenly on Sept. 26. He was born in Irvington, N. J., on Jan. 9, 1861, and was graduated from the medical department of New York University in 1890, after which he served as interne at Christ Hospital, Jersey City.

BOOKS AND PAMPHLETS RECEIVED.

Organic and Functional Nervous Diseases. A Text-Book of Neurology. By A. Allen Starr, M.D., Ph.D., LL.D., Sc.D. Third edition, thoroughly revised. Illustrated. New York and Philadelphia: Lea & Febiger. 1909.

A Text-Book of Surgery. By George Emerson Brewer, A.M., M.D. Second edition, thoroughly revised and much enlarged. Illustrated. New York and Philadelphia: Lea & Febiger. 1909.

A Practical Treatise on Diseases of the Skin. By James Nevins Hyde, A.M., M.D. Eighth and revised edition. Illustrated. Philadelphia and New York: Lea & Febiger. 1909.

Annual Report of the Board of Health of the Department of Health of the City of New York for the Year ending Dec. 31, 1907. New York. 1908.

Surgical Diagnosis. By Edward Martin, M.D. Illustrated. Philadelphia and New York: Lea & Febiger. 1909.

Short Talks with Young Mothers on the Management of Infants and Young Children. By Charles Gilmore Kerley, M.D. Second edition, revised and enlarged. Illustrated. New York and London: G. P. Putnam's Sons. 1909.

Blood Transfusion. By J. D. S. Davis, M.D., LL.D. Reprint.

Report of a Case of Urethral Transplantation. By J. D. S. Davis, M.D., LL.D. Reprint.

Leucopathies Métastases, Albuminuries et Ictères Leucopathiques. Par le Dr. Emile Feuillié. Paris: G. Steinheil. 1906.

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Original Articles.

POST-OPERATIVE ACUTE DILATATION OF THE STOMACH.*

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INTRODUCTION.

THE following is a clinical report of six[1] cases of post-operative acute dilatation of the stomach which I have observed, with a discussion and conclusions on the etiology of acute dilatation, based upon clinical and experimental work.

Considering the fact that there are less than two hundred and fifty cases of acute dilatation of the stomach reported in the literature, and the majority of these post-mortem reports, it is evident that this relatively frequent and always serious complication has not received the recognition and study which it merits.

The importance of a better understanding of the condition is evident when it is remembered that this condition is not one encountered by a few observers engaged in any special line of work, but may occur in the course of practically any medical or surgical illness.

Synonyms. — Acute dilatation of the stomach is variously known as acute gastroduodenal dilatation, gastromesenteric ileus, arteriomesenteric obstruction of the duodenum, acute gastric paresis, etc. These terms are not strictly synonymous, but have been given to the same clinical condition by different observers, each attempting to embody in the name his own idea of the etiology.

History. — If one will take the trouble to get the eighteenth volume of Guy's Hospital Reports he will find there a clear and concise description of the condition, written by Hilton Fagge in 1873. Rokitansky described the condition of acute dilatation of the stomach, due as he believed to compression of the duodenum by the root of the mesentery, in 1842; and Brinton recognized the condition, and believed it to be of paralytic origin, in 1859; but Fagge was the first to write a concise description of the condition, of the symptoms, diagnosis and treatment, — a description that, although written nearly forty years ago, is not surpassed in clearness in the literature of to-day.

Definition. — Acute dilatation of the stomach must be distinguished from the numerous class of cases of chronically dilated stomach met with in every-day practice in which there is organic stenosis of the pylorus due to tumor, scar contraction, etc. These patients exhibit variable symptoms, depending upon the nature of the obstruction, but mostly associated with the inability of the stomach contents to pass the pylorus. When the stomach becomes distended it relieves itself by vomiting, and these patients may go on for months or years with proper medical or surgical care, and do not die as a result of over-distention of the stomach of itself.

Acute dilatation of the stomach, on the contrary, is not a disease, but a complication, a condition coming on suddenly, "out of a clear sky," in the course of almost any medical or surgical disease. It may not be associated with any preceding stomach malady. Indeed, associated pyloric stenosis is rare, the obstructing factor in acute dilatation as evidenced by clinical and post-mortem facts being usually in the duodenum. The course of acute dilatation is rapid, with final circulatory and respiratory failure and death due to the enormous dilatation itself.

Occurrence. — The lesion may occur in the course of acute infectious diseases, as pneumonia or typhoid; in chronic wasting diseases; after injuries to the base of the skull and injuries to the spine (Selby, Conner); in Pott's disease; in scoliosis (Kelling); after eating a large meal (Boas, Kundrat); after excessive drinking. It is reported to have occurred in normal individuals after a paroxysm of laughter (Schmorl). But, according to Nicholl's analysis of the 217 reported cases, it occurs more often after surgical operations under general anesthesia than from any other cause. Although more than two thirds of such cases occur after laparotomy, and most often after operations on the biliary tract, the complication may occur after operations not connected or associated with the abdominal viscera, as after operations on the extremities.

The youngest case in Nicholl's analysis occurred in a child of nine months. Lucas has recently reported a case in a child of eleven months. The oldest case reported was in a patient of seventy-four years. It occurs most frequently between the ages of twenty and thirty, and slightly more often in females.

Of the cases reported in this paper, the youngest was twenty-two and the oldest forty; there were three men and three women. The earliest manifestation of symptoms was twenty hours after operation; the longest, sixty-six hours — four being thirty-six hours after operation. The operations were all abdominal, — cholecystectomy for stones, 1; gastro-enterostomy for pyloric stenosis, 1; bilateral salpingectomy for acute salpingitis, 1; bilateral salpingectomy for hydrosalpinx, 1; appendectomy for acute appendicitis, 2.[2]

Report of a Typical Case. — (See Case I.)

The following case is a typical one: I was called in the evening to see a woman of thirty-one, who was said to be much distended, vomiting frequently, and with a rising pulse. Thirty-six hours before she had undergone a laparotomy for pelvic peritonitis, in which both tubes were removed. She had recovered well from the operation and there had been no post-anesthetic vomiting. Twenty-four hours after operation her condition was satisfactory, although the abdomen presented slight general distention, for which an enema was ordered. Six hours later, when I saw her in the evening, she was pale, sweating, breathing rapidly, the pulse weak and irregular, ranging from 150 to 160. She was apparently in great distress, frequently regurgitating a small amount of greenish fluid and gas. There was marked general distention. The enema given in the afternoon had not brought away any appreciable amount of gas. Another enema given while I was there brought away considerable gas, but at the end of an hour she had not improved. She had continued vomiting small amounts. A third enema was productive of excellent results and then the diagnosis became apparent because it could be seen. A rounded tumor filled the epigastrium, extending down on the left to just below the umbilicus. The abdomen was flat below this. The tumor was smooth, tympanitic, not tender. A stomach tube was passed. As the tube entered the stomach there was a rush of gas and dark green fluid that escaped from the tube with such force that the fluid stained the ceiling. I should say that there was not over two pints of fluid, but the amount of gas was excessive. The stomach was washed out with warm water. The patient expressed immediate relief and in half an hour she was asleep. An hour later the pulse was of good quality and its rate about 100. The epigastric tumor had disappeared. She had no further trouble and made an uneventful recovery.

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[1] Another case observed since this paper was written is reported at the end (v. Case VII).

[2] Case VII, observed since this paper was written, occurred on the fifth day after operation for extensive peritonitis (appendix) in a girl of thirteen years.

My impressions from this experience were that acute dilatation of the stomach is not always recognized; that unless recognized and promptly treated it may result in death. This experience also suggested certain inquiries. Why does this complication occur after some operations and not after others, and what is the mechanism of the process when it does occur?

The object of this study, therefore, is twofold.

1. To urge the necessity of keeping in mind a relatively frequent complication, for treatment of this condition to be successful must be prompt.

2. To study the etiology and mechanism of the process, for rational preventive treatment will depend upon a clear understanding of the etiology.

This study is based upon the clinical observations of six cases of post-operative dilatation which it has been my fortune to see and treat in the private practice of Dr. F. B. Lund, as well as upon experimental work on living animals and on the cadaver, and upon a study of the literature.

ETIOLOGY.

Since the time of Rokitansky, in 1842, there have been supporters of the view that acute dilatation of the stomach is primarily a mechanical process, due to compression of the duodenum at the point where it is crossed by the root of the mesentery, and the relation between acute dilatation of the stomach and so-called mesenteric ileus has never been clearly understood.

On the other hand, the paralytic nature of the condition, notably of some interference with the vagus nerves, has been considered since the time of Brinton.

Before discussing the mechanism of acute dilatation it will be well to understand certain details (1) in the normal anatomy of the stomach and duodenum and to review certain physiological facts that may have a bearing on the subject under disussion, and also to consider (2) the postmortem findings in these cases; (3) the clinical facts; and (4) certain authentic experimental facts.

ANATOMICAL AND PHYSIOLOGICAL FACTS.

The innervation of the stomach. — The motor nerves of the stomach are the vagus nerves. According to the generally accepted teaching, stimulation of these nerves increases peristalsis. Paralysis of these nerves causes a cessation of peristalsis. It should also be noted that the motor nerves of the small intestine are derived largely from the right vagus nerve through Auerbach's plexus.

The inhibitors of gastric peristalsis are the sympathetic fibers from the dorsal cord through the solar plexus, and the splanchnic nerves.

Stimulation of these nerves lessens peristalsis. Paralysis of these nerves leaves the action of the vagus nerves unopposed, and tends to increase peristalsis. The splanchnic nerves, acting through the sympathetic, are inhibitors of intestinal peristalsis.

The relation of the root of the mesentery to the duodenum. — The transverse portion of the duodenum or the pre-aortic portion is firmly fixed by two agents, by fibrous tissue between it and the aorta and vena cava and vertebral column behind and by the root of the mesentery containing the superior mesenteric artery in front which presses this part of the duodenum against the aorta, thereby lessening the caliber to what is known as the isthmus of the duodenum. This point is distal to the papilla of Vater, the point of entrance of the biliary and pancreatic ducts. Kelling has noted that under normal conditions this portion of the duodenum has not a round, but a distinctly flattened, circumference owing to the pressure of the overlying mesentery and its artery. Kemp has called attention to another factor in holding the transverse portion of the duodenum very firmly in place, namely, a band of fibrous tissue which descends from the left crus of the diaphragm. Albrecht and Glennard have noted that there is normally a slight hindrance to the outward flow of duodenal contents at the point where the pressure of the root of the mesentery comes. This slight obstruction is normally overcome two and one-half to three hours after a meal when the stomach pours out the chyme into the duodenum, which stimulates the duodenum to contract and overcome the obstruction.

The duodenal sphincter of Ochsner should be mentioned. This he described as a marked thickening of the circular muscular fibers at a point below the entrance of the common duct. "This arrangement of circular muscle fibers serves the purpose of a sphincter to facilitate the process of mixing the bile and pancreatic juice in the duodenum which has been so perfectly described by W. B. Cannon."

The orifices of the stomach. — The pylorus opens and closes intermittently, while under normal conditions the cardiac orifice remains closed.

Post-mortem facts. — In one third of the autopsy cases (Nicholls) the duodenum as well as the stomach was found dilated, with compression of the duodenum distal to the papilla, either by the root of the mesentery, by a distended stomach or by a kink. Pyloric obstruction was found only five times in 120 autopsies.

In several of the cases the duodenum was found dilated, but mesenteric obstruction was not recorded.

Clinical facts. — Clinically, in the reported cases the vomitus was almost invariably bile-stained, but not fecal. This was true even in those cases which came to autopsy and in which no mesenteric compression was recorded. There was "bilious" vomiting in all of the cases reported in this series.

Experimental facts. — That traction on the root of the mesentery in the cadaver will occlude the duodenum has been shown by Albrecht, Conner and others. That an over-distended stomach will either by its own weight or by crowding the bowels down into the pelvis, thereby making traction on the mesentery, occlude the duodenum has been shown by Kemp. On the other hand, Kelling, Braun and Seidel, Carion and Hallion have shown experimentally that division of the vagus nerves in dogs results in enormous gastric dilatation. I have substantiated all of these experiments.

Conclusions. — Careful consideration of the foregoing post-mortem, clinical and experimental facts leads to the following conclusions: (1) In acute dilatation of the stomach the site of downward obstruction is usually distal to the papilla of Vater, but very high up in the small bowel; (2) that a dilated stomach favors the production of mesenteric compression and that mesenteric compression favors the production of dilatation. Furthermore, the conclusion of Carion and Hallion seems reasonable, namely, "if section of the vagus nerve is capable of engendering complete atony and permanent dilatation of the stomach, it is hardly disputable that effects of the same nature could be determined by paralysis or inhibition of the corresponding nerve centers without any previous alteration in the stomach itself."

The etiological problem. — Why does the stomach under certain conditions become enormously dilated and unable to empty itself? Is it a process due to mechanical obstruction or due to paralysis or to both? Does the dilated stomach secondarily produce obstruction in the duodenum, or does the duodenum become obstructed and result in gastric dilatation? Which is the cause and which is the effect? What is the order of the mechanism?

Résumé of opinions. — Before taking up the discussion of these questions, a brief résumé of the opinions of various observers on the subject will be instructive. Some observers have reached their conclusions by observation of cases, others by experimentation on living animals, and some from both sources. Others have ventured conclusions which are more or less speculative.

Conner, writing two years ago, concluded that the most important single cause of acute dilatation of the stomach is the sudden incarceration of the duodenum by the root of the mesentery. In certain cases the dilatation may lie in some disturbance of nerve centers or nerve trunks, but this probably does not hold good in most cases. In the majority of cases he thinks the disturbing agent must act directly on the stomach musculature or its terminal nerve filaments. He doubts that obstruction to the cardia or failure of the vomiting reflex is essential to the development of acute dilatation as evidenced by the large amount of fluid vomited, and concludes that there is much evidence to show that obstruction is present in many cases and that it plays a rôle of considerable importance in the production of such dilatation. He believes that obstruction of the duodenum by the mesentery must be regarded as a factor in the development of nearly half the cases of acute gastrectasis. He believes that this traction on the mesentery is due to the prolapsed intestine in the pelvis. In order to have this condition, the bowel must be empty of gas and the mesentery must be long enough to allow the intestine to hang in the pelvis with the patient in the dorsal position. He thinks it is possible that the frequency of such obstruction after operation may depend in part upon the fact that at such times the intestines have been emptied of gas by fasting, purging and enemas. Whether the dilatation of the stomach or the mesenteric obstruction of the duodenum constitutes usually the first step in the vicious circle by which both conditions are made worse he feels is still uncertain, but that there is little doubt that in some cases at least duodenal obstruction is primary he feels certain.

Kemp believed, as a result of his experiments, that pure mesenteric traction as a primary cause of acute dilatation of the stomach resulting from a weight of the intestines in the pelvis is hardly to be considered, but as exerted through downward pressure by the stomach on the small intestine, it may be a partial factor. That the intestines are found post-mortem forced down into the pelvis and flattened out he does not regard as evidence that they were there before the dilatation occurred. His conclusions, therefore, as to mechanism are that the pressure of the distended stomach on the transverse duodenum exerts a marked influence in producing obstruction. The fibrous attachment of the transverse duodenum to the left crus of the diaphragm, making this part the most fixed part, has a marked bearing in the production of obstruction. Mesenteric traction is chiefly produced by downward pressure of the stomach on the intestines. This downward pull exerts a counter-traction against the crural attachment at the duodeno-jejunal junction.

Laffer says that the majority of writers, the first being Brinton, favor primary gastric dilatation rather than ileus of the mesentery. He says that clinically, pathologically and experimentally, data are strongly in favor of acute dilatation being primarily an innervation disturbance, affecting the centers in the brain or cord or nerve paths connecting the stomach with these centers. Whatever the etiology, the primary trouble is not the dilatation, but the motor insufficiency, which leads to the dilatation through the accumulation of gas due to fermentation and irritation of ingested food and drink with over-secretion.

Nicholls says that although the majority of observers agree that acute dilatation is due to primary acute paralysis of the stomach, yet it is true that in at least one half the cases there is evidence of definite obstruction. He believes that in order to have gastromesenteric ileus it would seem necessary to have dorsal decubitus, empty intestine and long mesentery. At present, he feels that the paralytic factor is the primary one.

Kelling believes that narcosis is the chief factor and that incarceration of the duodenum is not always present. In order to cause acute dilatation, closing of the pylorus or duodenum is not sufficient. The cardia can protect itself by vomiting, even when the musculature of the stomach is paralyzed, as he demonstrated by substituting a bladder for a stomach. He believes that his experiments point to a disturbance of motor innervation, that in order to get dilatation after ether there must be a predisposition to closing of the cardia and duodenum and that the motility of the stomach must be lower after narcosis and that there must be over-filling of the stomach.

Braun and Seidel concluded from their experiments that the vagus nerves are the most important of gastric centripetal nerve paths from the stomach to the centers in the cord and brain and that a certain motor and secretory paralysis occurs after cutting these nerves. They concluded that dilatation can be best explained on the ground of a primary central or peripheral disturbance of the gastric innervation apparatus. In their cases they think the anemia or narcosis or both caused disturbance of the vomiting reflex so that the stomach did not fully relieve itself, but allowed over-distension. They think their cases cannot be explained by a mechanical hindrance, such as compression of the mesentery, nor by muscular insufficiency, but are to be explained rather by innervation disturbance due to narcosis and operation.

Selby, reporting a case of acute dilatation following spinal injury, concludes that the etiological factors are splanchnic stimulation superimposed upon some chronic malady of the stomach, aided by the presence of some fermenting irritant or hypertonic solution in the stomach.

Conclusions. — A consideration of the foregoing theories leads to the conclusion that a definite solution of the etiological problem that will meet with general acceptance has not been reached. Inasmuch as acute dilatation does occur, the problem is to explain the cause.

The essential factors in producing acute dilatation. — Assuming that it is impossible to dilate a hollow viscus when there is an exit for the distending medium, the essential factors in producing dilatation will be one or both of the following: (1) Increasing contents; (2) inability of the stomach to express its contents.

The contents may be fluid, solid or gaseous, or all three. The stomach secretion, the secretions of the liver and pancreas, the excretion into the stomach of chloroform, or the frothy accumulations of ether which are swallowed, the post-anesthetic thirst and the gaseous products of fermentation are all factors which may assist in producing a distending medium.

The normal stomach can be distended only providing both orifices are completely closed and there is a distending medium. Assuming that the stomach musculature is inert and the distending medium is rapidly produced, it is fair to suppose that a considerable amount of distention might follow if there was only partial or relative obstruction of the stomach orifices. The problem is as to the nature of the obstructing factor.

My investigations lead me to believe that the obstructing factor is not primarily a mechanical one, but is of paralytic origin; that the failure of the stomach to empty itself is due to paralysis of that organ combined with an obstructing factor which is not at first absolute, but relative, and finally, that mechanical obstruction when it does exist is secondary.

Mechanical factors. — The evidence favoring compression of the duodenum by the root of the mesentery as the primary factor in producing dilatation of the stomach is equally conclusive that the compression is secondary. The evidence is entirely post-mortem evidence. The fact that traction on the mesentery or that the weight of a *dilated* stomach will occlude the duodenum does not account for the dilatation itself nor for the failure of the stomach to empty itself by way of the esophagus. I cannot accept as evidence of closure of the cardiac orifice during life the results of the experiments of Conner on the cadaver, where he found that he could enormously distend the stomach without leakage at the cardia after making traction on the mesentery. The conditions in the cadaver are not the conditions that prevail in life, and conclusions drawn from experiments on organs deprived of innervation are hardly reliable.

That occulsion of more than one orifice is necessary to produce dilatation is evident by certain clinical and experimental facts. Acute dilatation is rare in chronically dilated stomachs where there is known pyloric obstruction. These stomachs protect themselves from overloading by vomiting. Acute dilatation is rare in mechanical intestinal obstruction even with reversed peristalsis. Here again the stomach protects itself by vomiting. Dogs in which I ligated the duodenum were fed and promptly vomited. There was no gastric accumulation when they were killed twenty-four hours later (*v.* Experiment I).

If compression by the root of the mesentery is the primary factor, why does not the condition more frequently recur after treatment? Is not the return to normal conditions after lavage suggestive that mesenteric obstruction, if present, was a result and not a cause? If a cause, it is still present to repeat the process.

Stied produced acute dilatation in dogs two weeks after gastro-enterostomy, and both pyloric and artificial openings were found patulous at autopsy. Tuffier (cited by Nicholls) reports a case of acute dilatation occurring after gastro-enterostomy, and at autopsy both pyloric and artificial openings were patulous. Acute dilatation occurred after gastro-enterostomy in one of the six cases which I observed (*v.* Case II). Evidently, the condition can occur without mechanical obstruction.

Even allowing definite mechanical obstruction in the duodenum, another factor must be necessary to cause acute dilatation, namely, a failure of the cardiac orifice.

Assuming absence of mechanical obstruction, both at the cardia and at the pylorus, what condition must exist which is not primarily mechanical to produce an obstructing factor at both orifices? That condition must be inhibition or paralysis of the vomiting reflex and inhibition of peristalsis, not only of gastric peristalsis, but of intestinal peristalsis.

Failure of the vomiting reflex and failure of peristalsis. — In my experiments, dogs in which the duodenum has been ligated vomited, but if the vagus nerves were divided, as practised by Braun and Seidel, the dogs were unable to vomit and dilatation followed (*v.* Experiment 2). But more significant, if the duodenum was not ligated, but if the vagus nerves were divided, enormous dilatation followed (*v.* Experiment 3). Evidently paralysis of the vagus nerves not only inhibited vomiting, but inhibited peristalsis. In other dogs, if the duodenum was tied, and the testicle crushed, as practiced by Cannon and Murphy, enormous dilatation followed (*v.* Experiment 4).

If the stomachs of conscious dogs were inflated, the stomachs emptied themselves (*v.* Experiment 6). If the stomachs of narcotized dogs were inflated they remained inflated (*v.* Experiment 5). A few drops of ether locally in the stomachs of dogs caused a cessation of peristalsis (*v.* Experiment 7).

The experiments of Cannon and Murphy demonstrated that the splanchnic nerves are inhibitors of gastric and intestinal peristalsis, and they concluded that strong impulses through these nerves may be regarded as a cause of gastric and intestinal inactivity.

All of these experimental results favor the necessity of an innervation factor in the production of acute dilatation, and this factor is most logically explained as paralysis of the vagus nerves or stimulation of the splanchnic nerves.

This cause may be direct or reflex. There are certain surgical factors which directly produce post-operative peristaltic inactivity, — trauma, cooling and exposure of the viscera, the presence of wicks, the development of peritonitis, overstretching of the bowel, etc. Whether the source of diminished peristalsis is of central or peripheral origin, it seems impossible to say. Cannon and Murphy concluded that the diminished peristalsis as the effect of handling is not necessarily the consequence of reflex inhibitions from the spinal cord, but can be entirely explained as a disturbance of the local mechanism in the wall of the gut. The occurrence of acute dilatation so frequently after operations on the biliary tract, and the fact that recurrence may take place until the drainage has been removed, suggests that the wicks may be a cause of local paralysis. Such a recurrence occurred in one of the six cases in this series (*v.* Case III). However, if local trauma plays such a part, acute dilatation should be more frequent after operations on the stomach itself, whereas it is rare. It occurred in Case II of this series.

On the other hand, a reflex cause is suggested by the occurrence of acute dilatation after operations on parts of the body not connected with the abdomen, as after enucleation of the eye.

Kelling has expressed the belief that narcosis is the chief factor in producing the primary paralysis in these cases, a view that has not met with general acceptance. I believe that his conclusion is logical.

The evidence of two clinical facts is certainly significant, namely:

1. A certain amount of paralysis of peristalsis follows general anesthesia. Cathartics are given to overcome this. This is not local paralysis of the parts operated on, but general paralysis.
2. There are no recorded cases of post-operative dilatation of the stomach where general anesthesia was not used.

Is acute dilatation of the stomach due to mesenteric compression?— Some explanation is due to account for the finding of duodenal compression by the root of the mesentery at autopsy. Some explanation is also due to account for the bile-stained vomitus and the absence of fecal vomiting, a fact which shows the location of an obstructing factor high up in the bowel, but distal to the papilla of Vater. It has also been concluded that mesenteric obstruction, if present, is secondary, and it is, therefore, necessary to account for a primary obstructing factor. The primary obstructing factor is to be found in the paralyzed bowel. Acute dilatation of the stomach is not a local paralytic process, but a general alimentary paralysis of which the stomach paralysis is but a part. The paralytically distended bowel is relatively an obstructed bowel. That any distended bowel presents many kinks is a well-known clinical fact. With an active peristalsis these kinks will be obliterated as the peristaltic wave moves over them. In the absence of peristalsis they will not be obliterated, and there exists a series of partial obstructions in a long tortuous tube — a condition seen frequently in those cases of intestinal paralysis due to peritonitis where upon opening the bowel only one loop is drained. Hence, an inactive bowel is an effective obstruction to the passage of gas, fluid or solids. The stomach, too, has lost its peristaltic action and in its weakened condition is unable to overcome the relative obstruction offered by the paralyzed bowel, and distention increases. If, now, the fixity of the transverse duodenum at the point where it is crossed by the root of the mesentery, which is the only absolutely fixed portion of the gastro-intestinal tract of small caliber, will be recalled, the conclusion of Nicholls with reference to this point will be appreciated. "We can conclude, then, there is what may be termed a physiological tendency to obstruction, and, moreover, to constriction at the terminal portion of the duodenum, a potentiality that may become an actuality from an apparently trifling cause." The comparative freedom of motion of the ascending and descending duodenum should be remembered. Theoretically, the production of a kink at this point should be easy in the absence of peristalsis. In the cadaver I found it easy to occlude or partially occlude the duodenum at this point by distending the stomach with fluid or air, and, what is also of great importance, a moderate amount of distention of the small intestine produced the same effect and caused a kink which obstructed the duodenum at this point. From these facts it is fair to assume that distention of the stomach or bowel, or both, need not proceed very far before mechanical obstruction is produced at this point and the "potentiality" becomes an "actuality." The process should now become a rapid one, and clinical observations and autopsy observations prove that it is. The condition now is one of paralyzed stomach, absolute obstruction at the distal outlet of the stomach, and paralyzed vomiting reflex. The contents, however, are constantly increasing. With the increase in contents comes increased paralysis of the stomach wall from over distention. With the increased size of the stomach comes a tendency to increase the obstruction already present in the duodenum.

Assuming that the contents continue to increase and treatment is not instituted, why does not the stomach go on to bursting? I have not been able to find an instance where this happened. With the conditions which now exist in the duodenum, exit of contents seems imposible. At the cardia the condition is different. Here is a spasmodic closure of the orifice, not by a kink, but by a muscular valve. As distention progresses this muscle is put under strain. It becomes fatigued and dilates a little. The result is leakage, not vomiting, exactly the condition which obtains clinically in these cases.

Conner has referred to the enormous amounts of fluid vomited. This did not occur in the cases in this series, and I find that most writers support the view that the vomitus is small in amount and is not vomited, but wells up. The action of the cardia here is like a safety valve. It seems, then, that any case of acute dilatation may finally become mesenteric ileus if the paralysis is of sufficiently long duration.

CONCLUSIONS AS TO ETIOLOGY.

On the evidence, then, I believe that the occurrence of acute dilatation of the stomach cannot be explained on a purely mechanical basis. The essential factor and the primary factor is paralysis, not of the stomach alone, but a general alimentary paralysis of which the stomach paralysis is but a part, although the important part. The manifestation of stomach symptoms is due to the anatomical relations and position of the stomach, which have already been mentioned. The obstructing factors are the paralyzed bowel and the paralyzed vomiting reflex. The source of paralysis seems most likely of central origin and probably due to narcosis, but with probable contributing peripheral injury.

That this paralysis must be largely nerve exhaustion seems apparent from the fact that it is transitory. One relief of the distention usually causes a return to normal conditions.

The occurrence of acute dilatation following anesthesia will depend upon the degree of the subsequent gastro-intestinal inactivity, this inactivity varying in different patients, according to their individual resistance, from a slight fatigue to exhaustion or absolute paralysis.

Prolapsed viscera and deformities of the spine causing distorted anatomical relations, as well as a stomach weakened from previous disease, may be contributing factors.

Mesenteric ileus may be a result of acute dilatation, but mesenteric ileus *per se* is mechanical intestinal obstruction. Acute dilatation of the stomach is an acute paralytic process related to mesenteric ileus only as a possible precursor of the condition.

SYMPTOMS AND SIGNS.

Vomiting, pain, distention, thirst and the rapid development of collapse are the usual manifestations, but these symptoms need qualification as they are all more or less characteristic.

Vomiting. — The vomiting may be a continuation of the usual "post-anesthetic" vomiting, or, what is more usual, it may come on twelve to thirty-six hours after operation. As a matter of fact, one half of the cases reported in this series had no post-anesthetic vomiting. This late appearance of vomiting in the absence of "reasonable cause" is to be looked upon with suspicion. Conner and others have spoken of the enormous quantities of the vomitus. "Persistent," "incessant," "uncontrollable," are terms used to describe it. According to my own observations, the vomiting was "persistent," "incessant" and "uncontrollable," but it was not profuse. It was no vomiting; it was regurgitation, and I think this is characteristic of the condition. It was what one patient described as "unsatisfactory." It was simply overflow, or what I have elsewhere spoken of as "safety-valve vomiting." The character of the vomitus I have described elsewhere. It is sufficient to say that it might be described generally as "bilious." Only 5 cases in 215 are reported by Nicholls in which it was "fecal." It is more logical to believe than the vomiting of large quantities means intestinal obstruction and not acute paralytic dilatation of the stomach.

Pain is usually of a character better described as distress, a feeling of intense fullness and pressure in the epigastrium.

Distention. — In my own cases distention was general, perhaps more marked in the epigastrium. The marked epigastric tumor extending down to the left below the umbilicus with flat abdomen elsewhere, I did not note excepting in one case (Case I) and that only after the bowel had been emptied by enemas. I believe that the cases of so-called mesenteric ileus which come to autopsy and in which a dilated stomach and collapsed bowel are found are in many instances a result of treatment for an unrecognized condition. Apparently, the condition was not recognized or the majority of the cases would not have come to autopsy. A distended abdomen presented, enemas were given, the bowel was emptied and the dilated stomach was not recognized.

Thirst was a constant symptom in my cases, — a thirst that could not be satisfied naturally, as none of the water was absorbed. The urine is likely to be scanty.

Constipation, as would be expected with a paralyzed bowel, is usual in these cases.

I did not note the presence of peristaltic waves. They have been reported in three or four instances.

Splashing sounds and fluctuation waves have been noted. Aside from adding interest, their presence or absence seems hardly a necessary factor in diagnosis.

Spasm is rarely present unless there be peritonitis.

The temperature is usually not elevated. It is more likely to be normal or subnormal.

Finally, as the process progresses, there are cardiac and respiratory symptoms. The pulse becomes rapid, small, the respiration superficial, the general appearance indicating collapse.

The diagnosis in these cases is not difficult if the condition is but kept in mind. Prolonged bile-stained post-anesthetic vomiting, or vomiting coming on twelve to thirty-six hours after operation in the absence of "reasonable cause," especially the frequent welling up of small amounts of bilious fluid without subjective relief, together with distention either general or epigastric, and a feeling of intense fullness and pressure in the epigastrium, should lead one to suspect the condition, and the stomach tube should be passed. Its use should not be delayed until the case becomes "typical," when the patient will be in collapse. Not all of the symptoms will present in every case and they will vary greatly in severity. The overflow vomiting is the most characteristic sign.

The condition might be confounded with acute intestinal obstruction, acute septic peritonitis (perforative) or acute pancreatitis. While it would be interesting to compare the symptomatology of these conditions for the purpose of differential diagnosis, it also seems entirely unnecessary, inasmuch as the stomach tube will settle the diagnosis at once.

The prognosis in recorded cases with typical symptoms is bad; the mortality is from 60% to 72%. It should be remembered that this represents the mortality of unrecognized and untreated cases. If the cases are recognized early and treated at once, the prognosis is good. The six patients in this series all recovered.

TREATMENT.

Active treatment is directed to the relief of paralysis, to the promotion of peristalsis by the evacuation of the gastro-intestinal contents by means of the stomach tube and the rectal tube, and to combat the condition of shock. The efficacy of treatment will depend upon the stage at which it is instituted. The first indication is to empty the stomach. Emetics are useless. The most effective method is the use of the stomach tube. After the stagnating contents are removed, the stomach should be washed out with water or salt solution, not only for its cleansing effect, but as a means of promoting peristalsis. The bowel should be emptied by enemas. The paralysis, as has been noted in these cases, is temporary and exists largely as fatigue from overstretching of the stomach and bowel. The tendency is, therefore, a return to normal conditions. The degree of paralysis, however, may be so severe that once relieving the alimentary tract will not be sufficient, but in the majority of cases it will. A return of symptoms calls for a repetition of treatment.

Saline enemas by the sleeping method should be given to restore the fluids lost by transudation. Although morphine is an inhibitor of peristalsis, I believe it should be given, on the ground that the paralyzed tract needs rest rather than stimulation and that by rest the stomach and bowel will more quickly recover their normal tone.

Treatment by posture, knee-chest position, ventral decubitus, etc., advised by Kemp, Conner and others with the intention of taking the weight of the distended stomach off from the duodenum and relaxing the mesenteric pressure by gravitating the small bowel toward the diaphragm seems to have its chief value in cases of chronic dilatation. It is not the best treatment in cases of acute paralysis following surgical operation, especially if one has a stomach tube and rectal tube at hand. After laparotomy, the process of putting patients into the knee-chest position will not appeal either to surgeons or to patients.

Treatment by operation. — Operative measures, gastrotomy and gastro-enterostomy, are not indicated and have not met with success in the treatment of this condition. I have not been able to find any record of a cure of acute paralysis of the stomach by this means. Gastrotomy accomplishes nothing that the passage of a stomach tube will not accomplish. Conner mentions seven unsuccessful attempts to cure the condition in this way. I have known of one case in which gastrotomy was done where an enormously distended stomach was found on opening the abdomen for supposed intestinal obstruction. The patient recovered, but in this case from the history I am inclined to think that the operator was dealing with a chronically dilated stomach.

Gastro-enterostomy accomplishes nothing because it is not a drainage measure. Attaching a paralyzed stomach to a paralyzed bowel does not empty the stomach or the bowel. Both operations add to the paralytic condition already present.

Prophylactic treatment is directed to the elimination or the minimization of these procedures in the pre-operative, operative and post-operative stages, which are known factors in the production of post-operative paralytic ileus. Much has been written about the probable effect of pre-operative purging and starving in producing traction of the mesentery by an empty bowel prolapsed into the pelvis. Whether or not the dangers of this preparation are magnified (and I believe they are), I think that surgeons in general will not look upon the presence of gas and feces in the bowel as a factor in any way contributing to the prevention of post-operative ileus. The influence of slow operating, long exposure and trauma as factors in the production of post-operative ileus is well known, and rapid operating, with a minimum of manipulation of the viscera, would seem to meet the indication for treatment.

I have already expressed the belief that narcosis is the chief factor in producing this condition, and I believe that the administration of anesthetics in minimum quantities and by more open methods than generally prevail at the present time will result in fewer cases of acute dilatation.

CONCLUSIONS.

Acute dilatation of the stomach is not rare. It is of comparatively frequent occurrence after surgical operations done under general anesthesia. The cases vary greatly in severity. It is presumable that many mild cases, which are unrecognized, but which occur in patients having a "stormy convalescence," get well without treatment. It is also presumable that some deaths following operation where the cause of death is not understood are the result of this condition. Its occurrence cannot be forecasted.

The evidence is against a mechanical process as the primary causative factor. The weight of evidence favors a primary gastro-intestinal paralysis, manifesting itself most severely in the stomach on account of the anatomical relations of that organ. The paralysis may be central in origin or peripheral or both. Its exact source is at present undetermined. The paralysis, of whatever source, is transitory and exists largely as fatigue. Prolonged operative procedures, trauma and anesthesia are the most probable causes of this paralysis, narcosis being, I believe, the chief factor. Mesenteric compression, if present, is secondary.

The most constant and characteristic symptom is the welling up of small amounts of bile-stained fluid at a time when post-anesthetic vomiting should have ceased.

The most reliable diagnostic measure is the passage of the stomach tube.

The prognosis is good if the condition is recognized early and treated at once; otherwise it is sad.

Active treatment is directed to the relief of paralysis and the promotion of peristalsis by evacuation of the stomach contents and the evacuation of the bowel contents. Operative procedures are not indicated. Prophylactic treatment is directed to the minimization of operative trauma and anesthesia.

Finally, rational preventive treatment for acute dilatation of the stomach will not be possible until the problem of its etiology is definitely solved. Laboratory experimentation will accomplish much toward this end, but the greatest factor toward the solution of the problem will be clinical observation and study of cases. To this end all cases should be reported in detail.

The most I can hope to accomplish by this study is to call attention to a frequent and serious complication, to urge keeping the condition in mind, for a successful outcome will depend upon early recognition and immediate treatment, and finally, urge a more active study of this interesting condition.

My thanks are due Dr. Fred B. Lund for permission to report the appended six cases.

CASE REPORTS.

Case I. Mrs. A. E. H., thirty-one years old. Aug. 13, 1907. Pelvic peritonitis. Bilateral salpingectomy with drainage. Acute dilatation of stomach. Lavage thirty-six hours after operation. Recovery. (Case described in text.)

Case II. Mr. R. C., forty years old. Oct. 24, 1908. Pyloric obstruction. Posterior gastro-enterostomy. Acute dilatation of stomach. Lavage thirty-six hours after operation. Recovery.

The patient was a much emaciated man in poor general condition with a history of symptoms of chronic ulcer extending over a period of four years, with vomiting of blood and evidence of pyloric obstruction. At operation, an indurated mass was found on the lesser curvature of the stomach, extending into the gastrohepatic omentum down to the aorta, very thick, covered with hard scar-like tissue. A posterior gastroenterostomy was done with a short loop. Twenty-four hours after operation he began vomiting small amounts of bile-stained fluid, complained of great distress in the stomach, and there was general abdominal distention somewhat relieved by enemas. Persistence of epigastric distention, increase of symptoms and failure in general condition followed. Thirty-six hours after operation a stomach tube was passed and a large amount of gas and fluid removed. The stomach was washed out. Three days later he had a return of symptoms similar to those just recorded. The stomach was again washed out, with improvement and gradual return to normal condition.

Case III. Mrs. O., forty years old. Gallstones. Cholecystectomy. Drainage. Acute dilatation of stomach thirty-six hours after operation. Lavage. Recovery.

This patient had made an excellent operative recovery and there had been no vomiting. At the end of eighteen hours after operation she started vomiting greenish material. At that time the abdomen was somewhat distended, and an enema brought away considerable gas. Her distress, however, was not relieved and she continued vomiting, at first every two or three hours, finally every half hour. It was greenish, contained old blood, but was not fecal. The amount ranged from 4 to 6 oz. each time. Her distress was great. The temperature was normal, but the pulse was of poor quality, its rate about 130. The lower abdomen was soft, not especially distended, but there was moderate distention and tympany in the epigastrium down to the umbilicus. The stomach tube brought away an enormous amount of gas, but a very small amount of brownish fluid, apparently a mixture of bile and old blood. The stomach was washed out and she was given morphine. There was complete relief of symptoms after lavage. It was necessary to repeat this treatment on the following day, and it was done also on the third day. Each time the symptoms were less severe. After her drainage was removed on the sixth day she had no further trouble.

Case IV. Mr. F., twenty-five years old. Acute appendicitis; appendectomy; drainage; acute dilatation of stomach. Lavage twenty hours after operation. Recovery. This young man had suffered with vomiting, which he described as "very unsatisfactory," from the time he came out of ether. There was a considerable amount of abdominal distention which was distinctly more marked in the upper half of the abdomen. His pulse did not go above 100, but the vomiting continued. A tube was passed and a considerable amount of bile-tinged fluid with a large amount of gas was removed. The epigastric distention was immediately relieved and he made an uneventful recovery.

Case V. Mr. W., twenty-five years old. Feb. 3, 1909. Acute appendicitis; appendectomy; drainage. Acute dilatation of stomach sixty-six hours after operation. Recovery.

At operation, a perforated appendix with free pus was found. There was no post-anesthetic vomiting. Six hours after operation he was complaining of gas in his abdomen. Thirty hours after operation there was considerably more gas which was not evacuated by enemas. Sixty-six hours after operation there was marked epigastric distention, high pulse and vomiting of small amounts of greenish fluid. A stomach tube was passed and a large amount of gas and bile-stained fluid removed. He expressed immediate relief, and had no further vomiting or untoward symptoms.

Case VI. Mrs. E. C., twenty-two years old. Dec. 28, 1908. Hydrosalpinx; bilateral salpingectomy. Acute dilatation of stomach thirty-six hours after operation. Lavage. Recovery.

The operation in this case was an especially difficult one, and consumed one and one-half hours. The patient did not present signs of shock at the close of the operation, but during the day her pulse gradually increased in rate. She vomited frequently a mouthful of bile-stained fluid. Thirty-six hours after operation her condition was not at all satisfactory. Her pulse was high and weak, she was vomiting, and there was a considerable amount of general distention not relieved by enemas. A stomach tube was passed and the stomach contents, which were large in amount and consisted of bile-stained fluid and gas, were evacuated. Twenty-four hours later it was necessary to again pass the stomach tube, although the second attack was less severe than the first. The stomach tube was not passed again, but the patient vomited and complained of distress for three days afterwards, when all symptoms subsided.

Case VII. (Author's case, seen since this paper was written.)

Miss M. R., thirteen years old. Aug. 16, 1909. Acute appendicitis; appendectomy. Acute dilatation of stomach four days after operation. Lavage. Recovery.

This child had undergone an operation for perforated appendix with extensive peritonitis. For four days her condition, although serious, gradually improved. There had been no vomiting since the night of the operation. The bowels had been moved with some difficulty. On the morning of the fifth day the nurse reported that the child had vomited several times, "without being nauseated," a mouthful of dark green fluid. The abdomen was generally distended. The stomach tube brought away 2 pints of dark green fluid with a moderate amount of gas. The bowels were evacuated by enemas with considerable difficulty. There was no further vomiting and her recovery was uneventful.

EXPERIMENTS. (PRELIMINARY REPORT.)

The animals used in the following experiments were dogs weighing about twenty pounds each, and full-grown cats. The experiments were all done under general anesthesia (ether).

Experiment 1. — Median celiotomy above umbilicus. A single silk ligature was passed around the duodenum one inch from the pylorus and tied. After recovery from ether, the dogs were fed. Vomiting followed. The dogs were killed twenty-four hours later and their stomachs were found empty.

Experiment 2. — The duodenum was ligated as in Experiment 1. The largest branches of the vagus nerves were isolated and divided close to the diaphragm, both in front and behind the esophagus. None of the dogs vomited following the operation. They were killed twenty-four hours later, and their stomachs were found markedly dilated. The contents were largely gas with some watery mucus.

Experiment 3. — The vagus nerves were divided as in Experiment 2. There was no vomiting after operation. At autopsy twelve hours later there was marked dilatation of the stomach with moderate distention of the small bowel.

In the case of one dog, after section of the vagi, the stomach was brought outside the abdomen and the dog kept under ether. At the end of an hour there was considerable gaseous dilatation of the stomach.

Experiment 4. — The duodenum was ligated as in Experiment 1. The abdominal wound was closed. The left testicle was exposed and crushed in a hemostat. The dog was fed after recovery from ether. There was no vomiting. Twelve hours later, at autopsy, there was enormous dilatation of the stomach. The contents were gas and food. There was moderate gaseous distention of the small bowel.

Experiments 5 and 6. — Under ether the stomach of one dog was inflated with air by means of a canula passed through the stomach wall. The stomach of another dog was distended with water in the same way Peristaltic motions ceased in both cases. When the dogs were allowed to come out of ether both emptied their stomachs by vomiting.

Experiment 7. — Four or five drops of ether at body temperature were injected into the stomachs of both dogs and cats by means of a hypodermic needle passed through the stomach wall. Gastric peristalsis was abolished for from ten to twenty minutes. Larger amounts (ʒss) of ether locally resulted in marked dilatation and death in four to five minutes.

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NEOPLASMS OF THE PENIS, SCROTUM, TESTICLE AND CORD.*

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Neoplasms of the penis. — Whether properly classed as neoplasms or not, several peculiar structural changes occur in the penile tissues which should perhaps be mentioned, although of rare occurrence.

First, fibrous sclerosis of the corpora cavernosa and spongiosum: A condition which consists in the development of fibrous masses in the sheath, septum, or erectile tissue of the corpora and which usually comes insidiously without apparent cause. The fibrous mass may form in any part of the corpora and be unilateral, bilateral, or multiple, but the growth is usually single, near the dorsum of the penis. The growth is slow and ultimately causes distortion of the organ. There may be some discomfort caused thus, and pain may be present in the early stages. Impotence often develops in chronic cases. The age incidence is chiefly from forty-five to sixty years. Horwitz states that the condition is not so rare as is generally supposed. Prognosis is poor because no form of successful treatment has been devised.

Second, fibrous and osseous transformations of the penis, an extremely rare condition of obscure pathological nature. The growths occur in any part of the organ, may be single or multiple and are seldom larger than a dime. No operative measures have been successful.

Third, horny growths of the penis, a rather rare condition, usually located on the glans, in the form of plaques or outgrowths, of which latter type some of large size have been reported. They seem to occur as the result of prolonged irritation or as sequels to papillomata, with which they should perhaps be classed. One case developed in the scar of a circumcision, and one case is reported which probably was congenital. The base of the growth shows a tendency to epitheliomatous change, and early and complete excision is the proper treatment. They cause no pain, but some mechanical discomfort.

Fourth, elephantiasis, sometimes termed "fibroma diffusum," occurring in endemic and sporadic form and usually, but not invariably, associated with a similar involvement of the scrotum. The etiology is not thoroughly clear, but the majority of cases can be traced to filaria sanguinis hominis. The condition consists in the diffuse growth of fibrous tissue in the cutis, often increasing the size of the organ to a great extent. Amputation is the best treatment; if due to filariasis the parent worms may be in this way removed, and even if some elements remain in the tissue left in place, further development does not necessarily follow.

Fifth, papillomata, whose structure consists of hypertrophied papillæ covered with epithelium. They are not necessarily venereal, but are the result of some condition causing local irritation, although they may occur under the most cleanly conditions. They usually appear on or just behind the corona, and two classes are described: 1. Soft warts on the mucosa of the glans or at the muco-cutaneous junction, most frequent in youth and early adult life. Long foreskins undoubtedly predispose. They begin as small papulæ, grow rapidly, proliferate, often become eroded and may attain excessive size. 2. Hard warts on the skin at some distance from the glans, commonly associated with the first form. Their growth is slower and they are more commonly sessile than are those of the first variety. The treatment consists in cleanliness and in eradication by means of acids, nitric or lactic, or removal by ligation and cauterization, or by excision. Since a long foreskin is not infrequently present, it will often be found possible to remove the growths on the portion of the redundant prepuce removed in the operation of circumcision.

Cystic tumors occasionally occur. Gerulanus makes the following classification: 1. Traumatic epithelial cysts, described as complicating ritual circumcision. 2. Cystadenoma, of which one case has been reported, arising from the sebaceous glands. 3. Atheroma of the prepuce and upper surface of the glans, the most common form, derived from hair follicles and less often from the sebaceous glands, and often present in considerable numbers and seldom of large size. 4. Dermoid cysts, congenital, usually in the median line, of the size of hazel or walnut. In all of these conditions there is some danger of malignant change, on which account removal is to be advised by excision of the sac *in toto*.

Among neoplasms properly so-called numerous forms of rare local occurrence are described in addition to sarcoma and carcinoma. Lipoma, angioma and circumscribed fibroma have been reported.

Sarcoma, though comparatively rare, is the most serious tumor involving this organ. It is more commonly primary than secondary and may be of the round-celled, spindle-celled, or melanotic type. The origin is in the corpora cavernosa or spongiosum, starting in the connective tissues, the endothelium of the cavernous spaces, or in the tunica albuginea. The tumor may start in any portion of the penis, in the form of circumscribed nodules or diffuse growth. Neighboring tissues are involved by direct extension, and metastases are very liable to occur at an early stage in prostate, testicle, and inguinal glands. Growth is often very rapid and may be extreme. Ulceration and hemorrhage are common. There is usually interference with urination, and pain is commonly intense, due to pressure or to extension into the urethra. Trauma has been noted as a possible cause.

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The tumor can be distinguished from carcinoma by its situation in one of the cavernous bodies, its outer configuration, the lessened and delayed tendency to ulceration, and by miscroscopic examination. The course is progressive toward fatal termination in from ten months to two years, from metastases, infection of the genito-urinary tract, and from general causes.

With the exception of the melanotic form, the prognosis is comparatively favorable if the tumor has not involved neighboring organs to any extent, although the majority of cases do not reach the surgeon at this early stage. Extirpation of the penis, with removal of the inguinal glands, offers a good chance of cure under the best conditions. In advanced cases only palliative measures can be used.

Cancer of the penis. — Barney, in 1903, made a study of 100 unselected cases of this type and his findings in the main accord with those of other authoritative writers. I shall with his permission quote freely from his monograph.

The medullary form has been reported in a few cases, usually in young adults, apparently as the result of injury. Scirrhus is the rarest of all tumors of the penis, while epithelioma is the most common, forming from 1% to 3% of all carcinoma in males, and may be regarded as the only form demanding discussion.

It is most common in the fifth, sixth and seventh decades, but numerous cases have been reported in the second and third decades as well as in the ninth. Phimosis is conceded by nearly all writers to be the most important factor in the etiology. Kaufmann says that in elderly men with phimosis and a foul discharge from the prepuce, cancer is a strong probability, even without induration. Chronic balanitis is frequently associated with the so-called "venereal wart," and Kaufmann reports 29 out of 33 cases as beginning in these simple vegetations. It has been often noted that Jews seem immune to this disease. It is certain that epithelioma finds a starting point sometimes in chancres or their scars. Trauma must also be regarded as a factor, 6 of Barney's cases showing the development of the tumors from old circumcision wounds or scars.

Two types of growth are usually described, the cauliflower, or proliferating, and the ulcerating, with indurated edges and rapidly destructive properties. Clinically it may often be impossible to differentiate these two types, especially in cases of long standing. The cauliflower growth is the more common variety. The ulcerated form has a foul, sanguino-purulent discharge. The proliferating type is also usually bathed in a creamy acrid secretion. Hemorrhage is not uncommon. The growth usually starts in the dorsum of the glans near the corona or in the preputial reflection.

The epithelioma begins as a simple wart, a pimple, slight erosion or raw patch, more rarely as a true ulcer, and very rarely in the urethral meatus. Thomson speaks of a precancerous condition of the epithelium, consisting in either a catarrhal condition, balanitis, or, more frequently, a marked thickening of the epidermis, described as psoriasis preputialis by Schuchardt.

Cases are occasionally reported,— McFarland found 8 and I have seen 1,—in which contact with a carcinomatous cervix may have been an immediate causal factor. It is questionable whether these cases are more than coincidences, and the present status of carcinoma study commends an indefinite answer.

Histologically, the tumor is an ordinary squamous-celled epithelioma. Involvement of other tissues occurs:

1. By extension along the main lymphatic vessels in the subcutaneous tissue of the dorsum and continuous with the primary growth. This extension may be apparent only on microscopic examination.
2. By penetration in time of the erectile tissue and urethra by epithelial prolongation.
3. More rarely by development of outlying foci in the erectile tissue.
4. By contact of epitheliomatous tissue with adjacent tissues, as from glans to prepuce or vice versa, or from either to scrotum. It seems that the process tends to be localized for a long time to its original site, a tendency most marked when the prepuce is the original site.

Invasions of the inguinal glands seem to be more frequent than is generally supposed, a conclusion somewhat at variance with the preceding statement, due to the fact that the surface of the growth is usually infected with bacteria. The lymphatic induration in vessels and nodes is in some cases solely inflammatory. Patterson says that without operation these glands suppurate, forming large ulcers infiltrated with cancer tissue. Because of this double infection operation meets with difficulties: The free communication between the numerous glands and their intimate association with important structures; adherence of the glands to surrounding parts by inflammatory process; softening of glands by inflammation, rendering complete extirpation difficult, so that small particles of cancer tissue are left behind. There may be internal metastases even when the inguinal glands are not demonstrably involved.

For symptoms we have the history of the origin and growth of the local tumor; pain is seldom severe and develops late, due to ulceration and passage of urine over the ulcer, phimosis, perhaps a foul-smelling discharge, interference with urination, and possibly hemorrhage, involvement of other tissues and organs, increasing cachexia and perhaps infection of the urinary tract, with final death. I wish to quote some of Barney's conclusions:

> "Phimosis is pre-eminently the most important of its exciting causes, occurring in over 85% of cases. Circumcision, therefore, cannot be too strongly advised, especially after middle life, in all cases where the prepuce cannot be easily and completely retracted. Syphilis and trauma are to be considered next in importance from an etiological standpoint.
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> "Most cases seek relief during the first and second

years of the disease, but it is not unusual to see cases of from five to fifteen years' duration.

"Pain occurs in 43.5% of all cases. It is rarely severe, and usually occurs late in the disease.

"Enlargement of the inguinal glands occurs in over 75% of all cases. In 60% these glands are cancerous. The rest show simple hyperplasia from septic absorption.

"Glandular involvement may occur early, but from my study of these cases I am inclined to regard it rather as of late occurrence.

"Inguinal metastases cause death sooner or later. If well advanced, attempts at their removal are to be considered only as 'surgical vandalism.'

"Invasion of the vital organs occurs in over 15% of all cases. It may occur without involving the inguinal glands.

"Recurrence takes place up to one year after operation in over 39% of cases; up to two years in over 19%; up to three years in over 16%; up to four years in over 6%, and, most notable of all, it occurs over five years after operation in over 12% of cases.

"The gross mortality is 32%; that of the primary cases is 29%; of the recurrent cases, 38.5%.

"Thirty-eight per cent of all cases are cured; of these, the primary cases form 36.5% and recurrent cases, 42%.

"Early amputation of the penis at the pubes with thorough dissection of the groins is the operation of choice. If taken in the earliest stages, however, amputation alone may effect a cure. The operation of splitting the scrotum and transplanting the urethra into the perineum, or of total emasculation, offers no greater hope of cure.

"The length of life from time of onset in primary cases is three years and four months; in recurrent cases it is eight years and three months.

"The length of life after final operation in primary cases is twenty-four months; in recurrent cases, four years and two months.

"Cases may live for over eleven years after the onset of the disease without operation."

The prognosis depends, of course, upon the extent of metastatic involvement. On this account, and for the sake of definite knowledge in operation, it is well to have in mind the anatomy of the regional lymphatics. The superficial lymphatics of the penis take origin in a dense network of vessels and channels under the mucosa of the glans and the skin of the prepuce and in the mucosa of the urethra, and, passing through a main collecting channel on the dorsum of the penis, empty into the upper, oblique group of the superficial inguinal glands along Poupart's ligament. It must be noted that there is a communication between the lymphatics of the lateral halves of the penis at the base of this organ, so that while the glands on the side of the tumor are usually the only ones involved, it is, however, possible that those on the opposite side should be involved, with or without, or preceding, the involvement of the glands on the side of the growth. The deep lymphatics drain the corpora cavernosa and spongiosum, pass beneath the pubic arch and enter the deep lymphatics of the pelvis, passing to the internal iliac glands along the internal vessels. The upper inguinal glands connect with the deep set and with the external iliac glands, which, with the internal iliac glands, connect with the lumbar glands along the spine from the sacrum to the hilus of the kidney.

Operative treatment. — The diagnosis of carcinoma having been made, and a radical operation decided upon, quite as thorough work should be accomplished here as in operations upon other fields. Having in mind the distribution of the lymphatics and the knowledge that when recurrence follows operation it is usually in the lymphatic channels, the radical operation suggested by Curtis usually meets the requirements of the case.

New growths of the *urethra* are comparatively rare, papillomata, both sessile and pedunculated, fibrous, fibromyomatous, fibromxyomatous and vascular polypi, cysts of Cowper's glands and of the prostatic utricle, carcinomata and sarcomata occur in frequency in about the order mentioned, according to Mark, from whose recent paper on the subject I have taken most of the data.

Papillomata: The most common site of these growths is at or near the external meatus, although they have been found throughout the entire extent of the urethra. One form, urethritis papillomatosa, is described as occurring upon the areas of infiltration found in chronic urethritis. It is probably unquestionable that papillomata originating posterior to the navicular fossa arise from one of two causes exclusively, chronic gonorrhea and syphilis. Single papillomata are of extreme rarity and are almost invariably found in that portion of the urethra lying between the peno-scrotal junction and the triangular ligament, apparently springing from isolated papillæ.

Multiple papillomata practically always originate at or near the external meatus and are usually associated with other similar growths of the glans. The urethroscopic appearance of these growths is typical. They are readily rubbed from their site of attachment, leaving a freely bleeding base.

Polypi: There is some confusion in the classification of these growths. Mark classes under this head, fibromata, fibromxyomata, fibromyomata, and vascular polypi. The latter form is exceptionally rare in the male and appears as bright red, succulent looking growths, having distinct pedicles and being exquisitely sensitive. They are usually single.

The other forms of polypi resemble each other closely. The myxomatous type develops in areas of infiltration, usually the result of chronic urethritis. The mixed forms occur most commonly in the bulbous portion. True fibromata are extremely rare and have occurred solely in the prostatic urethra. The possibility of malignant change must always be borne in mind.

Cysts of the prostatic utricle are extremely rare and practically never found in the adult.

Carcinoma: Primary carcinoma of the urethra is especially rare in the male. Barney, in his recent paper, states that 48 cases have been reported. These growths are always of the squamous-celled type and occur usually in the bulbous portion. Gonorrheal stricture may be regarded as an etiological factor. Diagnosis is rather difficult because symptoms and signs might fit almost any case of stricture. Mark says that we may safely consider any easily bleeding, fungating, raspberry-like growth in the urethra of a man over forty-eight years of age to be suggestive of carcinoma.

Sarcoma: It is the most uncommon of all new growths of the urethra, only a few cases having been reported.

In diagnosticating growths of the urethra we have to think of urethritis, simple and specific, stricture, simple and specific ulceration, abscesses, and prostatic and vesical conditions.

Operative measures applied to tumors of the penis previously discussed apply also to those of the urethra.

Neoplasms of the vas deferens. — Solid tumors are comparatively rare. Sarcoma and carcinoma may occur in primary and secondary form. Lipoma, fibroma, myoma, and myxofibroma are observed occasionally, lipoma being the most common type, in simple form or combined with myxoma and fibroma. Although lipoma has often been regarded as secondary to the same condition in hernia, there is little doubt that it may originate also in the vas. This tumor tends to send small projections between the structures of the cord. While usually of small extent, specimens of immense size have been reported. Its growth is slow, painless, and often more or less lobulated. At first it is rather hard, later soft. It is not translucent and transmits no impulse in coughing. It may easily be confused with omental hernia, a positive diagnosis usually being impossible without incision. Treatment consists in removal of the tumor, which in the small forms may be possible by blunt dissection, while in some cases castration may be necessary.

Cystic tumors of the cord are not uncommon and include the various forms of hydrocele, of which the multilocular form is the most obscure and infrequent, and have been classified by Kocher as echinococcus cyst, spermatocele, cysts of fetal remains, cystic lymphangiomata and encysted hydrocele lobulated by adhesive inflammation.

In dealing with neoplasms of the cord we must consider varicocele, tuberculosis, syphilis and hernia.

Neoplasms of the seminal vesicles. — Very few cases of primary malignant tumors, more commonly carcinoma, have been reported. Involvement by extension or metastasis from neighboring organs, especially in carcinoma of prostate and rectum, is not infrequently seen. Diagnosis is difficult and the condition is seldom brought to the surgeon's attention until vesical symptoms arise from involvement of the bladder wall. Cysts or hydrocele occur occasionally.

Neoplasms of the scrotum. — Elephantiasis is due to obstruction of the lymph channels, whether caused by chronic adenitis, extirpation of the inguinal nodes, or, as in the endemic form, by the filaria. The treatment consists in prophylaxis and removal of the scrotal mass by operation. While it is hardly to be expected that one may remove the parent worms, yet this may be possible and, in any case, it seems that local recurrence is seldom seen.

Small sebaceous cysts are occasionally seen, most commonly on the raphe. These are usually small whitish nodules, but they may attain immense size.

Multiple minute blood cysts, doubtless capillary dilatations, sometimes occur after middle life. They vary in size up to that of a large pinhead, occur over the whole scrotum, are of a dark blood color and cause no symptoms. They may be removed by electrocautery.

Among neoplasms proper, angioma, fibroma, lipoma, fibromyxoma, osteochondroma, teratoma, sarcoma, and carcinoma have been reported. Melanotic sarcoma is very malignant and rapidly fatal. With the following exception, these tumors differ in no way from similar growths in other regions. Epithelioma occurs in this region, apparently as the result of chronic irritation, and is seen especially among chimney sweeps and paraffin workers. This tumor is infrequent in this country and does not seem to occur so often as formerly in the European districts where at one time it was of no infrequent occurrence. It begins as one or more small soft warts or tubercles, usually at the lower forepart of the scrotum. Growth is slow and chiefly superficial, and involvement of lymphatic vessels and nodes is comparatively tardy, so that operation offers a good chance of cure. During the early stages excision of a small area may be sufficient. It is to be remembered that the lymphatics of the scrotum drain into the inner or middle group of the upper set of superficial inguinal nodes.

Eczema and other skin conditions, edema, cellulitis, erysipelas, abscess, gangrene and emphysema must be considered in the differential diagnosis of neoplasms of the scrotum.

Of tumors affecting the tunica vaginalis, cysts, lipomata, and fibromata have been observed; rarely enchondromata, myomata, and sarcomata have been seen. These tumors are confined strictly to the tunica, so that they can be removed without injuring testicle or cord. Lipoma usually affects the tunica communis, the others the propria. Small lipomata may not require treatment. Fibromata are large and should be extirpated in order to save the neighboring organs from their mechanical effects. In myxomata and sarcomata it is necessary to remove the testicle, dividing the cord as high up as possible,

Neoplasms of the testicle. — Cysts, as distinguished from cystic tumors, are not uncommon in the testicle. The most common forms originate in some of the various fetal remains of the part. They seldom attain a size larger than that of a hen's egg, although a few very large ones have been reported. Diagnosis is based upon the position of the cysts near the head of the epididymis independent of that organ as well as of the testis so that the three distinct structures can be palpated. Their contents may be clear or milky and may contain spermatozoa.

Cysts in the head of the epididymis are usually referable to previous inflammation of the part and are usually small and of slow growth.

Cysts in the substance of the testis are also usually of slow growth and may or may not appear on the surface of the organ, sometimes protruding as thin-walled sacs.

Parasitic cysts occur, but are rare in this country.

Almost every variety of neoplasm may occur in the testicle, but the benign connective tissue forms are comparatively rare. All tumors in this region seem to show an increased liability to the cystic form. Metastatic growths are also noted in this region, hypernephroma being a relatively common secondary tumor here.

Cyst-adenoma is relatively frequent. It results from overgrowth and constriction of the seminiferous tubules, with consequent cystic dilatation. Preponderant proliferation or cyst-formation give respectively the picture of adenoma or cystoma. Epididymis and vas usually remain uninvolved. The tumor may attain the size of a man's head, usually has a smooth surface, is soft and elastic, and occasionally fluctuates. It occurs usually between the ages of twenty and forty, but is seen also in children, grows rapidly, and may cause great pain. Sarcomatous and carcinomatous change may occur at any time. Incision is usually necessary for diagnosis. In any case, removal is to be performed. Before malignant change has occurred, the prognosis is good after a purely local operation.

Sarcoma and carcinoma are the most common tumors of the testicle and are comparatively frequent. Authorities differ in regard to the relative frequency of the two forms, but it is probable that sarcoma is the more common.

Sarcoma originates usually in the testis, seldom in the epididymis. Almost every variety has been found, including lympho-, fibro-, myxo- and angio-sarcoma, and the melanotic form. The small round- or spindle-celled are the usual types. The growths are hard or soft, according to their type, the latter being, in general, the more malignant. They may attain very large size, especially in cases of cystic change. There is a tendency to fatty degeneration, and areas of hemorrhage are usually seen scattered through this growth. There is said to be less tendency than in carcinoma to break through the tunica albuginea, but there is greater tendency to wide dissemination, giving metastases in lungs, liver, kidneys and brain. After the growth is once outside the limiting membrane of the testis, progress is usually very rapid, often invading the abdomen along the cord. The melanotic form is, as is usual, very malignant. Sarcoma seems to occur most commonly in childhood and early life. Statistics differ in regard to the relative liability of old age and adult years. Trauma seems to play a definite etiological rôle. It is generally stated that the non-descended testicle is especially liable to sarcoma, but there is some question whether cryptorchids bear more than their relative ratio of incidence, and it is certain that the large majority of cryptorchids that come to operation show no neoplastic change. The author, in a series of twenty operations upon cryptorchids, has found none to have undergone malignant degeneration or to be the site of a neoplasm. One had become infected with gonococcus and resulted in an abscess occurring on the right side, in the inguinal canal, simulating appendicitis. Treatment consists in early and radical operation. It is probable that there is no chance of cure if the growth has broken through the tunica albuginea. Various writers state that they have never seen a cure. Some hope may be offered by serum therapy.

Carcinoma usually originates in the body of the testis. It may occur at the two extremes of life, but it is most common between the ages of twenty and fifty. It is generally unilateral. It occurs in two forms, encephaloid and scirrhus. The latter grows slowly, is of irregular form and shows well-marked dense nodules. The medullary type is the more common, is of a more symmetrical shape and grows much more rapidly than the scirrhus form. Sarcomatous changes are said to co-exist sometimes. As in sarcoma, once the tunica albuginea is perforated, progress is rapid, the ovoid shape is lost, the growth becomes adherent to the scrotal wall, penetrates it, and appears on the surface as a fungus looking mass. Direct extension is limited, but early metastasis is the rule. Prognosis is, therefore, bad, except in the early stages. Treatment consists in early and radical operation, cutting the cord high up, and extirpating the inguinal nodes. The lymphatics of the testicle originate in a superficial set on the surface of the tunica vaginalis and a deep set from the testis, whose vessels pass along the cord to the lumbar nodes, up to the level of the hilus of the kidney. Cuneo describes a special node which is particularly liable to early involvement lying close to the point where the ureter crosses the iliac vessels. Ordinarily the superficial upper inguinal nodes are involved only when the scrotum has been invaded by the growth. Rare cases of inguinal involvement without scrotal disease are explained by lymphatic anastomosis along the blood-vessels. It can be seen from these facts that the prognosis of operation is poor. Few cases of complete recovery are reported when the tumor has been present for any length of time.

Mixed tumors, teratoma and dermoid cysts, to use terms that are more or less overlapping in a pathological sense, are by no means uncommon in the testicle. They are usually noticed at the age of puberty, at which time they usually begin to grow more rapidly. They may penetrate the skin and form sinuses through which fetal structures are discharged. These tumors are capable of malignant change at any time. It has recently been noted that these tumors sometimes contain tissue resembling chorio-epithelium, in which case they are of a most malignant type. It is probable that many testicular tumors previously diagnosticated as carcinoma or sarcoma were of this type. There is still some question regarding the origin of this peculiar tissue in these tumors. Diagnosis of teratoma is possible only by incision. On account of the serious possibilities of these tumors they should be removed at an early date. The testicle can sometimes be preserved.

In making a differential diagnosis and a prognosis on testicular tumors, various points must be borne in mind: In general that the growth may be syphilitic and that nearly all testicular neoplasms are malignant or may become so. The tumor is not usually noticed until it has involved the entire organ. Carcinoma grows more rapidly than sarcoma, as a rule. The benign cystic disease may retain a certain size for many years and there may be no sign of the change that will ultimately present it as malignant. The teratoma also are often quiescent for years and may then suddenly assume rapid growth, with or without malignancy. Kocher's average duration of carcinoma from first symptom to date of operation was one and one-third years, and Kober's list of sarcomata showed an average duration of two and two-third years. Since the tumor is commonly accompanied by hydrocele, the absorption of this fluid causes an apparent recession in the tumor's size. Pain is often slight throughout, but may become severe in the later stages, or if pressure within the tunic is severe. Testicular sensation is lost sooner or later. The oval shape of the testicle is preserved at first. The surface of the tumor later becomes uneven, nodular, elastic, and perhaps fluctuating. Finally, the tunica albuginea gives way and elastic masses are felt projecting through it, the scrotal veins enlarge, and inguinal, iliac, and lumbar glands become palpable. Thence, fascia and skin are involved, forming the fungus hematodes. White and Martin, and Keyes, from whose latest volume I have ventured to quote extensively, have valuable diagnostic tables. The various conditions that must be considered in any given case are: Hypertrophy, contusion, gangrene, neuralgia, orchitis, epididymitis, tuberculosis, syphilis, hydrocele, spermatocele, hernia, and the various cysts and tumors.

In conclusion, we may say that the advances which have been accomplished in recent years in dealing with neoplasms of the organs which we have considered are more accurate methods in gaining early and correct diagnosis, more nearly exact knowledge of the methods of extension, a more intimate understanding of the lymphatic distribution, and a more definite appreciation, gained from the conviction of those with the widest experience in this work, of the great importance of early operative procedure in neoplasms which are malignant or may become malignant, and of the necessity for complete and thorough removal of growth and of all infected tissue.

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NEW GROWTHS OF THE PROSTATE AND BLADDER.*

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THE researches of many observers demonstrate that inflammations of the bladder are more frequent in women than they are in men. Concerning tumors of the bladder, the contrary is the case. More than any other predisposing cause of tumor formations are conditions of chronic inflammation. We would expect women, then, to have more bladder tumors than men, and they probably would were it not for the part played by the prostate as a causative factor in bladder growths. Some observers, such as Motz, consider that two thirds of bladder tumors are of prostatic origin. This view the result of researches made by the author with Dr. Brooks would tend to corroborate.[1]

Until the past ten years, the ordinary hypertrophy of the prostate of the aged was considered by many to be either fibroma or an adenoma, and many of these cases were reported as examples of benign tumors, while malignant diseases of the prostate were considered to be comparatively rare. During the past ten years the work of Ciencanowski [2] in Poland, Brooks and the author in this country, and several other investigators, has shown that adenoma and fibroma of the prostate was a comparatively rare condition, and that the so-called hypertrophy was the after result of a chronic inflammatory condition, which either blocked up the mouths of the acini of the prostate, later causing their distension and thereby the enlargement of the gland, or fibrous connective tissue formed between the acini, pressing them together, and, when extensive, making the small hard prostate, thus not infrequently giving rise to the condition reported "as prostatism without a prostate."

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[1] Greene, Robert Holmes, A.M., M.D., and Brooks, Harlow, M.D.: A Contribution to the Pathology and Prognosis of Diseases of the Bladder. Med. News, June 20, 1903.

[2] Ciencanowski: Quelques Aperçus sur le Prostatisme. Ann. des mal. des org. gén.-urin., 1901.

Frequently, these two conditions just mentioned are found mixed in the same prostate. In the past that form which dilated the acini was reported as adenoma, the other form often reported as fibroma. Dr. Brooks and myself, in the examination of sixty-odd hypertrophic prostates microscopically, found only three fibromata and not a single true adenomata.

There are, of course, various other forms of benign tumor than the two just mentioned which may occur in the prostate. Cysts are very common; myoma are occasionally reported, but they are extremely rare. I am aware, of course, that the views of the investigators just mentioned have not been considered correct by quite a number of writers on the subject, but, so far as I know, no pathologist has carried on a series of investigations into the nature of prostatic hypertrophy since the articles were published to which reference has been made who have not confirmed those views, and that in most of the recent literature on the subject adenoma and fibroma are not given the importance formerly allotted to them, any one interested can easily ascertain.

In the past cancer of the prostate and sarcoma was considered to be rare. The tendency of recent investigation is to establish the fact of their comparative frequency when any chronic disease of the prostate exists. Almost all malignant growths in the prostate occurring in individuals under the age of thirty-five are sarcoma; over that age, cancer.

The prostate presents a beautiful field on which to study the nature of carcinoma. In that form of prostatic hypertrophy in which the mouths of the acini are stopped up and cell proliferation is going on inside the acini, but not breaking through the investing membrane, no malignant condition is as yet present. In making this statement, I am in accord with expert pathological opinion. I dwell on it here because a distinguished European surgeon has called such a condition adenoma-carcinoma, and he has been followed to some extent in that view by one or more surgeons in this country. These cases are not true carcinoma, and operations reported for this condition gave rise to misleading statistics. They should not be reported as operations for the relief of cancer. It is only after the cells have broken through the walls of the acini and invaded the surrounding tissue that true cancer can be said to exist.

Concerning the frequency of cancer of the prostate, in the paper read by the writer [3] six years ago, it was stated as his belief that 10% of the cases of hypertrophied prostate of severity sufficient to have brought the patient to the attention of a physician would be found to be malignant. Further observation has tended to confirm this view.

Diagnosis of cancer of the prostate. The most prominent symptom is pain; the next, hemorrhage. Objectively, it is difficult ordinarily to diagnose by the touch. Malignant growths feel harder than other enlargements. Residual urine is of no diagnostic value in regard to its amount. Neither is any great enlargement of the prostate. The writer operated on a case six years ago in which neither of the above conditions existed. Great pain was present; a small carcinoma was found in the center of the prostate. Cancer of the prostate may cause a tumor of very large size jutting up into the bladder before the surrounding tissues apparently are invaded to any considerable extent. A case of this kind occurred in the practice of the writer; the patient lived six months after the operation for its removal. In this case, the bladder capacity was much diminished by the growth. Comparatively little residual urine was present.

One diagnostic factor may be mentioned which was referred to in the paper of six years ago, and that is that any marked change occurring in an individual with a hypertrophied prostate already under observation, such as pain, if it did not previously exist, and a nodular condition appear to the touch which had not previously been present, should excite suspicion of malignancy. Such factors as rapid emaciation or enlargement of the inguinal glands should also receive consideration.

Sarcoma of the prostate gives little hope of recovery. The great factor here in the diagnosis is the age of the patient, and early removal of sarcoma would seem to indicate, according to some cases which have recently been reported, that the prognosis is not necessarily hopeless as was formerly considered the case. The technic of the use of the cystoscope as a diagnostic factor will be considered in some of the other papers of the evening.

Concerning the *treatment*, necessarily surgical for malignant growths of the prostate, what is the best method of removal of cancer of the prostate? The writer is in doubt as to the best procedure to adopt. The main idea should be to remove such growths before they have invaded the tissues outside the prostate, either by the superpubic route or by any of the various perineal routes. Other things being equal, it should be remembered that the general condition of the sufferers from these growths is almost invariably below par, and the quickest way in which the growth can be removed is the best way.

Concerning the operation for the total removal of the prostate with amputation of the neck of the bladder, its value has not as yet been clearly demonstrated. The statistics of relief following this operation are unreliable from the fact that some of the cases reported as malignant which have been relieved through this operation have not been cases of true carcinoma; they have been cases in which the cells have not broken through the investing membrane, and represent a type of cases previously referred to in this paper.

Operation should not necessarily be refused even if there is not much hope of total removal of the growth; in fact, it is very hard to tell when the malignant growth has been totally removed, as the bladder walls may have become already involved without direct evidence of its being present. From what experience the writer has had in his own practice, which is somewhat limited, hopeless cases in which more or less radical operation was performed apparently suffered less than those cases which he has observed in which no operation was undertaken beyond the installation of permanent drainage.

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[3] Greene, Robert Holmes, A.M., M.D.: Cancer of the Prostate. N. Y. Med. Jour., and Phila. Med. Jour., October, 1903.

What may we expect in the future concerning the treatment of malignant growths of the prostate? If, as the writer believes, chronic inflammatory conditions give rise to the so-called prostatic hypertrophy, which latter gives rise to cancer, we may properly expect that in the future a more generally disseminated knowledge of the seriousness of chronic inflammatory conditions in the prostatic region, if left untreated, together with the more general use of the cystoscope, should lead in years to come, through the better understanding of the pathology of these conditions, and through increased refinement of diagnosis, to a more thorough treatment of what should be considered pre-cancerous condition. This will lead to a great diminution in the occurrence of, or a retardation in, the appearance of these growths, with the amelioration of much suffering and, as far as these growths are a cause to the contrary, with the prolongation of human life. Remarks concerning the nature and diagnosis of bladder tumors as distinct from those connected with the prostate are reserved for a forthcoming article. The statement can be made that almost all tumors of the bladder are either malignant or on the way to become so, and that at the present time when they come under the observation of the surgeon the majority of them are multiple.

Treatment.[4] — Within the last five years some able and interesting articles have been written advocating new methods of removal of bladder tumors. Most of these new operative procedures have reference to the resection of all or portions of the bladder. I refer here to the article of Charles H. Mayo,[5] who advocates the transperitoneal removal of tumors of the bladder: laparotomy is performed, the peritoneum stripped back, the apex of the bladder brought well into view, the desired part of the bladder resected, the bladder wound sewed up, the toilet of the peritoneum made, the bladder returned. Dr. Albert Ashton Bird [6] recommends resection of the bladder wall and transplantation of the ureter when the ureteral orifice is involved into the apex instead of the base of the bladder, as in his opinion there is less danger of the consequent involvement of the ureter if placed in the position mentioned. Albarran, in order to obtain more room in four cases, split the symphysis of the pubes and retracted them, in that way obtaining a better view of the front of the bladder, so as to have more room to resect the tumor. Albarran operated by this means in four cases, in one of which a fistula was left behind, and he advocates insertion of two silver wire sutures to bring the bones together after they have been spread apart. Complete extirpation of the bladder for the relief of malignant growths is commencing to be performed somewhat more frequently, and Dr. F. C. Watson, of Boston, has advocated permanent drainage of the pelvis of the kidney in such cases rather than the transplantation of the ureters. All the above procedures, or any one of them, may, in certain cases, be an operation of some value, and it is not the desire of the writer to criticise any or all of these procedures if the indications of the individual case seem to require their carrying out. The observation of his own cases would lead him to believe that few tumors are presented in which resection is practical. Farther experience may cause him to change or modify these views. I may make my point of view clearer by briefly narrating the history of a few cases which have come under my observation.

Two years ago I was called on at night from the City Hospital to operate on a patient who had been in the medical wards, and transferred to my service for the relief of a stricture of so small a caliber that the house surgeon could not pass a filiform. His illness had been diagnosed as entirely due to his stricture. The general condition of the patient was very poor indeed. When I felt of the abdomen there seemed no indication of a distended bladder, but on examining the lungs it appeared to me that there was something at the base of one of the lungs. The patient being in an almost moribund condition, the state of affairs being as they were, I was unable to disagree with the diagnosis made, particularly concerning the condition of the lungs, as the chest, I understood, had been looked over by a competent medical observer. The patient was so near moribund that I did not think it wise to administer an anesthetic, did an external urethrotomy under cocaine and found, as I anticipated to be the case, very little urine in the bladder. I introduced a perineal tube, and had the patient removed as rapidly as possible from the table and instructed the house surgeon as soon as possible on the following day to introduce an aspirating needle into the base of the pleural cavity to see if there was any fluid at the bottom of the lung. The next day the patient's condition was very much better, the house surgeon forgot my instructions to introduce an aspirating needle at the base of the lung. The second day the patient died suddenly, and I procured an autopsy. I will say that in operating I had noticed no particular enlargement of the prostate or change in the bladder wall, except that the vesical orifice seemed a little higher up than usual. On autopsy, the patient was found to have a large abscess at the base of one of his lungs, hydronephrosis in one kidney, pyonephrosis in another, and the most interesting case of malignant disease of the prostate, bladder and ureter. There was no marked growth anywhere, but a form of growth which the histologists pronounced cancer invaded the prostate, the bladder, the ureter, to some extent the kidney, just as if a thin coating of paint had been run over all these organs. In a case like that no resection of the bladder could, of course, have been of any benefit.

The first case of bladder tumor the writer ever saw had a well-defined single tumor with a well-defined base; this was through the courtesy of his friend Dr. J. Vanderpool; he has never seen one since. The second case seen was operated on by the writer and was as follows: A man of about forty came to the City Hospital for relief of hemorrhage of the bladder. On opening his bladder the appearance was that such as you get looking at the bottom of one of the aquariums occasionally seen in shop windows. All kinds of fungoid and vegetable growths were present, some of which looked like seaweed and some of which were occasionally interspersed with what looked like stalks of celery. These growths pretty well covered over the base and sides of the bladder; some of them he cauterized, some of them he tore off, some of them he tied off, the wound healed rapidly, the patient left the hospital with no hemorrhage, and he is unable to tell his subsequent history.

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[4] In considering the treatment of bladder tumors, I shall not refer to their treatment by the operative cystoscope except that they may be removed by this for diagnosis or may have a field in the future, preferring to leave the discussion of their use to the paper following this.

[5] Mayo, Charles H.: Removal of Bladder Tumors. Am. Jour. Obstet., N. Y., 1908.

[6] Bird, Albert Ashton: Radical Treatment of Carcinoma of the Bladder. Ann. of Surg., 1908.

The next case on which I operated was that of an old man for the relief of hemorrhage of the bladder; growths somewhat similar, but in apparently a more advanced stage, were present and occupied about all the roof of the bladder. It was a curious thing in this case to notice the extreme thinness of the bladder wall. There seemed to be no ulcerative process going on, but the bladder wall was so thin and friable that, after incising the muscle, by simply pushing my finger not at all severely on the wall of the bladder, it pushed right through, the wall of the bladder being so much like parchment. In a case of this type no resection of the bladder wall could have been of any benefit, because union could not have occurred. This patient lived only a week after operating. I recently operated on another case in which a similar condition was present, a process midway between the two others just mentioned being present. He had two tumor masses, one on the roof, one on the side of the bladder, the base of each of which was some three or four inches in diameter.

This brings us to the consideration of an interesting point, and that is the apparent tendency of these bladder growths to extend by contact.

In this last case, it was as if the closing of the bladder had caused a growth which commenced at the side to start up another one on the roof, or vice versa. Of course in such case any resection would have been impossible. This patient lived six weeks and died apparently from other causes. The writer mentions these cases to illustrate the fact that while resection in certain cases may be advisable, it will probably be more popular only in the future when these growths are made out earlier before they have had so much opportunity to become multiple.

Albarran's ordinary method of resection, in which the incision made is rhomboidal, in the cases in which resection is practical, seems to the writer the most advisable. Albarran makes one valuable suggestion, and that is, that it is well to carefully study the situation before making the resection, so that the borders of the wound can be well brought together afterwards, and not have a tendency to gap apart. Also the idea of Mayo appeals to the author that when a single growth is found and is practical to resect and more room has to be made for it than the ordinary suprapubic incision will permit, laparotomy should be performed.

In removing a small isolated growth and with it a small piece of the bladder wall, as illustrated in the textbooks such as that written by Dr. Brooks and myself, among others,[7] in which ordinarily a lozenge-shaped wound is left behind, I think the idea of Albarran that the stitches should be introduced beforehand, before the growth itself is removed, in order to prevent the after-hemorrhage, is a good one to be adopted. Unfortunately, the author is unable to add very much from personal experience of value to the operative technic of these operations, except that each individual case must be judged on its own merits.

He believes that the anesthetic should be administered as short a time as possible, and that as much as possible all procedures, such as distention of the bladder with fluid or with air, should be done before the patient is anesthetized, and but as little time should be wasted doing the operation itself as possible. The little forceps here presented are very useful in catching the mucous membrane of the bladder and holding the wound open. What is ordinarily called the "Pea" light is most useful in observing the bladder while operating. Several men who have operated extensively on prostatic growths recommend that within three or four days the patient should be allowed to sit up and gotten out of bed as rapidly as possible. The writer thinks that he did harm to one patient in pushing this to the extreme. Several recent surgeons have advocated the advisability, following a suprapubic cystotomy, of attaching the bladder wall to the abdominal muscles for a few days to obviate the dead space. As far as the writer's experience goes — he has tried both ways — it has never appeared to him to make any great practical difference.

The history of one case of total extirpation of the bladder has been brought to his attention, the results of which were not such as to encourage him to perform it should the opportunity arise. One case has been under his care in which permanent drainage was made in each kidney, by one of his predecessors in the hospital, for inoperable cancer of bladder and rectum. The patient died shortly after the operation, apparently suffering as little or less than if simple permanent drainage had been instituted through the bladder. On general principles the writer is a believer in operations for the relief of malignant growths of the prostate or bladder, if they are at all practical, because the observation of cases on which no operation has been attempted, simply a permanent drainage tube inserted, would apparently demonstrate to him that those cases suffer as much, if not more, than those in which some operative procedure has been attempted, even if permanent recovery could not be looked for. Such is the condition of affairs concerning growths of the bladder at the present time. There are reasons for hope that in the future, in the bladder as well as in the prostate, a better understanding of the dangers of chronic inflammatory processes will lead to their more prolonged treatment, and that the more common use of the exploring cystoscope will lead to the earlier recognition of such conditions, as well as to the earlier recognition of new growths of the bladder, so that surgical treatment can be instituted before the surrounding tissues have become invaded, and while the growths are single, in which case better results from our efforts may be expected than are at present possible.

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[7] Greene and Brooks: Diseases of the Genito-Urinary Organ and the Kidney. Philadelphia: W. B. Saunders Company. 1908

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NEOPLASMS OF THE KIDNEY AND URETER.*

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TUMORS of the kidney are of special interest on account of their unique anatomical characteristics as well as the difficulties encountered in diagnosis and in operative treatment.

They make up about 2% of all tumors (Ransohoff). Albarran and Imbert,[1] in a series of 529 cases of renal growths in which histologic examination had been made, found only 13 malignant adenomata. An idea of their relative frequency to other diseases may best be gained by noting the number of cases observed in any large clinic. At Basle clinic, in twenty-four years, there were, in 17,405 admissions, 38 surgical kidney diseases, of which 8 were tumors — less than 1 in 2,000. In Küster's service at Berlin and Marburg, in twenty-four years, there were 19,934 admissions, of which 185 were kidney diseases, of which 15 were tumor — .075%. In 3,592 autopsies performed at the Massachusetts General Hospital and the Boston City Hospital during the past ten years, there were 91 cases of renal tumor (Watson). At St. Luke's Hospital, New York City, for the past twelve years, there were, among 33,700 admissions, 325 cases of kidney disease (excluding nephritis), of which 24 were tumors, or .07%. These 24 cases form the basis of this article. The 325 kidney diseases were as follows:

Tumors,	24
Renal calculus, Ureteral calculus,	56
Tuberculosis,	33
Pyonephrosis, Pyelonephritis,	45
Hydronephrosis,	7
Pyelitis,	23
Perinephritic abscess,	12
Displacement,	125
	325

In 13 of the tumor cases histological diagnoses were made or confirmed by Dr. F. C. Wood. In 3 cases of cystic kidney and 1 of secondary carcinoma the operative or bedside diagnosis could not be questioned. The other 7 are grouped as "tumors," irrespective of the clinical diagnosis. The diagnoses were as follows:

	Cases
Hypernephroma,	6
Sarcoma,	3
Mixed tumor,	1
Carcinoma,	1
Adenocarcinoma,	1
Secondary carcinoma,	1
Cystic kidney,	4
Tumor (unclassified),	7
	24

The 4 cases of cystic kidney are included because, whatever their etiological relation, they present many of the clinical features of tumor and because it is possible that some of the 7 unclassified cases may have been cystic kidney, though they did not appear so clinically.

These statistics are sufficient to show the relative rarity of renal tumor. If now we turn to a consideration of the symptoms we will find that they are, as might be expected, varied and inconstant. The disease may first show itself by hematuria, with perhaps obstruction of ureter or urethra by clots, with subsequent infection, and present a picture of calculus, pyelitis or cystitis. Hematuria often is intermittent, the urine being free from blood for weeks or months. Osler mentions as characteristic fibrin casts of the pelvis or calyces. Israel describes the presence of clots shaped like maggots or short, thick *tripper fäden*. He thinks these are due to the blood coagulating as it drops from the points of bleeding papillæ. In the blood-free intervals the urine may be normal. It must be remembered that profuse or even fatal hematuria may occur, the only lesion in the kidney being extensive nephritis. I recently cystoscoped such a case at St. Luke's Hospital. The autopsy showed only an extreme arteriosclerosis with marked interstitial nephritis.

The tumor may also produce pressure atrophy of the kidney, with symptoms only of renal insufficiency and urinary findings of a chronic nephritis. This is seen most frequently in multiple cystic kidneys which some pathologists regard as true new growths. Among the cases of hypernephroma was one in which the tumor was not palpable. The disease was first manifest by hematuria accompanied by rigor. This was followed by marked edema, ascites, vomiting and a rapid developing anemia. The blood disappeared from the urine, but albumen and casts persisted. Death ensued three months from onset of the symptoms and autopsy revealed a necrotic hypernephroma with amyloid liver and spleen.

Cachexia, usually a late, may be the first, symptom. When associated with vomiting, which is common in these cases, the picture may simulate gastric carcinoma. One case in the St. Luke's series, a man sixty-two years of age, gave a history of vomiting for some weeks, with increasing weakness and loss of weight. The kidneys were not palpable; the urine was normal; a test meal showed absence of HCl. It is not generally appreciated how often the gastric secretion of HCl is diminished or absent in carcinoma in any situation. The chief physical sign on examination was dullness at the apex of one lung with distant breath sounds. This was accounted for at autopsy by a large metastasis from a primary growth in the kidney. P. Albrecht reports a similar case.

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* Read before the New York Society of the American Urological Association, March 26, 1909.

[1] Les Tumeurs du Rein, Paris, 1903.

The tumor may give no symptoms until its presence produces a mass which may be seen or felt. Lumbar pain due to pressure is by no means peculiar to the disease. Pressure on the large veins may produce dilatation of the superficial abdominal veins or homolateral varicocele.

Vomiting is a symptom not often emphasized. In 11 of the 24 cases at St. Luke's it was an early symptom, and 4 other cases had persistent nausea.

Jaundice is an occasional symptom, probably due, as Kapsammer suggests, to hemorrhage into the tumor, with absorption of the blood pigment.

Hypernephroma may cause a pigmentation of the skin, related perhaps to the pigmentation of Addison's disease, but it is often local. It was present in 2 cases.

Subnormal temperature is mentioned as an occasional symptom; many of the cases had a slight elevation and some of the children a marked rise.

Some important conclusions can be deduced from even so limited a series of cases, therefore a summary may be of interest. Pain was the first symptom in 7 cases; hematuria in 4; weakness in 5; tumor in 2; vomiting in 1; pain and hematuria in 2. Albarran reports the palpation of a tumor as the first symptom in 59% of 98 cases. The frequency of hematuria varies in different series from 50% (Albarran) to 90% (Kapsammer). Küster, in 379 collected cases, found hematuria in 52%, while in 133 children only 16% showed it. Of the St. Luke's series, excluding cystic kidney:

		Per Cent.
Mass	was present in 16 cases,	80
Weakness	,, ,, ,, 14 ,,	70
Loss of weight	,, ,, ,, 13 ,,	65
Pain	,, ,, ,, 11 ,,	55
Anemia	,, ,, ,, 10 ,,	50
Hematuria	,, ,, ,, 8 ,,	47
Vomiting	,, ,, ,, 7 ,,	45
Leucocytosis	,, ,, ,, 7 ,,	35
Fever (100+)	,, ,, ,, 7 ,,	35
Edema (lower extremities)	,, ,, ,, 6 ,,	30
Metastases (found)	,, 4 ,,	20
Tenderness	,, ,, ,, 2 ,,	10
Venous dilatation	,, ,, ,, 2 ,,	10
Varicocele	,, ,, ,, 1 case	5
Pigmentation	,, ,, ,, 2 cases,	10

The presence of bone metastases is considered by P. Albrecht a differential point in favor of hypernephroma. Such metastases have been operated upon as primary tumors.

The term "weakness," which is used in the preceding table, does not refer to the typical cachexia of malignant disease, but to a condition peculiar to tumor of the kidney. Caspar describes it thus: "I have observed that nearly all patients having renal tumor enter upon a decline, become markedly emaciated, and upon first sight give one the impression that they are seriously ill." Watson calls attention to the fact that "a previous history of failing health, especially if there has been rapid, unexplained emaciation, even in the absence of any local symptoms, should lead one to suspect some serious internal affection. When localizing symptoms, therefore, appear, malignant disease must be the first to be considered.

The x-ray has added much to our ability to differentiate tumors of the kidney from those of other organs and, what is of as great importance, to discover the presence of kidney enlargement before the growth has become palpable. Dr. Lewis G. Cole has communicated to me that it is possible to outline the kidney in 90% of ordinary radiographs of the organ, and, if special care is taken, to do so in 98%. The bearing this has upon cases presenting the symptoms just mentioned is apparent and such an examination should not be omitted upon any patient in whom renal lesion may be suspected.

Garceau reports a case [2] where x-ray picture showed distinct shadows which were thought to have been cast by calculus. The patient had passed uric acid concretions. Lumbar nephrectomy revealed an organ two and one-half times normal size. Scattered through the substance of the kidney were masses of hypernephromatous tissue. There were one or two cavities due to abscess formation; from one a small calculus was obtained. The pelvis of the kidney was obliterated and in parts of the pelvis there were collections of gravel. The hypernephromatous nodules had cast distinct shadows on the plate, which was proved by radiographing the specimen after removal. In 1904, Keen, Pfahler and Ellis reported a similar case in which tumor nodules cast shadows on the plate.[3]

Hardon [4] reported the case of a female in which enlargement of the kidney had been present for two years. A radiograph showed a shadow simulating that thrown by calculus. Operation demonstrated a large tumor.

Taylor [5] failed to successfully radiograph a tumor which weighed 6½ lb. Many of the failures which have been reported are unquestionably due to technic. The more recent use of the compression diagram has largely reduced the number of failures.

Ureteral meatoscopy and renal urinary differentiation have become routine diagnostic procedures. Cryoscopy and the so-called functional test of the urine are of more value in deciding for or against operation than as aids to diagnosis. The response of the uninvolved kidney to these tests is the important factor to consider in advising nephrectomy. Even in this there is a percentage of error which has to be taken account of. For instance, Kapsammer quotes a case in a child where a tumor pressing on the opposite ureter completely obstructed it. Reflex anuria may also occur. The data derived from functional tests are only of value when used in conjunction with other findings.

The prognosis of kidney neoplasms is grave. The immediate operative mortality is very high and ultimate results almost less favorable. Various surgeons' operative mortality is as follows:

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[2] Trans. Am. Urol. Asso., vol i.

[3] Am. Med., 1904, vol. viii.

[4] Ill. Med. Jour., 1903–1904, vol. v.

[5] Am. Jour. Med. Sc., 1906, vol. cxxxi.

	Per Cent.
v. Eiselsberg (20 cases),	35
Schede,	50
Küster,	45
Reidel,	41
Albrecht,	33
Kummel,	10
Israel (117 cases),	24
Krönlein,	9
St. Luke's (16 cases, 6 exploratory),	50

Bland-Sutton states the operative mortality of renal carcinoma and sarcoma to be 50% and that life is prolonged not more than a year by operation. Operations for embryonic tumors in children have in recent years, however, yielded encouraging results. Albarran and Imbert gave the operative mortality of 34 cases collected from 1876 to 1890 as 52%, and 90 cases collected from 1895 to 1902 as 25%. Abbe[6] reported the removal of a seven and one-half pound renal tumor from an eighteen months' old female infant. He has recently told me that the patient is still living, a healthy young woman.

Of the St. Luke's series, 13 cases died with recurrence: 10 at periods of one to twelve years; 1 case had recurrence, but was living when reported; 1 case died without recurrence five years after operation; 4 are living without recurrence (2 carcinomata, 2 hypernephromata).

One reason of the high operative mortality is the rarity of early diagnosis. The tumor does not become palpable until it is very large.

Radical removal at present offers the only chance for cure, the size of the tumor indicating the route for removal. The transperitoneal route permits better exploration of the opposite kidney and a more complete extirpation of the lymph nodes and other surrounding structures which may be involved in the growth. Von Eiselsberg and others, however, still adhere to lumbar incisions, claiming that the peritoneum can be opened and the other kidney palpated with equal ease if necessary. Intense pain or serious hemorrhage may make operation imperative.

With regard to multiple cystic kidney, the opinion formerly current was in favor of nephrectomy when the disease was confined to one kidney. To make sure, the opposite kidney must be explored. Nephrectomy, by throwing all the work on the other kidney, may, however, produce a fatal end because the remaining kidney, being already diseased, is incapable of completely eliminating all the waste products, and death ensues from uremia. This unfortunate result occurred in one of the St. Luke's cases. Prockowitz also reports a case in which the opposite kidney felt free at operation, but the patient afterward quickly showed the disease in the other kidney. Seiber collected 62 cases of nephrectomy for cystic disease with an operative mortality of 32.8% (22% of these dying from uremia or shock); 67% showed temporary success, but in 21.9% of these later involvement of the other kidney appeared. Israel advises against nephrectomy in these cases, and Garré, Küster and others conclude that the operation is indicated when pain or hemorrhage is very severe or the kidney has become infected or strangulated.

Renal tumors do not fall readily into the ordinary pathologico-anatomical classification. In 89 cases of tumors in adults which Küster collected during a period of six years (1902–1908), 58, or 65%, were hypernephromata. Adding to this many which were diagnosticated "cancer," the description of which suggests hypernephroma, would bring the total up to 75%. These are generally believed to originate in aberrant remnants of adrenal tissue which are occasionally found in the columns of Bertini. They retain many of the histological and, Crofton claims, some of the chemical characteristics of adrenal tissue, but often vary widely from the type. They may develop characteristics of sarcoma or of carcinoma. Neuhäuser makes the doubtful claim that all malignant tumors of the kidney originate in suprarenal remnants. Hypernephroma is also considered by some as a form of carcinoma; by others as sarcoma or as tumor *sui generis*. They may become very large without producing any symptoms and may suddenly begin to form metastases. They have a tendency to invade the veins and may grow well out into the vena cava. Metastases usually take place by way of the blood stream and are relatively frequent in the bones. Hypernephromata develop elsewhere than in the kidney. Ellis collected 163 cases, of which 157 were in the kidney, 3 in the adrenals, 2 in the liver and 1 in the uterus. In the cases reported from St. Luke's, 1 was probably primary in the adrenal. During the same period (the past twelve years) there have been observed at St. Luke's 2 cases of hypernephroma of the ischio-rectal fossa and 1 of the ascending colon. Besides hypernephromata, only carcinoma, sarcoma and mixed tumor are of importance. The last with few exceptions occur in children under ten years of age. The frequency of metastasis from all types of renal tumor is as follows: lungs, liver, lymph nodes, other kidney and bones, in the order named.

The kidney is not infrequently the seat of metastasis from primary tumors elsewhere. Küster's figures are: In 126 cases of carcinoma, 10 showed renal metastases, and in 67 cases of sarcoma, renal metastases occurred the same number of times. Usually these lesions are obscured by the primary growth and are only recognized at autopsy, but occasionally they may dominate the clinical picture. One such case has been included in the St. Luke's series because the symptoms of lumbar pain, progressive weakness and hematuria and the presence of a mass in the kidney region suggested a primary growth. Only the finding of the scar of a breast amputation and a skin metastasis elsewhere made the real diagnosis evident.

The infinite variety of renal tumors which have been recognized histologically can be appreciated by referring to Küster's classification, as follows:

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[6] Ann. Surg., 1894, xix, 61.

- I. Tumors of the kidney proper:
  - *A.* Connective tissue tumors.
    - 1. Fibroma and myxoma.
    - 2. Lipoma.
    - 3. Sarcoma.
      - *a.* Simple sarcoma.
      - *b.* Angiosarcoma or endothelioma.
      - *α.* Hem. endothelioma.
      - *β.* Lymph endothelioma.
      - *γ.* Perithelioma.
  - *B.* Epithelial tumors.
    - 4. Papillary tumors.
    - 5. Adenoma.
    - 6. Carcinoma.
      - *a.* Papillary.
      - *b.* Circumscribed.
      - *c.* Infiltrating.
  - *C.* Tumors developed from extrarenal elements.
    - 7. Embryonal adenoma (mixed tumor).
    - 8. Hypernephroma.
- II. Tumors of the capsule.
  - 1. Lipoma.
  - 2. Fibroma.
  - 3. Myxoma.
  - 4. Sarcoma.
  - 5. Mixed tumor.
  - 6. Epinephroid tumor (hypernephroma).
  - 7. Epithelial-containing tumor (dermoids).
- III. Tumors of the suprarenal:
  - 1. Hypernephroma.
  - Possibly also carcinoma and sarcoma.

While, as has been shown, tumors of the kidney are relatively infrequent, those of the pelvis and ureter are more so. Benign neoplasms of the ureter and pelvis are, however, frequent as compared to malignant growths. Nicod, in 1827, reported a polypus of the ureter and, in 1835, a polypus in the canal of the ureter (Rickett's "Surgery of the Ureter"). Such tumors are papillomata and are seen in the pelvis of the kidney. They may spread over the whole surface of the pelvis, obstruct it and produce hydronephrosis. They resemble papillary bladder tumors, which are often associated with them. They are prone to develop malignancy. Primary carcinoma and sarcoma of the ureter have been observed, but such growths are usually secondary to neoplasms of the pelvic organs. A primary epithelioma of the pelvis has been found in a few cases.

Targett, in 1891,[7] reported a specimen of sarcoma of ureter taken from a man forty-six years of age, causing obstruction. From its upper extremity to the bifurcation of the right common iliac artery the right ureter was surrounded and invaded by the new formation. Hektoen[8] reports a case of primary carcinoma of ureter in a woman fifty years of age. Some of the varieties of primary tumor of the ureter described are: By Lebert, a polypoid fibroma; Thornton, a papillary fibroma upon which a calculus was situated; Neelsen, a typical papilloma of the upper part of one branch of a partially reduplicated ureter causing a large hydronephrosis of the corresponding half of the kidney; Chian, a so-called cholesteatoma of the ureter, and Ribbert, a myosarcoma. Wising and Blix reported a case of primary carcinoma of the right ureter with secondary tumors in mesenteric glands, the rectum and the liver, with hydronephrosis, in a woman whose urine examination was normal (Rickett's).

The generally accepted treatment for ureteral tumor, whether benign or malignant, is nephrectomy combined with ureterectomy. Watson and Cunningham (1908), after an extensive search of the literature, were able to find only 5 cases showing the end result following nephrectomy for simple papilloma.

Case I. (Fenwick.) Required ureterectomy for a recurrence at the end of a year. Death four years later, at which time the prostate and operation scar were the seat of malignant disease.

Case II. (Fenwick.) Patient well at end of five years.

Case III. (Heaton and Gamgee.) Duration of disease, nine years. No recurrence nine months after operation.

Case IV. (Le Dentu and Albarran.) Duration, four years. No recurrence fourteen months after operation.

Case V. (Tickhoff.) Male, age forty years; duration of symptoms, twenty years. No recurrence for ten years following operation, then medullary carcinoma appeared in the operative scar and patient died in six months.

In 9 cases of nephrectomy for papillary epithelioma, recurrence took place within a year in 4 cases; 1 recurred as carcinoma six years after operation; in 4 there was no recurrence at periods varying from six months to four years.

CYSTOSCOPY IN NEW GROWTHS OF THE URINARY SYSTEM.*

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(1) *New Growths of the Bladder.* — It is as the early and certain means of diagnosing tumors of the bladder that the cystoscope has achieved, perhaps, its greatest triumph. Cystoscopy not only enables us to ascertain readily whether or not a tumor is present, but it furnishes data as to size, location, character and number of growths; also as to the advisability of operation, which can be learned in no other way short of exploratory incision. Furthermore, it is an accurate method and, on the whole, an easy one. The cystoscope does not lie; it gives us a correct image which any one may see, but whose proper interpretation often calls for the utmost experience and skill.

A typical papilloma in an uninflamed bladder and a clear medium presents a beautiful and striking picture which is unmistakable, and once seen is never forgotten; in the presence of cystitis and hemorrhage it is quite another matter.

What are the limitations of cystoscopy in vesical new growths? There are, in the first place, the limitations of cystoscopy in general. Nitze's three requirements necessary to successful cystoscopy must be fulfilled, viz., the urethra must permit of the passage of the instrument, the bladder must be capable of a certain amount of distension, and it must contain a transparent medium. New growths may offer special difficulties under any one of these three headings: (1) They may block the passage of the instrument; this is especially true of malignant growths of the prostate and neck of the bladder; or (2) the tumor may completely fill the cavity of the bladder, leaving no space for the manipulation of the instrument; (3) it may be impossible to secure a clear medium on account of hemorrhage from the growth. The first two difficulties are insurmountable when present, but are fortunately rare. The third difficulty, hemorrhage, though often present, is curiously enough seldom bothersome. Papillomata of the bladder bleed profusely and even alarmingly without apparent cause, yet they seldom do so while under cystoscopic inspection. When a tumor of the bladder is suspected, it is better when possible to make the examination in an interval between hemorrhages; if the bleeding is suspected of coming from the kidney it should, on the contrary, be made during the bleeding. I do not hesitate to use the cystoscope during hemorrhage, and have only once out of thirty-eight cases of tumor of the bladder examined found it an insurmountable obstacle. In other cases hemorrhage was more or less bothersome, but in all sufficient could be seen to warrant a diagnosis. In fact, in my experience, hemorrhage has been more troublesome in cases of hypertrophy of the prostate than in tumors of the bladder. Adrenalin is of considerable value in controlling fresh bleeding. Prevention is better than cure, however, and gentleness of manipulation, gradual dilatation of the bladder and avoidance of entirely emptying the viscus during irrigation are practical means to this end.

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[7] Trans. Path. Soc. London, xliii, 92.
[8] Jour. Am. Med. Asso., 1896, xxvi.

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Having obtained a reasonably clear medium, what may we expect to see? There are various types of vesical tumors which are quite characteristic and readily recognized. Hurry Fenwick[1] picturesquely describes the villous papilloma as seen through the cystoscope in these words: "The delicate leafy processes are usually of a light fawn color and are veined by the blood red streak of their capillaries. They float freely about in the vesical water, trembling at every pulse of the iliac vessels, every movement of the beak of the cystoscope or swaying with the eddying rush of the ureteric streams near which they are usually placed. The entire picture is often like a small aquarium with a hydra or a sea anemone moving its tentacles about in search of prey."

This vivid description applies more particularly to the delicately villous papillomata which have been so generally compared to water plants; another form which is of more common occurrence, at least in my experience, is the lobulated papilloma in which the villi are more closely set, stouter and shorter; these growths closely resemble miniature pinkish cauliflowers and present a no less beautiful picture. There are various transitional forms which require no special description. The papillomata vary greatly in size from the merest splash to a tumor filling the entire cavity of the bladder. They are often multiple; sometimes the whole mucous membrane appears to be sown with them. A villous carcinoma may be cystoscopically indistinguishable from a benign papilloma, the only difference being an epithelial infiltration of the bladder base in the former. There is good evidence that the benign papilloma may undergo transition into a malignant growth; in its early stages this could only be recognized under the microscope.

The nodular infiltrating cancer of the bladder wall presents quite a different aspect. The surface of the growth is less raised; it is knobbed or nodular or coarsely papillary; often ulcerated or necrotic; the base is sessile and hard to see, and the whole tumor firmer and less freely movable.

Sarcoma of the bladder, which occurs usually in early life, it has never been my fortune to see with the cystoscope. It is said to present quite a characteristic appearance resembling clusters of grapes. Fibroma and myoma are smooth and rounded in outline, usually sessile, and seldom give rise to hemorrhage.

Of the 37 cases of bladder growths which I have examined with the cystoscope, 17 were pedunculated papillomata; many of these were multiple, 2 were encrusted with urinary salts. All of these cases were operated upon, and the diagnosis confirmed. Some have had recurrences with subsequent operations, 1 patient has had three operations, and 13 papillomata removed in all. She has remained free from recurrence during the last nine months.

There were 13 cases of primary cancer of the bladder, 2 cases of cancer of the bladder secondary to cancer of the intestine, 4 cases secondary to cancer of the prostate, 1 case of papillary cystadenoma of the prostate.

In examining a vesical tumor with the cystoscope it is important to determine, besides its form and probable character, details as to situation, size, number and whether or not pedunculated. The situation is particularly important, especially in relation to the ureteral orifices, near which, especially on the outer side, papillomata are most likely to be found. One wants to know in removing such a growth how wide a sweep can be made about the pedicle without endangering the ureter. Knowledge of this kind can be more easily obtained in a preliminary cystoscopy than at the time of operation when bleeding is apt to be troublesome. The preliminary passage of a ureteral catheter is often a distinct help. The situation as determined by the cystoscope will also at times decide which form of operation, extra- or intra-peritoneal, is the better. Having found a papilloma with the cystoscope, it is important to search thoroughly over the entire bladder wall for others which are frequently present and more easily discovered then than at the subsequent operation. When the bladder is opened and emptied, small tumors flatten out against the bladder wall and are exceedingly difficult to see.

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[1] Fenwick, E. Hurry: Clinical Cystoscopy, p. 255.

It is quite difficult to judge accurately of the size of growths, especially if they lie close to the internal urethral orifice, when they are apt to be exaggerated. When they are on the floor of the bladder or trigonum, their size may be approximately judged by the amount of bladder wall covered.

It is not possible to determine accurately whether a tumor is benign or malignant, but a fairly shrewd guess can usually be made. As a rule, a villous or papillary tumor with a small base is benign, the sessile villous tumor, usually, and the nodular tumor, always, malignant. The pedicle is often difficult to see; the irrigation cystoscope is useful in accomplishing this object, as a stream of fluid may be directed against it, displacing the overlying villi and allowing the stem to be seen. A source of difficulty with large tumors is when the growth impinges on the shaft of the cystoscope between the lamp and prism, obscuring the light.

The greatest difficulty in cystoscopy of tumors of the bladder is offered not by bleeding, but when there is accompanying severe cystitis. The inflamed bladder wall obscures the picture, there is not the usual contrast between tumor and vesical wall. Flakes and sheets of muco pus are adherent here and there, difficult to dislodge; the tumor may be necrotic and sloughing, or obscured by blood clot, or covered with phosphatic deposit; and, worst of all, these is usually pain, intolerance and tenesmus. Under these circumstances, patience and skillful manipulation are required to arrive at the correct diagnosis. After all, the error of overlooking a tumor which is present is less often charged against cystoscopy than diagnosing one which does not exist.

Among the sources of error are edema bullosum, which presents a remarkable picture of a series of superimposed edematous globules. I have personally seen only one good example of this, which was readily recognized, however, from the pictures in the textbooks; the cause in this particular case was found at operation to be a pyosalpinx adherent to the bladder wall.

A condition of the mucous membrane particularly about the internal urethral orifice found in long-standing cases of inflammation, called " cystitis colli proliferans," presents a number of club-shaped transparent villi, each with a central blood vessel arising separately from the bladder wall. When these are seen very close to the prism they might be mistaken for real tumors; upon pushing the cystoscope farther in, and viewing them from a distance, their true nature is apparent. A stone is usually distinguished by its color, contour, touch and mobility; an encrusted tumor, however, might be mistaken for stone.

Blood coagula and flocculi of muco pus offer no serious difficulties. Enlarged prostatic lobes are usually quite characteristic, owing to their position close to the urethral orifice, their smooth and rounded surface covered with normal mucous membrane, and their translucency.

Folds of the bladder wall may be deceptive; changes in the distension of the bladder will usually reveal their real nature. Prolapse of the ureteric orifice may closely simulate a cystic tumor, the presence of the orifice and the characteristic peristaltic movements should solve the problem.

A sharply anteflexed uterus, fibroid or other tumor in the neighborhood may invaginate the posterior or superior wall of the bladder, and appear as a rounded, smooth projection into the cavity of the bladder. Rectal or vaginal examination will usually explain this.

(2) *New Growths of the Prostate.* — Adenoma of the prostate, which is included in the term of simple hypertrophy, usually presents no great difficulty; its special characteristics have already been mentioned.

Cancer of the prostate is not recognizable by the cystoscope in its early stages; when it has broken through the capsule and has begun to involve the mucous membrane of the bladder, it is manifested by irregular nodular masses on the surface of the prostatic lobes and floor of the bladder. Advanced cancer of the prostate often offers the greatest difficulties to a cystoscopic examination; the introduction of the instrument is sometimes impossible and almost always painful, the bladder is usually inflamed, sensitive, contracted, intolerant and bleeds freely. Enthusiastic as I am about the cystoscope, I believe that the rectal touch gives us more valuable and earlier information in the diagnosis of this disease than does cystoscopy.

(3) *New Growths of Kidney and Ureter.* — The cystoscope, although unable to render a diagnosis by itself alone, as in cases of vesical growth, is of great assistance in arriving at a correct diagnosis and locating tumors of the upper urinary tract.

Cystoscopy is no less indispensible in every suspected case of kidney tumor than in tumors of the bladder.

In the first place, a tumor of the bladder may co-exist with a tumor of the kidney. In villous growths of the kidney pelvis and ureter, villous tumors have been observed at the corresponding ureteric orifice in the bladder, and even issuing from it. In such cases, after removing the bladder tumor, bleeding and other symptoms on the part of the kidney would persist. A new growth of the bladder may closely simulate a new growth of the kidney, especially if it is located close to the ureteral opening, in which case it may partly obstruct the ureter, when, in addition to hematuria, there may be also renal pain and tumor.

New growths of the kidney show blood in the urine in some stages of the disease in upwards of 50% of the cases. When there is hematuria, cystoscopy will show from which side it comes, hence the importance in renal cases of examining during the bleeding.

Rovsing [2] and Kuhn [3] have made the disquieting observation that in certain cases the hemorrhage may come not from the neoplastic kidney but from the opposite congested and hypertrophied organ.

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[2] Albarran et Imbert: Les Tumeurs du Rein.

[3] Kapsammer: Nierendiagnostik und Nierenchirurgie, vol. ii, p. 231.

Albarran has never observed this but admits it may be so. It must be rare.

Unilateral renal hemorrhage occurs in many conditions beside renal tumor, notably in early tuberculosis, stone and, commonest of all, in the so-called essential renal hematuria. I know of no certain method of differentiating the latter kind of hemorrhage in many cases from new growth except by exploratory incision.

Analysis of the urine of the two kidneys obtained by segregation of ureteral catheterization may throw light on the diagnosis. Tumor cells are rarely found. Albumen and microscopic blood are frequent, but not distinctive.

Modification of the renal function in cases of malignant disease of the kidney are to be expected where much of the parenchyma is involved. Diminution of the total quantity and of the quantity of solids have been observed, also alteration in the excretion time of methylene blue, indigo carmine and phloridzin. Sufficient work, however, has not yet been done in this line to warrant definite conclusions, and such evidence is merely of contributory value.

Finally, in cases in which the diagnosis is already reasonably established, the cystoscope should be called into use to determine as far as possible the presence and activity of the second kidney as in any case where nephrectomy is contemplated.

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Reports of Societies.

NEW YORK SOCIETY OF THE AMERICAN UROLOGICAL ASSOCIATION.

Meeting of March 26, 1909.

The President, **Dr. James Pedersen**, in the chair.

Dr. Richard L. O'Neil, of Boston, said that cancer of the male urethra was an extremely rare condition. It might be primary in the deep urethra without any previous venereal condition. Dr. O'Neil said he would like to report two cases of Dr. Barney's; both were from records of the Massachusetts General Hospital.

Case I: This was a man sixty-two years old. He denied ever having had any venereal disease. Two years before, being seen in the hospital, he had a sudden retention of urine lasting five hours. Since then he had had occasionally attacks of difficult micturition. Five days before his entrance he had an acute retention which lasted two days, when he began to pass a little urine. Upon examination, there was found an induration at the penoscrotal junction, extending to the posterior limits of the perineum, apparently surrounding the urethra. The bladder was distended to the umbilicus. There was edema of the prepuce and multiple urethral strictures. The rectal examination was negative. A perineal section was performed. At the end of seven weeks he returned for dilatation. At the end of five weeks he again returned, and the perineal wound was enlarged, and a cavity with suspicious-looking tissue was found. This tissue upon examination proved to be epitheliomatous. Death occurred about eight months later from cancer.

Case II: This patient was fifty-eight years old, and had had gonorrhea fifteen years previous. Seven years ago he had acute retention, of which he was relieved by catheter. Since that time he had more or less difficulty with micturition. About one week before his admission to the hospital he noticed a painful swelling in his perineum. This upon examination proved to be a perineal abscess, which was opened. A second operation was done later and a perineal stricture was cut and some gray granulations removed which proved to be epithelioma. This patient in time died.

Case III: This patient was a man sixty-five years old, and gave no history of any venereal disease. For a number of years he had had trouble with micturition, at times the retention lasting for a few hours. He had had twelve such attacks of temporary retention. During the last three or four weeks he was getting much worse. He passed blood once, a terminal hematuria. Upon examination his abdomen was found to be full and dull on percussion in its lower part. At the penoscrotal junction was a hard, nodular, tender mass which seemed to involve the urethra. The patient claimed that this mass had been present but three or four weeks. The examination of the prostate was negative and did not seem to connect with the mass. No instrument could be passed, and their use caused bleeding. This patient was sent from the dispensary to the General Hospital for operation. There was then quite a difference of opinion among the members of the staff who had seen him; they did not know whether the growth was an inflammatory one or a malignant one. Most cases had been wrongly diagnosed, either as a simple structure or a structure with peri-urethral abscess, or urinary extravasation. This patient was to be operated on, so the diagnosis was not known. But it seemed to him that the feeling and the fact that for four weeks there had been no tenderness very strongly favored the diagnosis of neoplasm.

In regard to cancer of the bladder he said he had nothing to add except to emphasize that in the advanced and inoperable cases relief of the symptoms was obtained by curetting, cauterizing and draining the bladder. By this means some cases would be made very comfortable for some time.

With regard to intraperitoneal cystoscopy, as referred to by Dr. Greene, work had been done and reported by Dr. Harrington, of Boston, fifteen years ago. This was a good method and gave an excellent avenue for approach to bladder tumors, particularly when the tumor had a broad base and it was desirable to remove the entire thickness of the wall, or nearly so. He had seen it done a number of times. Dr. Davis had seen cases of papilloma with small stalks, and the approach by this method was very easy and one got a good operative field. But in the use of this instrument, the base of the growth must be broad and the growth limited to certain portions of the bladder. Such a case he said he had assisted in operating upon just one week ago. The end result was unfortunate. This old man had a growth the size of a silver half dollar, and it was connected with the urethra. The operation was a difficult one, and the patient died of shock. He recalled another case of a man with an infected bladder; the growth was rather extensive. The intestines were protected with gauze. Extraperitoneal drainage was instituted, but the patient died of peritonitis. Such operations had a definite indication. In this last case, the growth could not have been removed in any other way. The tumor was very malignant.

With regard to tumors of the testicle, sarcomas, of course, were very fatal. He had found it stated somewhere that finding cholesterine crystals in the aspirated fluid meant that there existed a teratoma of the testis.

Sarcoma of the kidney in children under ten years of age was not uncommon. This reminded him of a case that had been reported, a four and a half pound tumor removed from a child but three years old; this tumor was comprised of various forms; there was the round and spindle-celled sarcoma, fibroma, and in places smooth muscle fibers were noted. Hematuria was the most common symptom, and most reliable, but must be differentiated from that occurring in nephritis and from various other causes. When the mass could be felt, the disease was far advanced.

One of the most interesting of the kidney tumors was hydronephroma, interesting because the patient presented symptoms of an interstitial nephritis, with high blood pressure, with the second aortic sound accentuated, polyuria and hematuria, etc., cases that were not infrequently treated as a chronic nephritis until the true nature of the condition was determined. Such a case was diagnosed by Dr. Councilman, of Boston, who based it upon what was found in the urine. The urine in hydronephroma might have a low specific gravity, few hyaline casts, and blood might be present.

In closing, Dr. O'Neil said he would like to speak briefly in reference to adrenal tumors, and described a case seen by him a few days ago in the dispensary. The patient was a man, fifty-six years old, who gave no symptoms except shortness of breath and a feeling of weakness in his legs, and was referred to him from the medical department. Examination revealed a systolic murmur at the apex of the heart. The abdomen was full, but not tender; there was a marked resistance caused by a large mass in the right hypogastrium and epigastrium, well shadowed by the x-ray. The skin was markedly bronzed. The urine had a low specific gravity, 1,008, was pale, and contained albumen .25%. Ten days previous he had blood in his urine which was pale red. Later there was no macroscopical blood. The examination with the cystoscope was negative. Examination of the prostate was negative. Adrenal tumors were rare. He believed the case to be one of adrenal tumor with destruction of the gland. These tumors were seen but occasionally. There were the benign tumors, the adenoma and cyst-adenoma, both of which might become quite large. The sarcoma was the most common of the malignant type. The symptoms were vague, the metastasis being first noticed. They involved the blood vessels in their growth, and hematuria might be present because of pressure upon the vena cava and renal veins causing congestion in the kidney. When the tumor was felt, it was more in the epigastric region than would be a renal tumor. The bronzing of the skin might or might not be present. An operation in such a case would be unsuccessful. In this case the tumor was enormous. After operation, a section was given to the pathologist, who reported the growth to be a papilloma and that he could find no malignant elements. This patient died in one year after. He believed that in order to determine the malignancy of a tumor, the growth must be sectioned throughout its entire extent.

Dr. Bond Stow presented specimens of multiple metastatic sarcomata of the ureters.

Dr. E. L. Keyes, Jr., presented two specimens of Wilm's embryonal sarcoma of the kidney. One was quite large, the other small. The large tumor was removed from a girl nine years old. She gave a history of having had this tumor for three years, but its rapid growth only occurred during the last six months. She had no hematuria. She had lost much weight. The tumor weighed 6 lb. The patient withstood the operation well, but she died six weeks after from an extension to the right lung. The kidney was adherent under the diaphragm. The remarkable thing about the operation was the ease with which the tumor was removed. The incision made was the ordinary one, along the right border of the rectus muscle. These tumors were mixed, but with the sarcomatous type predominating. A point of interest in this specimen was a nodule of bone situated in the middle of the tumor.

The second specimen was a tumor which was removed by Dr. S. J. Walsh. This case was very instructive, showing the growth of the tumor from the center of the kidney, with normal kidney tissue at either end. The patient was a boy, thirty months old.

With regard to shadows of the kidney, as referred to by Dr. Squier: Shadows of the kidney tumor might be as misleading as shadows of stone. Recently, Dr. Keyes had a case of genital tuberculosis, the disease being in the prostate, the bladder and one testicle. He thought the trouble began in the left kidney. Four years previous, the patient had had a severe pain on the left side, and hematuria; it was, therefore, supposed that the trouble began in that kidney. The bladder was in bad shape and it was impossible to catheterize the ureters. Two ureters were found by cystoscopy; and the left ureter was apparently in the center of an ulcer. There was a retention of 7 oz. of urine caused by stricture. A perineal section was, therefore, done. Because of the x-ray findings the left kidney was later cut down upon. It was found to be slightly enlarged by hydronephrosis involving the ureter and pelvis of the kidney. There was no tuberculous or inflammatory lesion at all.

Dr. Keyes said he had had but one case of epithelioma of the urethra, and this was peculiar in type. It showed itself simply by producing a gleet. The patient had had gonorrhea; one year later, he had a persistent urethritis. He was washed and dilated to 45 without any trouble. The urethroscope was used and a whitish papilloma was found. Various caustics were used, but without any good effect, and the curette was then used; the growth was as hard as leather. The case was, therefore, turned over to Dr. Abbe, who applied radium to the growth with very satisfactory results. It was diminishing in size. It looked like a leucoplakia of the tongue.

Dr. Winfield Ayres said he was interested in the use of the operating cystoscope for removing tumors. When once a tumor of the bladder was diagnosticated, he did not believe in wasting time, but to attack the tumor at once. The base of the tumor might be malignant, whereas the rest of it might be benign, and such cases should be operated upon at once.

Dr. Squier neglected to mention one thing in particular in the symptomatology of tumors of the kidney, i. e., the scarcity of symptoms, and he recalled four cases in which the diagnosis was made of hydronephroma, and in each case the only symptoms present were hematuria and frequency of urination. In all four, an examination was made for tumor of the bladder, but the cystoscopic examination showed a normal bladder, but urine coming from but one ureteral orifice.

The observation cystoscope should be depended upon to determine from which ureter the blood is coming, as the ureteral catheter, no matter how carefully passed, may cause a little blood from a perfectly healthy ureter. Unfortunately, at times no blood will be seen issuing from either side, and under these conditions the ureters may be catheterized in hopes of locating the trouble. Dr. Cabot, in one instance, not seeing any blood issue from either kidney, catheterized both sides and then made pressure over the suspected side and there was immediately a gush of blood from the catheter inserted on the suspected side. Dr. Ayres never had had to resort to this, but considered it a valuable point.

With regard to diagnosing the origin of blood in the ureter without the use of the cystoscope, this could sometimes be done. Pass a catheter into the bladder and wash it out; if the return flow comes quickly clear, one probably was dealing with hemorrhage from the kidney, whereas, if the washings cleared slowly of blood, the hemorrhage was probably from the bladder. But this was not always true. The only certain method, however, of making a diagnosis of the origin of the hemorrhage was by the use of the cystoscope.

He reported briefly an interesting case which had been under observation four years. For eighteen months before his first call the patient had been subject to attacks of colic followed by severe hematuria. At the time he first came under observation the urine was free of blood, but he had a bilateral pyelitis which was cured by lavage. There was no enlargement of either kidney. The periodic attacks of colic and hematuria continued. Two years ago there was no enlargement of either kidney, but eighteen months ago the right kidney was felt to be markedly enlarged. An operation was advised, consented to, and a very large hypernephroma was removed. Since that time the patient has been perfectly well.

Three years ago a patient was referred by Dr. Fewsmith whose only symptom was hematuria. The right kidney was discovered to be enlarged and nephrectomy was advised. A moderate sized hypernephroma was found. Six months later the patient suffered from retention, and on cystoscopic examination a tumor — probably a metastatic hypernephroma — was seen occluding the internal orifice of the urethra. Patient refuses operative interference.

Dr. Follen Cabot, speaking of growths of the genito-urinary tract, said that an early diagnosis was most important, and we were getting to the time where an early diagnosis was more frequently made than formerly. This was very important in order that lives might not be sacrificed by frittering away valuable time before the diagnosis was established.

What Dr. Smith had stated regarding epithelioma of the penis with a tight foreskin was very true; all patients operated on by the speaker had tight foreskins.

In regard to tumors of the bladder, the determination of their situation was very important. Most of them were seen on the floor, not on the anterior wall, but when in the latter situation, they could be removed more completely and with better results. Dr. Cabot had seen two cases of tumor of the anterior bladder wall. In the examination of these growths different kinds of cystoscopic telescopes should be used. Among them was the direct telescope, the indirect and the Kelly cystoscope for use in the female bladder. In making a diagnosis, two examinations should always be made; a mistake might occur because of the presence of a blood clot, cystitis, etc. Dr. Cabot reported having seen a stone adherent to the bladder wall, and this was not recognized as such until after three or four examinations. The stone was covered with dense mucus and looked like a growth hanging to the bladder wall.

About preliminary removal of new growth of the bladder, he disagreed. Negative findings were not so valuable, of course, as positive findings, but at the same time he felt that a positive diagnosis made by the removal of a small piece of the growth might easily change the whole plan of an operation. In removing these growths one must get at the bladder wall from the outside. In doing a double nephrostomy, the ureters must also be tied off; otherwise, they would continue to drain into the bladder.

The approach to the bladder in operations for new growths could well be made by the extraperitoneal route. All necessary room could be obtained by pushing the peritoneum back and lifting the bladder up into the wound.

The transperitoneal route, owing to changes of infection from the bladder, was not, the speaker thought, a safe procedure. Nearly all bladders the seat of new growth were seriously infected.

Dr. G. A. de Santos Saxe said he was astonished that not more had been said by some of the readers of the papers concerning the value of the microscopical study of the urine in the diagnosis of tumors, especially of tumors of the bladder and kidney. Perhaps it was because this question was one that had not yet been really thoroughly settled. He noticed that Dr. O'Neil had mentioned a case in which the diagnosis of hypernephroma had been made by Professor Councilman from a study of shreds in the urine. Dr. Saxe said that his personal experience in his line of work had in many cases demonstrated the value of the microscopic study of the urine in the diagnosis of tumors, although he had never been able to make out a "hypernephroma" in this manner. He asked to be permitted to relate a case which he had had the opportunity of examining, in conjunction with other surgeons about one year ago. The patient was a woman who was supposed to have a growth in her pelvis, but the exact location of the growth was not known. Previous to operation, which had been obtained by catheter, her urine was carefully examined, and, to his astonishment, he found, in addition to the urinary elements, what he could not help recognizing as intestinal elements, such as intestinal epithelia, connective tissue shreds and fecal fragments. These epithelia had oddly shaped, ameboid processes. He had never seen from any part of the urinary tract such oddly shaped epithelia. Pigment was also present in these bizarre epithelia. This pigmentation, these atypical epithelial forms and the presence of fecal elements led him to conclude that they were dealing with a case of vesico-intestinal fistula, and that there was a malignant growth present. At operation, this diagnosis was found to be correct. The tumor mass involved the bladder wall and the intestine. The carcinoma had been primary in the uterus and had subsequently involved the bladder and intestine. A complete hysterectomy, a resection of a portion of the gut and a resection of part of the bladder were performed, and the patient was living to-day. The operation was performed about one and a half years ago by Dr. W. G. Crump, of this city, by whose kindness Dr. Saxe was permitted to study the case.

With regard to the diagnosis of hypernephroma, Dr. Saxe said he had never been able to make a diagnosis of this tumor as such from an examination of the urine, nor from the clinical data of the case. Some surgeons of late have gone so far as to make this diagnosis clinically, and Dr. Saxe wondered how such a diagnosis could be made without more facts than the existence of bleeding and possibly of a mass in the loin. It seemed to him that this diagnosis might now be made more frequently, since surgeons had come to recognize the existence of hypernephroma as a more frequent occurrence, and were on the lookout for it.

Dr. Ferd. C. Valentine said that, in his opinion, one point regarding intravesical neoplasms had not been sufficiently emphasized, namely, the tendency of benign growths to recrudesce and then become malignant. It had been his fortune to see but few, perhaps seven or eight, such growths in this country. In the late Nitze's service, however, quite a large number had been presented; all were removed by the incandescent snare through the operating cystoscope and their bases cauterized by means of the same instrument. Nitze held, however, that their removal gave but temporary relief, for the invariable result was their recrudescence in the course of time. The speaker recalled one of Nitze's patients from whose bladder Nitze removed a pedunculated papilloma, in the site of the same cicatrix from which four similar growths had been removed in the same manner.

The skill that Nitze possessed in this work is by no means within the visual and manual dexterity of all operators. Although as far as the speaker's knowledge went, every such operation was successful in Nitze's hands, Nitze invariably warned those who saw him operate that whoever attempts the cystoscopic removal of tumors ought at every stage of the procedure to be prepared for cystotomy, lest otherwise uncontrollable hemorrhage directly endanger the patient's life.

It was Nitze's habit to emphasize also that recurrence of a vesical tumor is apt to be associated with malignancy, or followed by cancerous degeneration of the scar.

Dr. Fitz reported a case of sarcoma of the bladder that he had charge of three or four years ago. This was a hospital case, and had been seen one or two years before by Dr. Terry. The cystoscope showed the presence of this tumor, but the diagnosis of sarcoma was not made. The bladder was opened through the vagina and the tumor was removed. The examination of the specimen showed it to be a sarcoma. A recurrence occurred within three or four weeks, the tumor attaining the size of the one removed. An attempt was made at resection of one half the bladder and a transplantation of the ureter, but the patient died two or three days after. The interest in this case was in the rapid recurrence.

Dr. Potter believed that not much could be added to the discussion, but there were one or two points that should be emphasized in reference to cancer of the penis, and which had not been referred to by either Dr. Smith or Dr. O'Neil. He had been fortunate enough to see two cases of cancer of the penis, urethra and bulb, one of which he was unable to report. Both cases had been operated upon two or three times before a correct diagnosis was made. They had been treated as simple strictures. There was no venereal history in either case. The diagnosis in one case was made by accident, and at the last minute.

With regard to epithelioma of the penis there was one point of importance; in a series of 100 cases, of the 15% that died, there was no involvement of the inguinal glands. This showed that the lymphatics of the penis had drained under the pubic arch without passing through the inguinal glands.

In the *Annals of Surgery* published two or three months ago there was a very interesting and novel operation described for cancer of the penis which seemed to him the most radical thing yet done. This surgeon took out the inguinal glands as well as the dorsal lymphatics of the penis. These dorsal lymphatics of the penis were involved in many cases. Such an operation, in his opinion, should effect a most radical cure of the condition.

Dr. Robert H. Greene, closing the discussion, said that concerning cancer of the penis he believed it was on the increase; that he had seen three new cases within the past two weeks. He never operated upon these suspected cases until he had given the patients a thorough course of antisyphilitic treatment covering some time. He recalled the case of one patient who, after one month's antisyphilitic treatment, had the supposed cancer of the penis clear up. This, of course, showed that it was a gumma of that organ.

With regard to the statement made about the ease in diagnosing tumors of the bladder, he said he had made no such statement. In several of the cases he had operated upon he had had difficulty in making a diagnosis; in two of them hemorrhage prevented use of cystoscope at all; in another, on account of hemorrhage, only a blur could be made out indicating tumor with the cystoscope. You could almost always determine, however, that some disease of the bladder existed. Dr. Cabot had misunderstood him in thinking he recommended any one particular operation. Each case should be considered by itself; it was sometimes impossible to tell the exact condition until the bladder was opened.

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AMERICAN NEUROLOGICAL ASSOCIATION.

Thirty-Fifth Annual Meeting, Academy of Medicine, New York City, May 27–29, 1909.

(Concluded from No. 15, p. 518.)

A CASE OF PRIMARY DEGENERATION OF THE PONS, CEREBRAL PEDUNCLES, MEDULLA AND, TO A LESS EXTENT, OF THE CEREBELLUM, ASSOCIATED WITH PRIMARY DEGENERATION OF THE CORTICO-SPINAL TRACTS; WITH AUTOPSY.

Dr. T. H. Weisenburg and Dr. S. D. Ingham, Philadelphia, presented this paper. Dr. Weisenburg, reading, said that a man of forty-two, with an unimportant family history, had developed a tremor of his entire body, with staggering and uncertain gait, headache and dizziness, followed by increasing weakness and spasticity of the lower and then the upper limbs and a gradual difficulty in talking, eating and swallowing, with involuntary laughing and crying, There had been weakness of the tongue, palate and facial muscles, but no fibrillary tremors or atrophy. Ataxic movements of the eyeballs had been present early. The reflexes had been everywhere increased with bilateral Babinski. The autopsy showed a primary degeneration of the pons, cerebral peduncles, medulla and cerebellum. There had been, besides, a primary degeneration of the cortico-spinal motor fibers.

THROMBOSIS OF THE CERVICAL ANTERIOR MEDIAN SPINAL ARTERY; SYPHILITIC ACUTE ANTERIOR POLIOMYELITIS.

Dr. William G. Spiller, Philadelphia, presented this paper and said that, with the exception of the case reported in this paper, he knew of no instance in which thrombosis had been demonstrated by necropsy to be confined to a small portion of the anterior cervical supply. The case was a contribution to syphilis as a cause of acute anterior poliomyelitis; to the position of the fibers of pain and temperature in the anterior part of the lateral columns and of the fibers of tactile sensation in the posterior columns; and to the pathology of brachial paraplegia. It demonstrated that occlusion of a limited portion of the anterior arterial system of the spinal cord or medulla oblongata produces a symptom-complex that should be capable of diagnosis even without necropsy. The case was as follows: About four years previous to his paralysis the patient had had what was supposed to be spinal meningitis, from which he had recovered. He had been in excellent health, and was employed at the time the paralysis occurred in an ice house and with another man had been lifting blocks of ice weighing about 100 lb. Fifteen or twenty minutes after lifting the last block he had begun to have pain between the shoulders, and felt numb and weak in the upper extremities. Ten or fifteen minutes later he had felt weak and numb in the lower limbs. He had gradually recovered the use of the lower limbs, although they had remained somewhat spastic. He had normal sensation of touch everywhere. Sensations of pain and temperature had been much affected in the lower and upper limbs and trunk. He had been almost completely paralyzed in the upper limbs, and these limbs had been much wasted. The microscopic examination had shown that the lesion was thrombosis. The whole anterior part of the cord from the fourth cervical to the first thoracic segment inclusive had been much degenerated. The pyramidal tract had been only slightly affected. The lesion affected the blood supply of the anterior part of the cord. The thrombosis had probably been syphilitic in origin.

Dr. Bernard Sachs, New York, said that every one who had seen much of spinal syphilis would agree that anything resembling a poliomyelitis in connection with spinal syphilis was an extreme rarity. He had been thoroughly busy with this subject some ten or fifteen years ago, and during that period he had not seen a single case that could be relegated to this group. It seemed to him that the only safeguard to put around one in endeavoring to interpret a condition of this sort during life was to insist that, in addition to the special symptoms, there should be some other symptoms pointing to constitutional syphilis before it would be safe to make a diagnosis of syphilitic anterior poliomyelitis.

PATHOGENESIS OF TABETIC ARTHROPATHIES BASED UPON THE ANATOMICAL AND HISTOLOGICAL STUDY OF TWO CASES.

Dr. Alfred Gordon, Philadelphia, read this paper, saying that a degenerative state of the peripheral nerves was an essential element in the causation of the arthropathy, yet another factor was necessary, and this was trauma. In view of the hypotonia, loss of tendon reflexes and loss of sensations, traumata of the joints might occur very readily and pass unnoticed. In two of his cases slight traumata had become the starting points for later arthropathies. The smallest nerve branches distributed within and around the affected articulations (knees and foot), also the blood-vessels, had been carefully examined microscopically. Identical nerve branches and blood vessels had been taken from the unaffected side of the body and equally examined for the purpose of control. Degenerative conditions were found in the nerves on both sides. Very slight changes were found in the blood vessels.

The conclusion is that while degeneration of peripheral nerves is a *sine qua non* in the genesis of tabetic arthropathies, trauma is an indispensable element.

Saturday, May, 29, Morning Session.

Dr. F. W. Langdon, second vice-president, called the meeting to order at 10.24 a.m.

PAIN IN TABES DORSALIS AN IMPORTANT DIFFERENTIAL DIAGNOSTIC POINT AS BETWEEN GENERAL PARESIS.

Dr. E. D. Fisher, New York, read this paper, saying that the pains of tabes were lightning-like and distributed in the peripheral nerves either in the upper or lower extremities; girdle or band-like and of a duller character either in the lumbar or dorsal region; or in the form of the paroxysmal crises of pain involving the various visceral organs, as the stomach, bladder, heart, etc. These pains in typical cases of general paresis were rare, though we had general paresis of the tabetic type, that is, with irregular spinal symptoms in which pain was present. He drew attention to this one symptom to emphasize his opinion that we had two distinct diseases in general paresis and tabes dorsalis.

Dr. Graeme M. Hammond, New York, said that he could not attach the same importance to the pain symptom that Dr. Fisher did. He did not see all cases of tabes suffering from sharp lancinating pain. In fact, one case he now had under treatment, a man of great intelligence, who had had tabes for the past ten years and had all of the symptoms of tabes, including the classical Argyll-Robertson pupil, had never had a single pain during the whole course of the disease. On the other hand, he had seen cases of paresis in which he could distinguish the pains they complained of from the typical pains of many tabetics. They were sharp, lancinating in character in the legs or in the arms; generally, in paresis, they were in the arms as well as in the legs, but they were of distinctly the same type. The symptom, therefore, of pain was not one which could be relied upon in making a differential diagnosis.

Dr. H. N. Moyer, Chicago, said that he would like to know what typical symptoms a tabetic ought to have. There might be such, but they did not come frequently under his observation. The last speaker had spoken of the typical changes in the cord; so far as his examination of cords had gone he had not found typical changes. Unquestionably, tabes passed into paretic dementia of the typical sort; not so commonly as was generally supposed, but undoubted cases were seen. He remembered a classmate whom he had under observation for twelve years. There was no question of his having typical tabes. He had pain and staggering when he walked. In the last year of his life he had passed into typical paretic dementia and, fortunately, Dr. Moyer had been able to get the cord and brain, and the changes in the brain had been the characteristic changes that were seen in paretic dementia, and in the cord had been also found the typical changes of tabes.

Dr. E. D. Fisher said that he had purposely made his statement as sharp as he could to bring out just the discussion which had taken place. He might have over-reached a bit, but at the same time he intended to do so. Dr. Hammond's experience about the course of patients without pain in tabes was, of course, a common one. We might find a patient with tabes where all the symptoms confined themselves to ataxia. We were talking of the patients who had pain, not those who hadn't. Those irregular cases are the ones that he would say were apt to pass into general paresis.

THE SURGICAL TREATMENT OF ATHETOSIS AND SPASTICITIES BY MUSCLE GROUP ISOLATION.

This paper was prepared by **Dr. Sidney I. Schwab** and **Dr. Nathaniel Allison**, St. Louis, and presented by Dr. Schwab. Athetoid and spastic conditions of organic origin were essentially similar processes due to several factors; the essential mechanism was nervous in origin. The term "muscle group isolation" implied the isolation of the muscle or group of muscles which were at fault in the production of contracture deformity or athetosis. It was made effective by cutting off from the central nervous system the connection along which the abnormal impulses, active in causing spasticity or athetosis, were transmitted. This was done by isolating the nerve and injecting it with an alcoholic solution. There resulted an immediate paralysis of the physiologically stronger group of muscles without interfering with the free muscular use of the antagonists. At this point physiologic exercises planned to further strengthen the antagonists might be used.

Dr. B. Onuf, New York, said that it so rarely happened that we got therapeutic suggestions at meetings that when we did get such suggestions he did not believe a speaker should be ashamed of it and make excuses for it. He had observed that athetosis was essentially a symptom of diseases which had been acquired at a very early age. He had not seen a single case of athetosis in which the lesion which caused it had been acquired in adult life. He explained this to himself, theoretically, by assuming that there was an interruption in the pathways between the cortex and lower centers at an early date, and then these lower centers acquired a certain independence and movements were acquired which were entirely independent of the will. If this was the case, then, if the offensive muscles were paralyzed for a period of six months, these lower centers might again forget, and the cortical centers again gain their ascendancy.

Dr. Schwab said that in case of athetosis we not only paralyzed the muscles, but their sensory supply totally, because there was a theory that athetosis also depended upon the abnormal sensory impulse as well.

HEREDITARY SPASTIC PARAPLEGIA WITH REPORT OF SEVEN CASES.

Dr. John Punton, Kansas City, Mo., read this paper, saying that hereditary spastic paraplegia was comparatively rare. In the seven cases he reported heredity had been the chief etiologic factor and had been of great diagnostic and prognostic value. The first group consisted of four cases, viz., the mother, aged fifty-nine, in whom the disease had its onset after her marriage at the age of twenty-three; a son, aged thirty-four, in whom it had begun at sixteen; a son, aged thirty-two, in whom it had begun at fifteen; a son aged twenty-four in whom it had begun at fourteen or fifteen. The second group consisted of three cases, viz., the mother, aged forty-three, in whom the disease began at thirty-three; a daughter, aged seven years, in whom it had begun at six years; a daughter, aged five years, in whom it had begun in infancy. As the disease was incurable the only measures to be taken were prophylactic and consisted in discouraging marriage in persons with a tendency toward this disease.

OCCUPATION NEURITIS OF THE THENAR BRANCH OF THE MEDIAN NERVE: A WELL-DEFINED TYPE OF OCCUPATION ATROPHY OF THE HAND.

Dr. J. Ramsay Hunt, New York, read this paper, and said that a well-defined type of atrophy of the hand resulted from an occupation neuritis of the thenar branch of the median nerve, which was induced by a compression of small motor branch of the median nerve as it emerged from beneath the anterior annular ligament of the wrist. This thenar branch was purely motor and innervated the abductor pollicis, opponens pollicis and the outer head of the flexor brevis pollicis. This group of cases was characterized clinically by a sharply defined atrophy, confined to the distribution of this nerve. The thenar eminence presented a "scooped-out" depression, lying between the outer border of the first metacarpal bone and the inner head of the flexor brevis pollicis. There were present well-marked reactions of degeneration in the affected muscles; and objective sensory disturbances in the distribution of the median nerve were absent. This type of atrophy interfered very little with the usefulness of the hand, as all the other muscle groups were normal.

He also called attention to another well-defined type of occupation atrophy of the hand, described by him,[1] which was dependent upon an occupation neuritis of the deep palmar branch of the ulnar nerve as it passed between the tendinous origins of the abductor minimi digiti and the flexor brevis minimi digiti. In this type, all the intrinsic muscles of the hand were paralyzed, with the exception of those which are supplied by the median nerve, and here, as in the thenar type of occupation atrophy, sensory disturbances were entirely absent, the deep palmar branch of the ulnar being a purely motor nerve. The importance of these two types of occupation (motor) neuritis became immediately apparent from the resemblance which they bore to the Aran-Duchenne type of spinal atrophy. This resemblance was enhanced by the well-known fact that progressive muscular atrophy, beginning in the small muscles of the hand, not infrequently developed with occupations necessitating an over-activity of these members. There was no question but that cases which belonged to one or the other of these two groups of occupation atrophies, without sensory disturbances, were not infrequently erroneously diagnosed as spinal atrophies. Hence their clinical and diagnostic importance.

HORIZONTAL OSCILLATION OF THE EYEBALL IN PARALYSIS OF THE ORBICULAR BRANCHES OF THE FACIAL NERVE.

Dr. L. Pierce Clark and Dr. H. H. Tyson, New York, presented this paper, saying that it was fairly well known that in Bell's palsy the upward and inward or outward rotation of the eyeball was a physiological act and was not pathognomonic of any special type of palsy as it might be shown in a normal person. Schlesinger had reported one case of horizontal oscillation, and a few other observers had noted the same phenomenon. It consisted of a see-saw oscillatory movement of 40 to 60 vibrations a minute, when a persistent forceful attempt was made to close the lids, the opposite eye participating in the movement. They reported three cases. The explanation was as difficult as that for ordinary nystagmus.

HOW SHOULD THE PAROCCIPITAL FISSURE BE REPRESENTED IN FISSURAL DIAGRAMS?

Dr. Burt G. Wilder, Ithaca, N. Y., presented this paper, saying that commonly this and the parietal fissure are interpreted and represented as, respectively, the occipital and horizontal components of the intraparietal fissural complex. In apes and monkeys, young and adult, they were always continuous; the fetal conditions were unknown. In the human fetus they always commenced independently and remained separate in about 40% of hemicerebrums, but united sooner or later in the other 60%. In many, perhaps most, of the cases of superficial continuity the original isthmus might be recognized as a more or less deeply submerged vadum or shallow, and it was a fair question whether cases in which the fissure at this point was less than one half the greatest depth at either side should not be regarded as cases of separation rather than continuity. Superficial continuity was two or three times as common as separation on the left side, but on the right separation was more common, about 55%. In the light of existing knowledge, the writer concluded that fissural diagrams should include the dorso-caudal aspect of this region, with continuity of the two fissures on the left and separation on the right; when only one lateral aspect was shown the fissures should still be separate, but there should be a statement as to the conditions in the lower primates and in the human fetus and average adult.

THE HERPES ZOSTER OTICUS: A STUDY OF THE ZOSTER ZONES OF THE GENICULATE GANGLION OF THE FACIAL AND THE JUGULAR GANGLION OF THE VAGUS.

Dr. J. Ramsay Hunt, New York, presented this paper in which he called attention to the "herpetic inflammations of the geniculate ganglion of the facial nerve," a syndrome described by him before the association three years ago. The present study was an attempt to define more accurately the zones of the geniculate area and to differentiate the geniculate zone from the zones of the glossopharyngeal and jugular ganglion. Three kinds of evidence were considered, anatomical, embryological and clinical. The latter was based on the analysis of 25 cases of isolated herpes oticus, which included 6 personal observations. In consideration of this evidence, he believed that the geniculate area was represented on the following anatomical landmarks of the ear: the external meatus, concha, tragus, antitragus, antihelix, fossa of the antihelix and the external surface of the lobule. That the zones for the jugular ganglion of the vagus and the petrous ganglion of the glosso-pharyngeal were represented on the posterior portion of the tympanic membrane, and the posterior wall of the auditory canal, as well as a cutaneous strip on the posteromesial surface of the auricle and the adjacent mastoid region. The other portions of the auricle anteriorly and posteriorly corresponded to the Gasserian and cervical zones respectively. Attention was also called to the occasional occurrence of an eruption on the anterior two thirds of the tongue and soft palate in cases of facial palsy. It was very probable that the facial nerve had a vestigial sensory innervation within the buccal cavity in these distributions; and it was quite possible that such cases were to be explained by herpetic lesions in the geniculate ganglion, although a neuritic origin for this distribution could not be entirely excluded. It was especially emphasized that this attempt to differentiate the zones of the auricle was entirely a preliminary one and that at the present time, with the material at hand, it was quite impossible to do more than to indicate their probable areas. The clinical importance of herpes zoster oticus was indicated, and the significance of the "zoster" method in determining the zoster zones of the seventh, ninth and tenth nerves in the auricle. Attention was also directed to the facial palsy and auditory disturbances which so frequently accompanied herpes oticus, also the possibility of pneumogastric disturbances which so frequently accompanied herpes oticus, also the possibility of pneumogastric disturbances in this group of cases. He also believed that the ganglia of the auditory nerve, the ganglion of scarpa and the ganglion spirale, might be primarily involved in zoster symptoms of Menière's disease.

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[1] Jour. Nerv. and Ment. Dis., 1908.

DREAMS AS A DIAGNOSTIC AND THERAPEUTIC AID.

Dr. B. Onuf, New York, read this paper, and stated that diagnostic aid might be obtained from the study of the amalgamation or mixture of two or more different characters into one which occurred in a dream; also by noting the reversal of rôles played by different characters of real life as it occurred in dreams. Assistance in treatment of certain conditions might be secured by suggesting a dream to take place in a hypnotic or post-hypnotic condition. For example, in case of a woman who had had an aversion to beans and sweet cabbage which appeared to be purely psychic it had been suggested that she dream in a hypnotic state that she was eating these articles with great relish. The result was that it had temporarily the desired end.

Adjourned 12.50 p.m.

OFFICERS FOR 1910.

President, Dr. Morton Prince, of Boston. Vice-Presidents, Dr. John K. Mitchell, of Philadelphia; Dr. Herman M. Hoppe, of Cincinnati. Secretary and Treasurer, Dr. Alfred Reginald Allen, of Philadelphia. Councillors, Dr. C. L. Dana, of New York; Dr. J. J. Putnam, of Boston,

Next meeting to be held in Washington.

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Zone of Quiet.—Alderman Bow, a member of the Minneapolis council committee on health and hospitals, will introduce an ordinance for the establishment of a zone of quiet to be maintained in the vicinity of all hospitals in the city. —*Jour. Am. Med. Asso.*

Book Reviews.

Principles and Practice of Physical Diagnosis By John C. DaCosta, Jr., M.D., Associate in Clinical Medicine, Jefferson Medical College; Chief of Medical Clinic and Assistant Visiting Physician, Jefferson Hospital, etc. Illustrated. Philadelphia and London: W. B. Saunders Company. 1909.

There are many books on physical diagnosis, but this constitutes no adequate reason why others should not be forthcoming. This volume by DaCosta is a careful summary of much personal experience of some of the present methods of physical diagnosis. In the subjects discussed, which are methods and technic of physical examination, examination of the thorax, examination of the bronchopulmonary system, diseases of the bronchopulmonary system and mediastinum, examination of the cardiovascular system, diseases of the cardiovascular system, examination of the abdomen and the abdominal viscera, the author has gone into very considerable detail and given an admirable presentation of present knowledge and methods. It is evident, however, that physical diagnosis goes far beyond the scope of this volume, a fact which in some way should be recognized in the title. An unfortunate omission, and one which tends to widen the gap between diseases of the nervous system and internal medicine, is a complete ignoring of the many means of physical examination required in determining organic nerve lesions. The diagnosis of diseases of the nervous system is certainly a distinct and a very important part of physical diagnosis, and yet this manifest fact is wholly ignored, not only in this, but in certain other similar books which purport to be general considerations of physical diagnosis. We regret this omission in an otherwise excellent book, which will undoubtedly find a definite place in the large list of treatises on the subject of diagnosis. The illustrations, largely photographic, are satisfactory, and the book, were its limitations more definitely stated, is to be recommended.

Neurological and Mental Diagnosis: A Manual of Methods. By L. Pierce Clark, M.D., and A. Ross Diefendorf, M.D. 12mo. Pp. xii, 188. With 31 illustrations. New York: The Macmillan Company. 1908.

This little volume is not worthy of serious consideration. It is superficial, incomplete and inadequate. Although it claims to be a manual of methods, the methods are so inadequately described that the student would find it impossible to make a proper examination by the aid of a manual like this. The section on mental diagnosis is more satisfactory, for the writer gives in the first chapter a list of the more prominent mental symptoms, although the methods for elucidating them are of little help. The final chapter is a glossary of terms used in psychiatry, which would be of more value if it did not define some of those terms by cross-references to non-existent headings.

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MEETING OF MILITARY SURGEONS.

THE eighteenth annual meeting of the Association of Military Surgeons of the United States was held last week in Washington. Representatives from eleven foreign countries were present. In his annual address, Surgeon-General Rixey recommended increase of the authority given to medical officers in the army and navy, and emphasized the desirability of more efficient organization and co-ordination of state and national medical departments. During the meeting attention was called to a recent article in the *British Annual* presenting statistical comparison of the health of various national armies, based on the relative percentage of admissions to military hospitals. In the United States the annual number of admissions is 1,250 per 1,000; in France, Germany and Austria, over 600; in England, only 324. The high American rate is partly explained by the fact that the figure includes all soldiers excused from any part of their duty for medical reasons, whether admitted to hospital or not. Tabulation of the relative prevalence of various diseases shows that the incidence of venereal disease is 178.72 per 1,000 in the United States army, 81.8 in the British, and only 19.8 in the German. The reason for this is alleged to be the greater personal freedom and the higher pay given to American and English soldiers. The relative frequency of tuberculosis in the armies is noted as follows: France, the United States, England, Russia, Germany, Austria. Cardiac disease is commonest in the British army. The total peace death-rate in the United States army is 6.14 per 1,000, that of Great Britain and France about half as much.

These statistics are interesting but of little value unless their methods of compilation are critically investigated. Such interpretation and discussion is appropriate to an organization like the Association of Military Surgeons, and not only represents part of the legitimate work of such societies, but also illustrates the opportunities afforded by large standing armies for the study of hygiene and of disease. The contributions to medical science made possible by the world's armies and navies have probably been one of the most beneficent results of war, and are to-day to be reckoned among the compensatory advantages of maintaining armed forces in time of peace.

TYPHOID MASTITIS.

THE longer typhoid fever is studied, the more numerous become the surgical complications of this disease. Mastitis arising during typhoid is a complication of infrequent occurrence, because only twenty-three instances have so far been recorded, three by Guirand, of Montpellier, and twenty by Hanriot in his thesis (Nancy, 1907).

Usually this form of mastitis is met with in the female, although 4 cases out of the 23 recorded occurred in males, during the period of glandular activity. The patients have gone through lactation, and some gave a history of a former inflammatory process in the gland. In some patients no cause could be discovered to account for the mastitis arising in the typhoid. Eberth's bacillus was sometimes found in the pus; in others only an ordinary pyogenic organism was present.

The clinical evolution of typhoid mastitis is rapid but not serious. It generally makes its appearance towards the decline of the disease, during the third or fourth week. The temperature, which at this time is nearly normal, rises suddenly, reaching usually not over 103°, while the pulse follows the temperature.

The amount of pain in the breast is moderate, but may be fairly severe on pressure. The skin is not often involved. By palpation a small or considerable induration of the gland is detected. In 50% of the cases the induration subsides little by little; likewise the rise in temperature. One or several recurrences may take place, but the process undergoes resolution each time. Both breasts may become involved simultaneously or successively.

In the other 50% of cases, the process goes on to suppuration, resulting in abscess. The prognosis is, however, good, and in no case recorded did the mastitis exercise any influence over the general affection.

The treatment should be that of ordinary mastitis, and if abscess formation occurs, incision and drainage are indicated.

SPREAD OF AMEBIC DYSENTERY.

The increasing prevalence of amebic dysentery on the Pacific coast threatens to become of national medical importance, since from this source the disease may readily be disseminated through the country. At present only sporadic cases are observed in the large eastern hospitals, but in San Francisco the disease is so frequent that it has been made one of those which must be reported by physicians to the Board of Health. It is believed in California that its spread may be due to the eating of uncooked vegetables and fruits from Chinese farms fertilized with human sewage, and the use of such material for manure has now been made a misdemeanor in that state. This action calls renewed attention to the possible importance of sewage farms as agents in the distribution of intestinal infections.

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SCHOOL DRINKING CUPS.

In a recent note we commented on the abolition by general statute of public drinking cups in all trains, railway stations and schools in Kansas, and expressed the hope that this action might soon be followed in other communities. It is now reported that the Massachusetts State Board of Health has in preparation a pamphlet, written by Dr. Alvin Davison, of Lafayette College, on the dangers of common drinking cups, and recommending the school authorities of every town to require school-children to use individual cups. The issue of this pamphlet will be awaited with interest as earnest of further progress in this much-needed hygienic reform.

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TYPHOID IN NEW BRUNSWICK.

An extensive epidemic of typhoid fever has recently broken out in the little village of Andover, N. B. About of a third of the population of 300 are said to be infected. The outbreak appears typical of the kind caused by pollution of a limited common water supply with dejecta from a single imported case. Vigorous measures are being taken by the local physicians and those from neighboring towns to prevent further spread of the disease. The infection in this instance seems fortunately not to be virulent, since few deaths have as yet occurred.

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MEDICAL NOTES.

Plague in Ecuador. — It is reported from Guayaquil, Ecuador, that thirty-eight cases of bubonic plague occurred during the second half of September, with fifteen deaths. There were also during the same period a number of cases of yellow fever.

Yellow Fever in Yucatan. — The Superior Board of Health in Mexico City has lately had report of four deaths from yellow fever in Yucatan. The proximity of this district to Cuba makes such an outbreak of special importance to that island and to the United States.

Tuberculosis in Chinese Hogs. — Of a recent shipment of 5,000 hogs from China to England, 9% were condemned as tuberculous on inspection by the sanitary committee of the city of London. The danger to man of tuberculous meat is still subject of dispute. For the present, however, Chinese pork will be unable to compete in the British market with that from the United States, which, owing to our rigid methods of inspection, is essentially free from tuberculosis.

Cholera in Russia. — It is reported from St. Petersburg that six cases of Asiatic cholera have appeared at Medvied. At Vladivostock, in Manchuria, it is said that 8 or 10 new cases occur daily. Of interest in this connection are the researches which Dr. Rudolf Emmerich has been making in the St. Petersburg hospitals with a view to testing his theory that the fatal element in the disease is intoxication with nitrous acid set free by the action of the bacteria in the intestine. Definite announcement of his results may lead to important advance in our knowledge of the prophylaxis and treatment of cholera.

Cause of Pellagra. — The study of pellagra is being steadily carried on in different localities where the disease has appeared. From the Illinois State General Hospital for the Insane at Peoria it is stated that Dr. Joseph F. Siler and Dr. Henry J. Nichols, who have been acting as official investigators for the War Department, have evidence suggesting that pellagra may be a water-borne infection, requiring prophylactic measures similar to those adopted for the prevention of typhoid. It is further said that a new focus of the disease has been discovered in New York state. Investigation of such an isolated outbreak may be expected to yield valuable etiologic data.

Prevention of Infant Mortality. — The third mid-year meeting of the American Academy of Medicine (specializing in medical sociology) will be held in Lamson Hall of Yale University, at New Haven, Nov. 11 and 12. The first session on Thursday will be devoted to a consideration of the medical prevention of infant mortality; the second session, to the consideration of the philanthropic prevention of infant mortality; the third session, on Friday, will take up the institutional prevention of infant mortality; and the fourth session, Friday afternoon, will be devoted to the educational prevention of infant mortality. A large number of papers from well-known persons with special personal experience in their different departments are promised. Members of the medical profession are cordially invited to be present.

BOSTON AND NEW ENGLAND.

Acute Infectious Diseases in Boston. — For the week ending at noon, Oct. 12, 1909, there were reported to the Board of Health of Boston the following cases of acute infectious diseases: Diphtheria 55, scarlatina 22, typhoid fever 35, measles 22, smallpox 0, tuberculosis 51.

The death-rate of the reported deaths for the week ending Oct. 12, 1909, was 16.74.

Boston Mortality Statistics. — The total number of deaths reported to the Board of Health for the week ending Saturday, noon, Oct. 9, 1909, was 201, against 216 the corresponding week of last year, showing a decrease of 15 deaths and making the death-rate for the week 16.82. Of this number 91 were males and 110 were females; 197 were white and 4 colored; 132 were born in the United States, 64 in foreign countries and 5 unknown; 49 were of American parentage, 125 of foreign parentage and 27 unknown. The number of cases and deaths from infectious diseases reported this week is as follows: Diphtheria, 51 cases and 2 deaths; scarlatina, 22 cases and 2 deaths; typhoid fever, 48 cases and 6 deaths; measles, 32 cases and 0 deaths; tuberculosis, 48 cases and 10 deaths; smallpox, 0 cases and 0 deaths. The deaths from pneumonia were 12, whooping cough 1, heart disease 23, bronchitis 3 and marasmus 1. There were 14 deaths from violent causes. The number of children who died under one year was 40; the number under five years 56. The number of persons who died over sixty years of age was 56. The deaths in public institutions were 73.

Cerebrospinal meningitis, 1 case.

Of the above the following were non-residents: Typhoid fever, 3 cases and 1 death.

Deducting deaths of non-residents, the total is 180. The corrected death-rate is then 15.07.

Bequests. — By the will of the late Catherine P. Buttrick, of Lowell, Mass., the following institutions, among others, receive bequests: St. John's Hospital, Lowell, $6,000 for the maintenance of a free bed, and $20,000 absolutely; Lowell Humane Society, $5,000; the Lowell Day Nursery, $5,000; Boston Home for Destitute Catholic Children, $5,000.

Court Decision Relative to the Insane in Vermont. — The Supreme Court of Vermont has recently handed down a decision, through which it appears that about seven hundred inmates of the state asylum at Waterbury and of the Brattleboro Retreat have been committed illegally through defects in the commitment laws. Although these commitments are declared legally void, this does not mean that the inmates will be set free. The new law provides that persons suspected of insanity be given notice that it is proposed to commit them and be given the right of a trial by jury.

NEW YORK.

Special Surgical Clinic. — On Oct. 7, a special surgical clinic under the direction of Dr. George E. Brewer was held at the Sims Operating Theater, Roosevelt Hospital, to which all the surgeons of the foreign and American warships visiting New York were invited.

Holmes Centenary. — The Medical Society of the County of New York on Oct. 9 held its special meeting at the Academy of Medicine to celebrate the centenary of the birth of Dr. Oliver Wendell Holmes, when the interesting program previously announced was carried out.

Gift to Yale University. — The brothers William D. and Henry T. Sloane, of New York, have given $425,000 jointly to Yale University to build, equip and endow a physical laboratory, to be used by the academic, scientific and graduate departments. The total benefactions of the Sloane family to the university now amount to some $750,000.

Death-Rate. — The condensed quarterly report of the bureau of records, New York City Health Department, shows that in the quarter ending June 30, the death-rate was 16.89, as against an average of 18.50 for the corresponding quarters of the preceding five years, a decrease of 1.61 points. The causes of death in which occurred the most marked decreases were cerebrospinal meningitis, 442; accidents, 329; lobar pneumonia, 213; pulmonary tuberculosis, 177; Bright's disease and acute nephritis, 102; diphtheria and croup, 73. The largest increases were in diarrheal diseases in children under five years of age, 179, and bronchopneumonia, 104.

Tuberculosis Camp at Poughkeepsie. — At an open-air service attended by 2,500 persons, which was held one Sunday afternoon in September on the grounds of Christ Church, Poughkeepsie, the rector, the Rev. A. G. Cummins, took advantage of the occasion to make an earnest appeal for the continuance of the tuberculosis camp which has been maintained during the past summer on College Hill, now a city park. He is chairman of the finance committee of the camp, and, in accordance with a request which he made at that time, a collection for the benefit of the institution was taken up in the various churches of Poughkeepsie on Sunday morning, Oct. 3, when the religious services in connection with the Hudson-Fulton celebration were held.

Freedom from Accident, Hudson-Fulton Celebration. — It is a matter for great congratulation that during the Hudson-Fulton celebration, notwithstanding the enormous influx of visitors to the city, the number of accidents reported each day was actually less than the average for the preceding thirty days. This happy result must be attributed, to some extent at least, to the very elaborate provision made for the protection of the public, although no special emergency arose calling into requisition the service of the various agencies which were in readiness to cope with all contingencies. One of these was St. John's Guild, which had its floating hospital, with a competent corps of medical men and nurses, stationed at a convenient point on the Hudson River. There must have been, counting both sides of the streets, at least eight miles of temporary stands for spectators erected along the route of the land parades, some of them of immense size, and it is to the credit of the strict supervision exercised by the building department that, although all of these were crowded to their utmost capacity on the occasion of all three of the great parades, no part of a single one of the stands collapsed.

Mortality Statistics. — The weekly reports of the Health Department show that during the month of September the mortality in the city represented an annual death-rate of 14.33, as against 15.79 in August and 14.74 in September, 1908. The corrected death-rate, excluding non-residents and infants under one week old, was 13.53. Among the diseases in which there was an augmented fatality were the following: The weekly average of deaths from typhoid fever increased from 13 in August to 24.5 in September; the weekly average from diphtheria and croup, from 14.75 to 18; from acute bronchitis, from 11 to 18; from pneumonia, from 35.5 to 56.5; from bronchopneumonia, from 59.5 to 60.25; and from cirrhosis of the liver, from 16.75 to 21.75. Among the diseases in which there was a diminished mortality were the following: The weekly average of deaths from measles declined from 13.25 to 6; from pulmonary tuberculosis, from 144.75 to 134.75; from diarrheal diseases, from 302.75 to 200.5; from diarrheals under five years of age, from 302.75 to 188; from cancer, from 63 to 61.25; from organic heart diseases, from 106 to 98.5; and from Bright's disease and acute nephritis, from 85.25 to 79.75. In the week of the Hudson-Fulton celebration in the city, the death-rate was one of the lowest on record, 13.62, as against 14.15 for the corresponding week of last year. Deaths from violence, which include all casualties and suicides, numbered only 68, while in the corresponding week of 1908 they amounted to 83.

Treatment of Drug and Alcohol Addictions. — Dr. Alexander Lambert, professor of clinical medicine at Cornell University Medical College, and visiting physician to Bellevue Hospital, has made known the fact that he has been using with great success at Bellevue a speedy and simple cure for drug and alcohol addiction. It consists of a combination of tincture of belladonna (15%) with the fluid extracts of hyoscyamus and xanthoxylum. This mixture was called to his attention about five years ago by Charles B. Town, of New York, who, while in China, had spent some time in studying opium cases in the hospitals. The doses administered presumably differ in different instances. Dr. Lambert states that in the morphine or cocaine habit the specific should be given every hour, the dose being doubled at the end of six hours. Practically all suffering is absent, for the reason that the patient is at first allowed to take his accustomed drug, one half to two thirds of the usual total daily amount of the opium, morphine or cocaine which he has been using being given, in suitably divided doses, during the first day of treatment. In the treatment of alcoholic cases the remedy does not, as a rule, require to be given for as long a period as in drug habits, but much greater care is necessary to avoid belladonna poisoning. Dr. Lambert is quoted as saying as to the results he has observed: "The obliteration of the craving for narcotics is not a matter of months or weeks, but is accomplished in less than five days. The result is often so dramatic that one hesitates to believe it possible."

Current Literature.

Medical Record.

Aug. 21, 1909.

1. *Knopf, A. *Life Insurance in its Relation to the Prevention of Tuberculosis.*
2. Bondurant, E. D. *Pellagra, with Report of Nine Cases.*
3. *Wolbarst, A. L. *The Value of Microscopic Examination of the Prostatovesicular Secretion in the Diagnosis and Prognosis of Gonococcus Infection.*
4. Fox, C. D. *A Case of Multiple Sclerosis.*
5. Lewis, J. P. *Malformations of the Nasal Septum.*
6. Stumsky, M. *Remarks on Flat Feet.*
7. *Meisenbach, R. O. *Conservatism in the Use of Flat-Foot Plates.*

1. The author emphasizes the work that can be done by the life insurance companies in the prevention of tuberculosis.

3. The author lays great stress on the value of microscopical examinations of the prostatovesicular secretion in the diagnosis and prognosis of gonorrhea. He gives a number of tables to show how frequently gonococci can be found in the prostatic secretion, even years after the time of infection, by the use of the microscope.

7. The author puts in a word of caution against the promiscuous use of flat-foot plates. He discusses the materials used in their construction, and insists on the importance of a correct diagnosis of the local condition before plates are prescribed. [W. B. R.]

Aug. 28, 1909.

1. *Matson, R. C. *Serology of Syphilis.*
2. Thompson, W. H. *A Severe Case of Scarlatina and Diphtheria Successfully Treated without Medicine.*
3. Diller, T. *A Large Glioma Growing from the Basal Ganglia Producing Symptoms Suggestive of a Growth in the Frontal Region.*
4. Felberbaum, D. *The Diagnosis of Tricuspid Stenosis; Report of a Case with Tracings.*
5. Posey, W. C. *Report of an Unusually Intractable Case of Iritis with Some Remarks on the Etiology of Iritis.*
6. Gaines, L. M. *The Early Diagnosis of Pulmonary Tuberculosis.*
7. Harrower, H. R. *On the Estimation of the Urinary Ammonia, and a New Instrument for Its Rapid Estimation.*

1. Matson describes the Wassermann reaction and its significance. Among other results from the test he believes that it can be concluded from a negative reaction, first, in one who has had syphilis, that the patient is not necessarily well, but that the infection, if present at all, is quiescent. If a negative reaction occurs in an early suspected case, the chances are from 95% to 100% against syphilis. If in a suspected secondary case, the chances are from 75% to 95% against syphilis. If in a suspected latent case the chances are from 50% to 75% against syphilis If obtained in a suspected parasyphilitic case, the chances are 70% to 80% against it. The reaction may be an indication of the efficiency of a line of treatment. [W. B. R.]

Sept. 4, 1909.

1. *Bashford, E. F. *Address on Cancer in Man and Animals.*
2. Agramonte, A. *Yellow Fever Prophylaxis in Cuba.*
3. Einhorn, M. *A Further Contribution to our Knowledge of Intestinal Dyspepsia.*
4. Alexander, H. C. B. *Forensic and Clinical Aspects of Transitory Frenzy.*

1. Bashford's article on cancer in man and animals takes up the work that has been done on the subject in the past few years. The liability of all races of man to cancer, and of all vertebrates, has been established beyond all question. The inoculation of cancer in animals is now established, which allows of experimental study as never before. The infectious theory of cancer can be put aside from lack of supporting evidence, and it can be proved that the inoculation of cancer depends on the transplantation of living cells. Cancer is associated with certain periods of life, being more frequent in advancing age. He goes into the fallacy of statistics of the increase of cancer, for we find that the increase in the number of deaths from cancer runs parallel with the increased accuracy in vital statistics. The sites of predilection of cancer in men and women, and in the different races, seems to vary with the varying habits of the individual, suggesting the influence of chronic irritation. But this influence is merely an indirect etiological factor, as can be shown by experiment, and the development of the cancer cell from the normal cell must depend on endogenous factors as yet not understood. He goes at length into a discussion of experiments to show that heredity cannot be proved to be of influence in the etiology of cancer. The cancer cells can be shown to differ absolutely from embryonic tissue. They are highly specialized and not undifferentiated cells. If we assume that all forms of cancer are to be explained by the intervention of congenital germs, then it must be assumed that such germs are as uniformly distributed as the skin itself. It can be shown that the terminal result in cancer is due to the greater number of cells demanding food, and not to a greater avidity for it, and that death is not due to poisons. He describes a cyclical fluctuation in the growth of the cancer cell, a positive and negative phase of growth, which is evident in all experimental tumors, and which may explain some of the peculiarities of the growth of cancer. In spite of evidence to the contrary, we have not got much beyond defining that the cancer cell has many of the properties of rapidly growing tissue, without containing anything extraneous, and without secreting anything directly deleterious to the organism. The nature of immunity to cancer is not yet elucidated. He goes into a discussion of the various theories that have been put forward, and the fallacious grounds on which they rest. It has no analogy with anything known in the infectious diseases. It can be stated that apparently animals showing a high resistance against inoculations do not yield a serum which has the power of protecting other animals against inoculation. [W. B. R.]

New York Medical Journal.

Oct. 2, 1909.

1. *Saxe, G. A. D. *The Persistence of the Gonococcus in the Prostate.*
2. Fruchthandler, E. A. *Treatment of Locomotor Ataxia by a Modification of the Re-educational Exercises.*
3. Pulley, W. J. *The Diagnosis of Incipient Pulmonary Tuberculosis.*
4. Peters, L. S. *A Few Points on the Early Diagnosis of Tuberculosis.*
5. Cleborne, A. B. *Post-Operative Suppression of Urine.*
6. Work, J. A., Jr. *Pathogenesis of Round Ulcer of the Stomach.*
7. Zenner, P., and Kramer, S. P. *Operation for Brain Tumor, with Occurrence of Hitherto Unrecognized Circulatory Phenomena.*
8. Benedict, A. L. *Determination of the Hepatic Area by X-Rays and by Auscultatory Percussion and Allied Methods. Echinococcus Disease.*

1. Saxe studied 180 cases of gonorrheal infection with special reference to the prostate. Of 150 cases of chronic gonorrhea of six months' to eighteen years' duration, 60% had prostatitis; the older the infection, the more frequent was prostatitis. Of 108 cases of prostatitis, 28.7% showed gonococci in the prostatic secretion; the organisms were less likely to be found in the older cases and were rarely found after three years. The infection was mixed in 86% of the prostatitis cases; in only 5 out of 108 were gonococci alone found, and all of these cases were of less than one year's duration. Staphylococci were present in 74% of the cases of mixed infection, bacilli in 28%, diplococci (Gram-positive) in 10%, streptococci in 7.6%. In 13 cases (12%) the urine was clear, but smears showed prostatic infection. [L. D. C.]

The Journal of the American Medical Association.

Oct. 2, 1909.

1. Manton, W. P. *Mental Alienation in Women and Abdominal Pelvic Disease.*
2. Benjamin, A. E. *The Choice of Operations for Retrodisplacements of the Uterus.*

3. *Wetherill, H. G. *The Present Status of Irrigation and Drainage in Obstetric and Gynecologic Operations.*
4. *Brush, A. C. *A Study of the Traumatic Insanities.*
5. Hewitt, J. H. *Pellagra in Virginia.*
6. Pollock, L. T. *Pellagra in Cook County Institutions.*
7. Evans, W. A. *Lake Michigan Water for Drinking Purposes.*
8. Wood, H. B. *The Economic Value of Protection to the Water Supplies.*

3. Wetherill believes that there are many cases now drained in abdominal operations that do not need drainage. As an illustration he cites three cases of infection of the tubes of long standing in which adhesions may be freed, pus evacuated and diseased parts removed, without the necessity of drainage. A simple wiping of the soiled surfaces with gauze is sufficient. He describes and illustrates a form of continuous drainage or seepage which may be carried on in the uterus or bladder by means of an inverted rubber tube. This is particularly useful in old chronic bladder cases.

4. Brush believes that the theory that in the traumatic insanities the injuries to the head and cerebral concussion, by causing inflammation of the meninges, which spreads to the brain, disorder its circulation and nutrition and thus produce psychic disease at once or after a long interval, and the more recent theory that, with or without material injury, the shock produced by the accident may cause molecular changes in the brain, thereby producing psychic disturbances, are not borne out by the findings of either the surgeon or the pathologist. We must recognize, however, that both organic changes occurring after severe head injuries and severe fright occurring with trivial injuries may immediately or after a period be followed by psychic disturbances, and that in latent cases the two must be connected by recognizable conditions. Brush describes (1) traumatic hypochondria as a fixed delusion on the part of the patient that he has sustained some severe and permanent injury as the result of some accident. (2) Acute primary traumatic insanity in which minute lacerations, minute hemorrhages or thrombi, capillary stasis or edema may be found. It occurs most often in persons of a neuropathic heredity or those suffering from alcohol or syphilis. In the majority of cases the insanity follows immediately the cerebral contusion, but a lapse of time even up to one year may occur before its onset. There may be complete recovery within a few months. (3) Where dementia precox, manic-depressive insanity, melancholia, acute dementia and paranoia follow trauma, it is most probable that the accident either only called attention to an already existing condition or hastened the development of the psychosis. (4) Trauma never causes general paresis, but only aggravates the course of an already existing condition. [E. H. R.]

The Journal of Experimental Medicine.

May, 1909.

1. Duval, C. W. *Studies in Atypical Forms of Tubercle Bacilli Isolated Directly from the Human Tissues in Cases of Primary Cervical Adenitis.*
2. Pearce, R. M. *An Experimental Study of the Influence of Kidney Extracts and of the Serum of Animals with Renal Lesions upon the Blood Pressure.*
3. Elsberg, C. A. *Pneumothorax and Posture.*
4. Dixon, R. L. *The Effects of Röntgen Irradiation upon the Changes in the Cell Content of the Blood and Lymph Induced by Injections of Pilocarpine.*
5. Fleisher, M. S., and Loeb, L. *Studies in Edema. II.*
6. Fleisher, M. S., and Loeb, L. *Studies in Edema. III.*
7. Eyster, J. A. E., Burrows, M. T., and Esseck, C. R. *Studies on Intracranial Pressure.*

July 17, 1909.

1. *Darling, S. T. *The Morphology of the Parasite (Histoplasma Capsulatum) and the Lesions of Histoplasmosis, a Fatal Disease of Tropical America.*
2. Pearce, R. M. *An Experimental Glomerular Lesion Caused by Venom (Crotalus Adamanteus).*
3. Bunting, C. H. *Blood Platelet and Megalokaryocyte Reactions in the Rabbit.*
4. *Boggs, T. R., and Morris, R. S. *Experimental Lipemia in Rabbits.*
5. Opie, E. L., and Meakins, J. C. *Data Concerning the Etiology and Pathology of Hemorrhagic Necrosis of the Pancreas (Acute Hemorrhagic Pancreatitis).*
6. *Wollstein, M. *A Comparative Study of the Diplococci Occurring in Epidemic Cerebrospinal Meningitis and Posterior Basic Meningitis.*
7. Lewis, P. A. *The Influence of Temperature on Hemolysis in Hypotonic Solutions.*
8. *Noguchi, H., and Moore, J. W. *The Butyric Acid Test for Syphilis in the Diagnosis of Metasyphilitic and Other Nervous Disorders.*
9. Jobling, J. W. *Standardization of the Antimeningitis Serum.*
10. Meltzer, S. J., and Auer, J. *Continuous Respiration without Respiratory Movements.*

1. Darling describes a fatal infectious disease of tropical America resembling kala-azar of India; the clinical characteristics of the disease are splenomegaly, emaciation, irregular pyrexia, leucopenia and anemia. The pathological features are the invasion of endothelial cells in the smaller lymph and blood vessels and capillaries by enormous numbers of a small encapsulated micro-organism (histoplasma capsulatum), causing necrosis of the liver, with cirrhosis, splenomegaly, pseudogranulomata of the lungs, small and large intestines, with ulceration of the latter, and necrosis of lymph nodes draining the infected viscera. The micro-organism presents only minor differences from the Leishman-Donovan body of kala-azar. The mode of infection and the portal of entry are unknown.

4. Boggs and Morris by bleeding rabbits daily for eight to sixteen days were able to produce a lipemia. They do not offer any explanation of the mechanism of this lipemia.

6. Wollstein was unable to find any reliable criteria of difference between strains of diplococcus intracellularis obtained from typical cases of epidemic meningitis and several cultures obtained from cases of posterior basic meningitis. Moreover, the diplococcus obtained from posterior basic meningitis produced in monkeys an acutely fatal form of meningitis.

8. Noguchi and Moore describe the butyric acid test for syphilis as applied to the cerebrospinal fluid. The test is a simple one, requiring only a few minutes, and is dependent upon the higher content of globulin and euglobulin in the cerebrospinal fluid of syphilitic individuals than in normal cerebrospinal fluid; the cerebrospinal fluids from persons with acute general diseases without meningeal inflammation do not give the butyric acid test. The cerebrospinal fluid from acute inflammatory diseases of the meninges, including tubercular meningitis, always gives the butyric acid reaction, but the diagnosis of those conditions should be possible by other examinations of the cerebrospinal fluid.

In cases of syphilis without direct involvement of the nervous system the cerebrospinal fluid yielded the butyric acid test of feeble intensity; in cases of cerebral and spinal syphilis the percentage of butyric acid reactions was 100; in hereditary syphilis and in general paralysis positive butyric acid reactions were obtained in 90%; in tabes dorsalis the percentage of positive butyric acid reactions was 100%. The Wassermann reaction on the cerebrospinal fluid (not from the blood) was considerably lower in each instance. The writers commend this reaction as a valuable addition to the Wassermann test, the results of which it is capable of confirming and extending. [R. I. L.]

Sept. 2, 1909.

1. Fleisher, M. S., and Loeb, L. *Studies in Edema. IV. The Influence of Calcium Chloride, Adrenalin, Myocarditis and Nephrectomy upon the Dilution of Blood during Intravenous Injection of Sodium Chloride Solution.*
2. Fleisher, M. S., and Loeb, L. *Studies in Edema. V. The Effect of Calcium Chloride, Adrenalin and Myocarditis Lesions upon the Blood Pressure in Animals Injected Intravenously with Sodium Chloride Solution.*
3. Anderson, J. F. *The Influence of Concentration (Gibson's Method) on the Presence of Tetanus Toxin in Blood Serum.*

4. GREY, E. G., AND DE SAUTELLE, W. T. *The Relations of the Thyroid Glands to Glycosuria.*
5. KING, J. H. *The Influence of the Thyroid on Carbohydrate Metabolism.*
6. *KING, J. H., AND STEWART, H. A. *Effect of the Injection of Bile on the Circulation.*
7. OPIE, E. L., AND BARKER, B. I. *Enzymes of Tuberculous Exudates.*
8. SIMON, C. E., MELVIN, E., AND ROCHE, M. *On Auto-Antibody Formation and Antihemolysis.*
9. DOCHEZ, A. R. *Proteolytic Enzymes and Anti-Enzymes of Normal and Pathological Cerebrospinal Fluids.*
10. STROUSE, S. *Experimental Studies on Pneumococcus Infections.*

6. King and Stewart working on dogs found that the injection of bile increased the tone of the vagus nerve and that bile pigment in combination with calcium or sodium is less toxic than uncombined pigment. In experimentally produced jaundice in dogs the calcium content of the blood is increased while that of the liver, muscle and brain is decreased; the writers express the opinion that the increase of calcium in the blood is a protective mechanism against the circulating pigment of obstructive jaundice. [R. I. L.]

THE LANCET.

AUG. 28, 1909.

Educational number. No original articles appear in this number.

SEPT. 4, 1909.

1. *BASHFORD, E. F. *An Address on Cancer in Man and Animals.*
2. THOMSON, J. J. *Presidential Address.*
3. *TUBBY, A. H. *Experiences in the Treatment of Distal Paralyses by Nerve Anastomosis.*
4. *ATKINSON, J. M. *A Possible Natural Enemy to the Mosquito.*
5. WIER, A. A. *A Case of "Delayed Chloroform Poisoning" Treated with Dextrose; Recovery.*
6. ROSS, H. C. *The Vacuolation of Blood Platelets: An Experimental Proof of Their Cellular Nature.*
7. GREENWOOD, M. *Domiciliary Medical Treatment under the Poor Law.*
8. HIRSCH, C. T. W. *Motoring Notes.*

1. Bashford, director of the Imperial Cancer Research Fund, reviews the general subject of this disease in animals and in man in a thorough manner. He describes the work done on animals in transplantation of cancer and the various attempts to prepare anti-cancerous serum.

3. Tubby describes the results of 8 cases in which he has done nerve anastomosis. Two of these cases were of traumatic origin, and 6 due to anterior poliomyelitis. The first two are both recovering. In 4 of the latter cases there is evidence of a more than partial recovery of the muscles, and in 2 there is no improvement.

4. Atkinson describes a fly, native to Hong Kong, which feeds on the mosquito larva. Experiments are being carried on to ascertain whether or not this fly can be grown and transported elsewhere so as to help eradicate the mosquito. [J. B. H.]

SEPT. 11, 1909.

1. PEPPER, A. J. *The Harveian Lecture on Some Aspects of Forty Years of Hospital Experience.*
2. *MURRAY, G. R. *Three Cases of Sporadic Cretinism.*
3. *BAIN, A., AND MALONEY, W. J. *Rabies with Notes of Thirty Cases.*
4. *THOMPSON, R. *The Etiology of that Form of Dislocation of the Hip-Joint which is Generally Regarded as Congenital.*
5. ALLEN, R. W. *Six Cases of Vaccine Treatment of Somewhat Unusual Interest.*
6. BAYLY, H. W. *The Use of the Ultramicroscope for the Early Diagnosis of Syphilis.*
7. HIRSCH, M. *Motoring Notes.*

2. Murray describes 3 cases of sporadic cretinism treated with good results with thyroid extract. Excellent photographs add to the interest of the article.

3. Bain and Maloney present notes on 30 cases of rabies met with at the Government Hospital at Cairo, Egypt. Twenty-one cases were due to bites of dogs, the remainder to wolves. All received injections of unaltered rabies virus in graduated doses, but of 30 cases there were 15 deaths. The details of the cases are briefly given.

4. Thompson discusses the etiology of so-called "congenital" hip dislocation. He is strongly of the opinion that this is not a congenital affair but one which occurs in early infancy, due to static causes. It is more frequent in the female because the female hip-joint is weaker and acts at a greater mechanical disadvantage than the male joint. [J. B. H.]

BRITISH MEDICAL JOURNAL.

AUG. 21, 1909.

1. WILLIAMS, C. T. *A Lecture on the Infection of Consumption.*
2. KEITH, A. *Three Demonstrations on Congenital Malformations of Palate, Face and Neck.*
3. WATKINS-PITCHFORD, W. *Light, Pigmentation and New Growth.*
4. WICKHAM, L. *Radium and Radiotherapy in Skin Diseases.*
5. JONES, H. L. *On the Treatment of Nevus by Radium.*
6. TOMKINSON, J. G. *The Etiology and Treatment of Pruritus Ani.*
7. ALLWORTHY, S. W. *A Case of Cutaneous Actinomycosis.*
8. COOPER, R. H. *The Supposed Risks Attending X-Ray Treatment of Ringworm.*
9. HALL-EDWARDS, J. *Observations on the Existence of an Idiosyncratic Susceptibility to Rœntgen Rays.*
10. HUMPHRIS, F. H. *Some Practical Uses of Static Electricity.*
11. HAZLETON, E. B. *X-Rays in Gynecology.*
12. SCURFIELD, H. *Notification of Tuberculosis of the Lung in Sheffield.*

AUG. 28, 1909.

1. BARR, J. *Address on the Peripheral Circulation and Its Treatment.*
2. *BROCKBANK, E. M. *Crescendo Murmur of Mitral Stenosis.*
3. MACALISTER, C. J. *Observations Concerning the Blood in Chorea and Rheumatism.*
4. WYNNE, F. E., AND STURM, F. P. *Case of Enterospasm Simulating Acute Obstruction.*
5. MOIR, G. *Achondroplasia Occurring in a Chinaman.*
6. *MCMULLAN, G. *Case of "Dercum's Disease."*

SEVENTY-SEVENTH ANNUAL MEETING OF THE BRITISH MEDICAL ASSOCIATION.

Section of Hygiene and Public Health.

7. *WILLIAMS, P. W. *Discussion on Latent Infections by the Diphtheria Bacillus.*
8. GILCHRIST, A. W. *On the Endemicity of Influenza.*
9. WYNNE, J. D. *On the Connection between Cattle Fairs and Tuberculosis in Ireland.*

Section of Hematology and Vaccine Therapy.

10. *CALMETTE, A. *Early Diagnosis of Tuberculosis; Its Importance in Regard to Efficacy of Treatment.*
11. NOON, L. *Influence of the Site of Inoculation.*
12. CARMALT-JONES, D. W. *Review of the Inoculation Treatment of Tuberculosis; with Special Reference to Lesions of Lymphatic Glands.*
13. FLEMING, A. *Bacteriology, and Vaccine Treatment of Acne Vulgaris.*
14. BENHAM, C. H. *Bacteriology of Common Colds.*

Section of Pharmacology and Therapeutics.

15. ROLLESTON, H. D. *Discussion on the Treatment of Edema.*
16. DIXON, W. E. *Facts and Fancies in Pharmacology.*
17. DIXON, W. E., AND DALE, H. H. *Demonstration on the Action of the Pressor Substances in Putrid Meat, Placenta and Ergot on the Heart and Uterus.*
18. CHARTERIS, F. J. *Effect on the Leucocyte Count Produced by Thiosinamine Injections.*

19. Moore, B., Baker-Young, F. W., and Sowton, S. C. M. *New Member of the Saponin Digitalin Group of Glucosides.*

Section of Dermatology and Electrotherapeutics.

20. Morris, M. *Discussion on the Mucous Membrane Lesions in Cutaneous Disease.*
21. Wild, R. B. *Case of Acanthosis Nigricans.*
22. St. George, G., and Melville, G. M. *Acanthosis Nigricans.*

2. Brockbank discusses the etiology of the so-called crescendo murmur in mitral stenosis. There are two views as to the origin of this murmur: (1) That it is a direct current murmur and occurs while the blood is passing from the auricle into the ventricle, and is caused in part or wholly by systole of the auricle; (2) that it is a regurgitant murmur due entirely to the systole of the ventricle. He is strongly in favor of the latter theory. In other words, that the murmur is not really a presystolic one but is systolic in time, due to regurgitation through the mitral valve during systole of the ventricle. He discusses the application of this theory in the explanation of the chief auscultatory signs of mitral stenosis. First, the accented first sound alone, and later the crescendo murmur alone. The article is illustrated with numerous cardiograms.

6. McMullan describes an interesting case of adiposis dolorosa successfully treated with thyroid extract.

7. Williams, Buchanan, Forbes and Clark discuss the question of latent diphtheria infections from the clinical, bacteriologic and administrative points of view. This important question is well covered by these interesting though short articles.

10. Calmette discusses the early diagnosis of tuberculosis. The paper is chiefly an argument in favor of his ophthalmotuberculin reaction. [J. B. H.]

Deutsche Medizinische Wochenschrift. No. 35.
Sept. 2, 1909.

1. *Henschen, S. E. *Functional Systolic Heart Murmurs.*
2. Senator, H., and Schnütgen, A. *Aerated Baths.*
3. Ribbert, H. *Observations on the Essay of Aschoff on "The Concept of Disease."*
4. *Schlesinger, E., and Holst, F. *The Diagnosis of Changes in Position and Shape of the Stomach by Means of the Rœntgen Ray.*
5. Ohly, A. *The Chemical Demonstration of Blood in the Stools by Means of the Combined Turpentine, Guaiac and Aloin Test with Special Regard to the Sources of Error Associated Therewith.*
6. Pickert, M. *The Regular Appearance of Tuberculin Antibodies in the Course of Specific Treatment and Its Therapeutic Significance.*
7. Homberger, E. *The Test of Heart Function.*
8. Stühmer, A. *The Modification given by Tschernugobow to the Wassermann Reaction.*
9. Seefisch, G. *The Question of Torsion of the Omentum.*
10. Wieland, E. *Physiologic Bone Formation in Fetuses and the Newborn and its Importance in the Histological Diagnosis of So-Called Congenital Rhachitis and Osteochondritis Syphilitica.*
11. Lewy, J. *Relations between Infection and Flat Foot.*
12. Richter, R. *A Means for the Prevention of Conception.*

1. Henschen enumerates the different ideas that have been advanced in regard to the cause of functional heart murmurs, and in a brief manner shows why the different ideas are not tenable. He then advances his own idea, namely, a dilatation of the heart due to weakness of the cardiac muscle from fever, anemia or the like with a temporary insufficiency which causes the murmur.

4. Schlesinger and Holst give a brief summary of the literature on the question of observations on the stomach by the use of the Rœntgen ray. They then give in some detail their technic and show the different possibilities for the position and shape of a normal stomach. They also give the method of diagnosing abnormalities in the shape and position and what these signs mean towards making a diagnosis. They consider that very exact gastric diagnoses may be made by this method. They emphasize the value of making the observations with the patient upright. [C. F., Jr.]

Münchener Medizinische Wochenschrift. No. 37.
Sept. 14, 1909.

1. *Rolly, F. *The Question of the Permeability of the Kidney for Bacteria.*
2. Hecker, R. *The Origin of Albuminuria in Children.*
3. Schumm, O., and Hegler, C. *The Utility of the So-Called Cammidge Pancreatic Test.* (Preliminary communication.)
4. Braun, H. *The Question of Serum Hypersusceptibility.*
5. *Schulz, H. *Fulguration of Inoperable Cancers.*
6. Sellheim, H. *The Occurrence and Healing of Complete Lacerations of the Perineum.*
7. Vulpius, O. *Forward and Back in the Treatment of Scoliosis.*
8. *v. Lichtenberg, A. *A Useful Mode of Treatment for Contracture in Tuberculosis of the Hip.*
9. Karo, W. *Specifics in the Diagnosis and Treatment of Genito-Urinary Tuberculosis.*
10. v. Zeissl, M. *Two Interesting Cases of Lues, and Deductions Therefrom.*
11. Fein, J. *The Removal of the Pharyngeal Tonsil.*
12. Harrass, P. *Incarceration of a Large Diverticulum of the Small Intestine in a Congenital Inguinal Hernia.*
13. Büdinger, K. *Treatment of Warts by Freezing.*
14. Henkel. *Official Precautions against Infectious Diseases.* (To be continued.)
15. Pittinger, X. *Supervision of Infants and Examination of the Dead in the Country.*
16. Herz, M. *On Criticism of My Apparatus for Measuring Blood-Pressure.*

1. Having experimented on dogs, the writer comes to the conclusion that inflammation of the kidney *per se* has little influence on bacteriuria. A high acidity of the urine, on the other hand, may check the growth of bacteria, but its effect may be to some extent neutralized by the presence of albumen and cellular elements. When bacteriuria is suspected, the urine should be examined when *fresh.*

5. Schulz reports a series of cases of inoperable carcinoma treated by fulguration as previously practiced. He did not observe any benefit.

8. v. Lichtenberg describes a simple apparatus by which he claims to have obtained good results in contracture following hip-disease. Anesthesia is not necessary and the process is not painful. The apparatus can be made by any blacksmith. [G. C. S.]

Berliner Klinische Wochenschrift. No. 38.
Sept. 20, 1909.

1. Pel, P. K. *The Tuberculin Treatment of Pulmonary Tuberculosis.*
2. Schultz, W. *Clinical Experiences with Iron Tuberculin.*
3. Frugoni, C. *Studies on the Blood-Serum of Tuberculous Patients and the Exudates of the Serous Cavities by Means of Complement Binding.*
4. *Zorn, F. *Slivered Fragment of a Stewpan in the Vermiform Appendix in a Hernial Tumor.*
5. Hinselmann, H. *The Nature of Pancreatic Diabetes.*
6. Engel, H. *Arteriosclerotic Blood-Pressure Variations in the Individual Man.*
7. Thoma, G. *Seasickness.*
8. Bamberg, G. *Isolated Injuries of the Posterior Vaginal Vault from Coitus.*
9. *Böhm, M. *The History of Ether Narcosis.*

4. After brief review of previous reports of foreign bodies in the appendix, and of the appendix as a hernial content, Zorn describes a case of his own in which, at elective operation for radical cure of inguinal hernia, the appendix was found in the sac, and on section following removal proved to contain a number of pinworms and a metallic fragment, apparently from a saucepan, which the patient remembered to have swallowed twenty-two years before while eating boiled potatoes.

9. It is interesting to read, especially at this season, Böhm's rehearsal of the familiar story of the demonstration of ether anesthesia. His residence in Boston has

enabled him to draw largely from local sources of information, and to those who knew him here his personality shines entertainingly through his narrative. [R. M. G.]

Deutsche Zeitschrift für Chirurgie. Bd. 100.

1. Braun, H. *Inflammatory Tumors in the Intestine.*
2. Kocher, T. *A Case of Tumor of the Hypophysis with Operative Cure.*
3. Dollinger, J. *The Operative Reduction of Old Dislocations of the Elbow.*
4. Küster, E. *The Treatment of Congenital Dislocation of the Hip.*
5. Bardenheuer. *Myotomy and Myorrhaphy.*
6. Garré, C. *The Present Status of Ureteral Surgery.*
7. *Sonnenburg, E., and Kothe, R. *Contribution to the Diagnosis and Prognosis of Progressive Peritonitis with Special Regard to the Significance of the Arneth Blood-Pictures.*
8. *Graser, E. *Two Cases of Extrophy of the Bladder Cured by Maydl's Method with Examinations of the Urine Evacuated from the Bowel.*
9. *Kappeler, O. *Rupture of Incarcerated Intestine from Taxis.*
10. Lauenstein, C. *Is It Possible to Diagnosticate Two Intestinal Loops in a Strangulated Hernia? A New Contribution to the Pathology of Retrograde Intestinal Incarceration.*
11. Friedrich, P. L. *Further Questions and Suggestions for Operative Mobilization of the Lung and Chest Wall (Thoracoplastic Pleuropneumolysis) in Pulmonary Phthisis Predominantly Unilateral or Limited to the Region of the Upper Lobes.*
12. Witzel, O. *The Construction of Gastric Fistula with Formation of an Oblique Canal as Performed To-day.*
13. Lexer, E. *Plastic of the Cheek.*
14. Küttner, H. *Isolated Tuberculous Tumor of the Ascending Colon.*
15. König, F. *The Reinforcement of Insecure Lines of Suture in the Intestine and Urethra with Implanted Tissue Flaps.*
16. Rydygier, L. R. v. R. *The Diagnosis and Treatment of Ureteral Constriction.*
17. Perthes. *Contribution to the Knowledge of Congenital Diverticulum of the Bladder.*
18. Wiesinger. *Side-Tracking the Intestine.*
19. Borchard. *The Operative Treatment of Fractures of the Neck of the Femur, Especially in the Young.*
20. *Neumann, A. *The Value of Omental Plastic in the Treatment of Perforating Gastric and Duodenal Ulcer.*
21. Martens, M. *The Surgery of Pancreatic Cysts.*
22. Madelung, O. *Some Observations on Complete Mid-Tarsal Dislocation.*
23. Hochenegg, J. *The Treatment of Hypophyseal Tumors.*
24. Poppert. *The Question of the Treatment of Prolapse of the Rectum by Plastic of the Pelvic Floor.*
25. *de Quervain, F. *Malignant Aberrant Parastruma.*
26. Sick, P. *The Treatment of Peritonitis, with Special Reference to Primary Enterostomy.*
27. Wilms. *The Sensibility and Sensitiveness to Pain of the Abdominal Organs.*
28. Müller, W. *The Condition of the Joints in General Edemata and Vascular Compressions (Static Effusions).*
29. *Payr. *Some New Experiments in the Treatment of Lupus.*

In a brief preface to this hundredth volume, Trendelenburg reviews the names and work of the surgeons, now dead, who have shared in the literary production of the *Zeitschrift* since its foundation in 1872. This period has been essentially that of the development of bacteriology and its beneficient application to the problems of surgery, and no small share of the progress of the time has been first chronicled in the *Zeitschrift.* Other notable advances have also been here recorded. The invention of skin-grafting, the discovery of the Röntgen rays, the development of new methods of narcosis for surgical anesthesia and of the technic of many valuable operations, have made this period fruitful in German medical literature. All these Trendelenburg hopefully regards as earnest of still greater achievement in the future.

This number further contains articles by many of the most eminent living German surgeons, and a general index of all the volumes of the *Zeitschrift* since its beginning.

7. The authors present a clinical study of a number of cases of appendicitis with progressive peritonitis, and emphasize the value of Arneth's method of plotting graphically the neutrophilic leucocyte curve as a felicitous completion of the quantitative blood examination. By the simultaneous determination of the number and kind of leucocytes, one is enabled to obtain accurate information as to the processes going on in the blood and as to the severity of the infection; and comparison of a series of data gives valuable diagnostic and prognostic evidence.

8. Graser reports two cases of extrophy of the bladder successfully operated according to Maydl's method, with implantation of the ureters and trigonum into the sigmoid flexure, closing the genital cleft into a common cloaca. Of special interest are the subsequent chemical examinations of the cloacal urine as compared with that of normal children. Apparently the cloacal children passed a considerably larger daily quantity of urine, which was normal on leaving the ureters but became modified by its sojourn in the intestine. The longer this sojourn, the greater the alkalinity of the urine and the less its urea and total nitrogen content.

9. Kappeler reports from his personal observation three cases of rupture of the intestine from taxis of an incarcerated hernia, another communicated to him by Brunner, and collects 4 from the literature. In 4 of these 8 the taxis was exerted by the patient. Two were inoperably moribund when seen; 6 were operated, with 5 recoveries.

20. Neumann classifies under four heads the recognized indications for the use of the omentum in intra-abdominal plastic:

(*a*) To support and protect suture lines of uncertain security.

(*b*) To piece out in the hollow abdominal viscera, especially in the gastro-enteric tract, defects which could not be closed by direct marginal approximation.

(*c*) To cover serous defects, in order to avoid pathologic adhesions between the abdominal organs.

(*d*) To establish new vascular paths (as in Talma's operation, and recapsulation of the decorticated kidney). To these he proposes the addition of a fifth:

(*e*) To cover temporarily, in patients too weak for radical surgery, a callous perforating gastric or duodenal ulcer in the neighborhood of the pylorus, thus tiding them over the perils of acute perforation until improved conditions make secondary gastro-enterostomy possible.

25. As a contribution to the classification of tumors of the neck, de Quervain suggests their division into median tumors, derived from the thyreo-glossal duct and its end organs, and lateral tumors associated with the branchial clefts. Under each group he reports a case, with illustrations and histologic findings, the first a ciliated epithelial thyreo-glossal cyst, the second a malignant aberrant parastruma.

29. Payr proposes a new procedure for the treatment of lupus. Under local anesthesia the ulcerated area is undermined, between two parallel incisions in healthy tissue, and underneath it are passed strips of iodoform gauze dipped in balsam of Peru. After a week these strips are changed daily. The circulatory stimulation induced by this manoeuver, coupled with the antiseptic action of the iodoform and balsam of Peru, is supposed by Payr to be the cause of the immediate healing and cicatrization of the ulcers observed by him in 4 cases which he reports treated after this method. When this healing is complete, the gauze strips are omitted and the skin allowed to heal down into its original site. There is said to be no tendency to recurrence. The suggestion certainly seems worth further trial. [R. M. G.]

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Miscellany.

MASSACHUSETTS MEDICAL SOCIETY.

Meeting of the Council.

A stated meeting of the Council of The Massachusetts Medical Society was held in John Ware Hall in the Boston Medical Library, Oct. 6, 1909, at 4 P.M., seventy-two councillors being present, and the President, Dr. Silas D. Presbrey, in the chair.

The record of the last meeting was read and accepted. The following were appointed to fill vacancies caused by resignation: David D. Scannell, of Boston, on the Committee on State and National Legislation; John Bapst Blake, of Boston, as a delegate to the American Medical Association for the year 1909–10. The following were appointed delegates to the American Medical Association for 1910–11: H. D. Arnold, Boston; Homer Gage, Worcester, and O. J. Brown, North Adams. Alternates: F. J. Cotton, Boston; F. W. Anthony, Haverhill, and W. A. Dolan, Fall River. The following were appointed delegates to the meetings of state societies: Vermont: J. H. Higgins, of Marston's Mills, and G. S. Allen, of Lawrence. New York: S. B. Woodward, of Worcester, and A. R. Crandell, of Taunton. Rhode Island: F. A. Hubbard, of Taunton, and H. P. Mosher, of Boston. Maine: E. W. Taylor, of Boston, and G. Z. Goodell, of Salem. New Hampshire: S. H. Sears, of Yarmouthport, and E. S. Jack, of Melrose. Connecticut: F. S. Ward, of Springfield, and George P. Twitchell, of Greenfield. New Jersey: W. W. Miner, of Ware, and J. H. Gifford, of Fall River. The Committeee on Membership and Finance reported through Dr. Goss and it was voted: That all extraordinary expenditures be referred to the Committee on Membership and Finance before they are presented to the Council for action. At the suggestion of the Committee on Publications it was voted: That the annual discourse be the property of The Massachusetts Medical Society, the orator being informed when he is appointed that such has been the vote of the society.

Dr. A. K. Stone made the following motion: That a committee of five (5) be appointed by the president to consider and report to the Council whether the amendments offered by Dr. Cotton at the annual meeting in June, 1909, are so worded as to produce the results desired, and, if not, to draw up more satisfactory amendments which may receive the support and recommendation of the Council at the next annual meeting, and it was so voted. The president appointed, as this committee, A. K. Stone, F. J. Cotton, Henry Jackson, G. deN. Hough and J. W. Bartol.

Dr. G. W. Gay moved: That the members of the standing committees of the American Medical Association, the representative of The Massachusetts Medical Society upon the National Legislative Council, and the delegates to the American Medical Association with their alternates from this state society be invited to attend the meetings of this Council, and it was so voted.

The reports of the Committee on Contract Work were discussed by several members and finally the motion of Dr. E. B. Harvey that this matter be indefinitely postponed was adopted. On motion of the President of the Middlesex South Society it was voted that the Council recommends that the district societies discuss the question of contract work during the year and report their conclusions to the Council at a future meeting.

The president presented obituaries of Homer Bushnell and Thomas Hovey Gage.

Adjourned at 5.11 P.M.

MORTALITY STATISTICS NEXT YEAR.

Revised Version of Classification of Census to go into Effect.

United States Census Director E. Dana Durand has just promulgated new rules and instructions for the purpose of securing more complete and accurate transcripts of deaths occurring in the selected death registration states and cities of the United States. These transcripts are obtained every month by the Census Bureau from nearly all of the city and state registrars in the census death registration area, and they form the basis of the mortality statistics prepared by the Division of Vital Statistics, under Chief Statistician Dr. Cressy L. Wilbur.

This action is expected to result in the presentation of the most scientific and trustworthy mortality statistics ever compiled in connection with a decennial United States Census, which affords the population bases for the 1910 death-rates. In addition to this important step toward more reliable data, the new revised version of the "Classification of the Causes of Death," as adopted at the Paris conference for the second decennial revision of the International Classification, will go into effect Jan. 1 next in the census registration area. Supplementing these will be the use of the new United States standard death certificates which it is believed the organized registration officials forming the vital statistic section of the American Public Health Association will adopt for the report of deaths commencing Jan. 1 next, at the Richmond, Va., meeting, Oct. 19–22 next.

In his communication to the state registrars, Director Durand states that in their work of co-operation it is of the greatest importance that there should be exact agreement between the number of deaths as compiled by the state officers and by the Census Bureau, at least with respect to the total number of deaths reported for each month in each state, county and city. Differences occur at present which are not creditable to American statistics. For the purpose of preventing such differences, a monthly shipment check list, showing the deaths by months and areas, has been prepared and will be supplied to each state registrar.

Dr. Wilbur, who was one of the American delegates at the second decennial revision, stated that the opportunity of starting out with the use of the revised classification for the mortality statistics relating to the actual census year is of the greatest value. It is highly gratifying, he said, that the wishes of the United States for the advancement of the date of the international revision from 1910 to 1909 were acceded to by the French government and the other countries participating.

RECORD OF MORTALITY

FOR THE WEEK ENDING SATURDAY, OCT. 2, 1909.

CITIES.	Reported deaths in each.	Deaths under five years.	CITIES.	Reported deaths in each.	Deaths under five years.
New York	—	—	Waltham	5	2
Chicago	—	—	Pittsfield	6	5
Philadelphia	—	—	Brookline	—	—
St. Louis	—	—	Gloucester	4	2
Baltimore	194	74	North Adams	12	4
Cleveland	—	—	Northampton	4	1
Buffalo	—	—	Chicopee	6	4
Pittsburg	—	—	Medford	6	1
Cincinnati	—	—	Beverly	8	1
Milwaukee	—	—	Leominster	4	2
Washington	—	—	Hyde Park	1	1
Providence	—	—	Melrose	8	1
Boston	183	53	Newburyport	2	—
Worcester	37	17	Revere	4	—
Fall River	39	25	Westfield	1	—
Cambridge	20	7	Woburn	9	2
Lowell	30	13	Peabody	—	—
New Bedford	34	10	Marlboro	3	1
Lynn	30	5	Attleboro	5	3
Springfield	19	2	Adams	2	1
Lawrence	24	14	Clinton	4	1
Somerville	14	4	Gardner	6	3
Brockton	11	2	Milford	3	0
Holyoke	21	8	Watertown	4	0
Malden	10	3	Plymouth	—	—
Chelsea	7	3	Southbridge	1	—
Newton	6	1	Weymouth	2	0
Salem	11	4	Framingham	—	—
Haverhill	9	1	Wakefield	—	—
Fitchburg	—	—	Webster	—	—
Everett	8	3	Arlington	—	—
Quincy	—	—	Greenfield	1	—
Taunton	9	3			

CHANGES IN THE MEDICAL CORPS U. S. NAVY FOR THE WEEK ENDING OCT. 9, 1909.

TOLFREE, H. M., passed assistant surgeon. Ordered to the Naval Magazine, Iona Island, N. Y. Oct. 1.

ALLEN, A. H., assistant surgeon. Ordered to the Naval Recruiting Station, Pittsburg, Pa. Oct. 1.

OURSLER, J. T., pharmacist. Discharged from treatment at the Army and Navy General Hospital, Hot Springs, Ark., and ordered to the Naval Academy. Oct. 1.

SMITH, H. W., passed assistant surgeon. Detached from the Navy Yard, Boston, Mass., and ordered to duty in the Bureau of Medicine and Surgery, Navy Department, Washington, D. C., Oct. 2.

EYTINGE, E. O. J., passed assistant surgeon. Detached from the "Wolverine" and ordered to the Naval Hospital, Norfolk, Va. Oct. 2.

REED, T. W., assistant surgeon. Ordered to the "Wolverine." Oct. 2.

SHIPP, E. M., surgeon. Detached from the Naval Recruiting Station, New York, N. Y., and ordered to duty at the Naval Hospital, Philadelphia, Pa. Oct. 5.

RAISON, T. W., assistant surgeon. Ordered to duty at the Naval Hospital, Navy Yard, New York, N. Y. Oct. 5.

APPOINTMENT.

DR. JOHN F. ANDERSON, past assistant surgeon in the United States Navy, and for the last seven years assistant director of the hygienic laboratory of the Public Health and Marine-Hospital Service, has been detailed as director of that institution. In this post he succeeds Dr. M. J. Rosenau, recently appointed to the new chair of preventive medicine in the Harvard Medical School.

SOCIETY NOTICES.

SUFFOLK DISTRICT MEDICAL SOCIETY CENSORS' EXAMINATION. —The censors of the Suffolk District Medical Society officiating for the society at large will meet to examine candidates for admission to The Massachusetts Medical Society at 8 the Fenway, on Thursday, Nov. 11, 1909, at 2 P.M. Candidates, who must be temporary or permanent residents of the Suffolk district, should make personal application to the Secretary, and present their medical diplomas, at least three days before the examination. For further particulars, apply from 1 to 3.30 P.M. to

DAVID D. SCANNELL, M.D., *Secretary.*
366 COMMONWEALTH AVE.

NEW YORK AND NEW ENGLAND ASSOCIATION OF RAILWAY SURGEONS will hold its nineteenth annual meeting at the Academy of Medicine, New York City, on Nov. 16–17, 1909. A symposium will be presented on the "Causes of Railway Accidents Individualized." The names of prominent lay officials, attorneys and surgeons from railways all over the country appear on the program, which is very attractive and interesting. All interested in this line of work are cordially invited to attend.

J. M. WAINWRIGHT, *President.*
GEORGE CHAFFEE, *Corresponding Secretary.*

THE regular meeting of the South Boston Medical Society was held in the Out-Patient Department of the Carney Hospital, Monday evening, Oct. 11, Dr. P. J. Timmins in the chair. The paper for the evening was read by Dr. Percy Brown, on "The Roentgen Ray in Examination of the Stomach and Intestines."

J. C. ROGERS, M.D., *Secretary.*

RECENT DEATHS.

CHARLES WILLARD PIERCE, M.D., M.M.S.S., died in Allston, Oct. 9, 1909, aged thirty-seven years.

JOHN PHILLIPS REYNOLDS, M.D., M.M.S.S., retired, died in Boston, Oct. 10, 1909, aged eighty-three years.

DR. HOWARD S. DEARING, who recently died at his native town, East Waterboro, Me., was for many years a practitioner in Boston. He received his medical degree from Dartmouth. Since 1886 he had served on the medical staff in several organizations of the Massachusetts militia, and at the time of his retirement in April, 1909, was the senior medical officer in the state. He was only fifty-two years old, and is survived by his wife and three children.

DR. LUDWIG KOHN, of New York, died on Oct. 3 from the accidental taking of phenol solution in mistake for a dose of strontium bromide mixed with syrup and water. Dr. Kohn was a native of Germany and was graduated from the University of Vienna in 1887. Immediately afterward he came to New York, where he built up a large practice in the lower East Side of the city. Two years ago he removed to Harlem.

DR. CHARLES PARSONS BEAMAN, of Ithaca, physician of the Cornell University Athletic Association, died on Oct. 6, in the fiftieth year of his age.

BOOKS AND PAMPHLETS RECEIVED.

Le Sweating System et la Loi sur la Protection de la Santé Publique. Par le Dr. Lucien-Graux. Reprint.

L'Habitation Urbaine. Chambres de Domestiques, Cuisines et Loges de Concierges. Par les Drs. Henry Thierry et Lucien-Graux. Reprint.

Meine Behandlungsmethode der Ischias. Von Dr. Franz Jetel. Reprint.

La Profilassi della Malaria col Chinino. By Lucio Andreola. Boston. 1909.

(1) A Study of Some Casts of the Infantile Pharynx, with Special Reference to the Eustachian Tube. (2) A Note on Eustachian Obstruction. (3) Partial Bibliography of Recent Papers Relating to the Eustachian Tube. By William C. Braislin, M.D. Reprint.

Dr. Adam Hammer, Surgeon and Apostle of Higher Medical Education. By James Moores Ball, M.D. Reprint.

Treasury Department. Public Health and Marine-Hospital Service of the United States. Plague among Ground Squirrels in Contra Costa County, California. By W. C. Ricker.

A Working Plan for Colored Antituberculosis Leagues. By C. P. Wertenbaker.

Hygienic Laboratory. Bulletin No. 53. The Influence of Certain Drugs upon the Toxicity of Acetanilid and Antipyrin. By Worth Hale.

Hygienic Laboratory Bulletin No. 54. The Fixing Power of Alkaloids on Volatile Acids and its Application to the Estimation of Alkaloids with the Aid of Phenolphthalein or by the Volard Method. By Elias Elvove. Washington. 1909.

Original Articles.

STUDIES ON THE DIAGNOSTIC BEARING OF CERTAIN NORMAL AND ABNORMAL PULMONARY AND PLEURAL CONDITIONS.[*]

BY FREDERICK T. LORD, M.D., BOSTON,
Instructor in Clinical Medicine, Harvard Medical School.

In accepting the honor of addressing you on some subject concerning the diseases of the lung and pleura, it occurred to me to discuss on this occasion (1) certain features of the normal chest; (2) the presumptive diagnosis of pulmonary tuberculosis; and (3) the early diagnosis of pulmonary abscess and gangrene.

I. CERTAIN FEATURES OF THE NORMAL CHEST.

The features to be mentioned in regard to the normal chest are necessarily fragmentary.

In practically all normal individuals, the right apex above the second rib in front and the spine of the scapula behind is slightly less resonant on percussion than the corresponding region of the left lung. The quality of the breathing at the right apex is more nearly like that over the trachea or bronchi. On comparison with the left, the inspiration at the right apex is louder and slightly higher in pitch, the expiration strikingly louder and longer and of a somewhat higher pitch. An increase in the intensity of the spoken voice, the whisper and tactile fremitus is also found over this same region. Such signs at another part of the chest would suggest pulmonary consolidation.

The slight relative dulness at the right apex is difficult of explanation. It is too constant a feature to be ascribed to latent disease. In 14 patients in whom it was present, but without symptoms or other signs of pulmonary trouble, x-ray examination [†] failed to show an increase in the density of the shadow at the right apex. It does not appear to be due to greater development of the muscles about the right shoulder in right-handed individuals, as it was present with other signs normally found at the right apex in all but 2 of 19 left-handed individuals [‡] recently examined. If it were due to the additional lobe in the right lung or the proximity of the liver, acting as a mute, relative dulness at the left rather than at the right apex might be expected in the rare instances of complete transposition of the viscera. I have recently examined 3 such cases, in whom the transposition was confirmed by x-ray examination. In 2 of the 3 I could not with certainty determine a difference in the percussion note at the two apices, while in the third, the inequality, though slight, seemed to be in favor of slight dulness at the right. A larger series might decide this question.

The bronchovesicular breathing, increased voice, whisper and tactile fremitus at the right apex are much more striking features. They have been explained on the ground that the right primary bronchus is shorter, larger and more vertical in its course than the left. These factors are doubtless insignificant, however, compared with the recent demonstration by Petterolf[1] of the important difference in the anatomical relation of the two apices to the trachea. He has shown that the right lung, throughout almost the entire length of its thoracic course, lies in contact with the trachea, while between the left apex and the trachea 3 cm. or more of large blood vessels, esophagus, areolar and lymphatic tissue are interposed. The breathing and voice sounds, thus short-circuited at the right apex, are transmitted more directly to the ear. In the 3 cases of complete transposition of the viscera, previously mentioned, there was bronchovesicular breathing, increased voice, whisper and tactile fremitus at the left apex.

So constant in normal individuals are these differences that apices found to present the same (as well as abnormally dissimilar) physical signs should be suspected of pathological changes.

A change in the percussion note, on shifting the position of the patient, is at times noted as a sign of pleural effusion. In this connection I would remind you that the percussion note over the posterior inferior parts of the lungs normally becomes more resonant when the patient assumes a horizontal position, as in bending forward or lying face downward. Although pleural effusions can be shown by x-ray examinations to change their position slightly on changing the position of the patient, yet this sign in the absence of a complicating pneumothorax is of very little value, not only because of the slight mobility of pleural effusions, but also because of this normal change in the percussion note.

Concerning the diaphragm phenomenon, it may be mentioned that in normal chests the transverse shadow descending with inspiration and marking the inferior boundary of the lung may be seen not only in the anterolateral, but also in the posterior, part of the chest, where it is lost between the angle of the scapula and the spinal column. Its presence here is mentioned by Litten, but is usually omitted in later descriptions. Cog-wheel breathing, which may be of significance in other regions of the chest, may normally be found in the left back below the angle of the scapula.

Grocco's discovery of a paravertebral triangle of dulness at the base of the lung, on the side opposite a pleural effusion, has directed our attention more closely to this region. It should be noted that, under normal conditions, there is a triangle of dulness at either side of the spinal column in the inferior thoracic region. The degree and extent of normal dulness here is somewhat variable and must be learned by experience. It limits the diagnostic value of the pathological triangle.

Finally, I would call your attention over the back to a sound which may be confused with pleural friction rub. Hardly a week goes by in the hospital clinic without finding one or more examples. Its incidence may be estimated by its presence in varying degrees of intensity in 18 (32.7%) of 55 unselected cases. It was loud in only 5 of this number.

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[*] Presented by invitation before the Academy of Medicine, Springfield, Mass., Sept. 14, 1909. That part of the present paper dealing with "Hemoptysis as a Symptom" was previously and more fully presented, by invitation, before the Rutland County Section of the Vermont State Medical Society.

[†] My thanks are due Dr. W. J. Dodd for the x-ray examinations and his assistance in their interpretation.

[‡] I am indebted to Dr. J. L. Belknap for his interest and assistance in collecting this series of left-handed patients. All cases with symptoms or signs of pulmonary disease were excluded.

It is commonly heard during the examination of the posterior thoracic region, while the patient's arms are folded across the chest, each hand resting on the opposite shoulder. It does not usually appear at once on beginning the examination and may be present only after two or more minutes of forced respiration. It begins as an inconstant, rumbling, grating, sound, at first confined to inpiration, becoming more and more intense, and finally occupying both phases of respiration. It may be harsh and hardly to be distinguished by its quality alone from pleuritic friction. It varies in intensity in different patients and during the course of the examination of the same patient, ordinarily increasing for a time, then gradually fading away. It may then be reproduced after an interval of quiet and may be heard in subsequent examinations of the same patient. It is much less jerky than pleuritic friction and rougher than the sound heard over any contracting muscle of the extremities. It is usually bilateral. It may at times be palpated with the hand, and in some instances is audible several inches from the side. The patient may appreciate it as a grating sensation, but it causes no pain. In the back, it is practically always confined to the scapular region, whence it may be followed to its point of maximum intensity over the shoulder-joint. At times it can be heard down the arm as far as the hand, as well as along the clavicle. There can be little doubt but that it is due to crepitus at the shoulder-joint. Removal of the hands from the opposite shoulders may abolish it. It is readily distinguished from pleuritic friction by its less jerky character, bilateral position over the scapular region, maximum intensity at the shoulder-joint, disappearance on shifting the position of the arms and the absence of pain.

II. THE PRESUMPTIVE DIAGNOSIS OF PULMONARY TUBERCULOSIS.

My excuse for selecting so time-worn a subject is that the differential diagnosis between infections of the respiratory tract with tubercle bacilli and other organisms is an ever-present difficulty with me, as I have no doubt it is with you.

In doubtful cases, the possibility of invasion by other organisms than the tubercle bacillus, such, for example, as the influenza bacillus, the pyogenic cocci, the pneumococcus, micrococcus catarrhalis, etc., singly or combined, must always be considered. There seems to be nothing distinctive in the clinical aspect, the symptoms of onset, the course, duration or pathological picture of infection by the individual members of this confusing group of organisms. There can, therefore, be little if any value, in individual cases, in searching out the particular member of this group. I do not, of course, mean to imply that such a study may not eventually lead to a better understanding of these infections, but that for the present their separation into classes is rather of academic interest than of practical importance.

Concerning the group as a whole, it is important to appreciate that it is capable of causing respiratory infection, which shows a tendency in a small proportion of cases to end in permanent damage to the pulmonary substance. It is especially the more persistent types of these simpler infections which may be confused with tuberculosis. In general, it may be said of them that they seldom tend toward a fatal termination, but rather remain stationary or slowly progress toward recovery.

It is not my purpose to consider in detail the various features which must be sought in the history and physical examination in cases of possible tuberculosis, and I shall attempt to discuss only certain aspects of the problem.

The patients, concerning whom the question of tuberculosis must be answered, usually present themselves with a history of cough and expectoration for a period of a few weeks or it may be for a few months. It may be assumed that a diligent and repeated search of the sputum has failed to disclose tubercle bacilli, but as it is well known that such negative evidence is of little moment in early cases, the possibility of tuberculosis must still be entertained.

In the history, it is, of course, important to inquire concerning tuberculosis in the family, but known opportunity for contagion is of more positive value. A previous history of pleurisy or of hemoptysis may be of great moment. Cough which begins without preceding catarrhal symptoms is also suggestive. On the other hand, little evidence against tuberculosis can be ascribed to the history of a " cold " which leaves the patient with a persistent cough. Many cases of tuberculosis begin in this way, previously inactive or slowly advancing lesion being thus excited to more rapid progress. Loss of weight and strength, night sweats and evening rise of temperature are also significant.

Concerning the general examination, I would call attention to the growing tendency on the part of ophthalmologists to regard phlyctenular conjunctivitis as a manifestation of tuberculosis. Among Cohen's[2] 123 adult patients with this disease, there was a family history, a previous personal history or clinical evidence of tuberculosis in 78 (63.4%); and in about one half of Derby's[3] series of 66 children and young adults, there was certain or probable evidence of tuberculosis in the lungs or other parts of the body. Corneal scars are very likely to have been due to phlyctenular disease, if trauma, gonorrhea or syphilis can be excluded, and are then suggestive of tuberculosis; so, also, among other conditions, are lupus, cicatrices from cervical adenitis and ischeo-rectal abscess.

Examination of the lungs may be negative and yet enough evidence may already have been obtained to make a probable diagnosis of pulmonary tuberculosis.

Of the various pulmonary features, (1) involvement of the apices, (2) pleurisy or (3) hemoptysis are especially important and may be more fully considered.

(1) *Involvement of the apices.* — Apical râles are among the earliest signs. Special means may be needed to detect them. Examination early in the day before a morning paroxysm of cough may be helpful. At an early stage, râles are usually present only on forced inspiration, at times only after cough, or cough at the end of expiration, followed by strong inspiration. Râles repeatedly found over the same thoracic region should be regarded as arising in consequence of pulmonary rather than of bronchial inflammation. In general, it may also be said that fine râles which are clear cut, sharp and distinct, of a so-called consonating quality, are suggestive of pulmonary consolidation.

The signs of apical catarrh, pulmonary consolidation or pleural thickening, limited to one or both apices, is justly regarded as of the greatest importance in the diagnosis of pulmonary tuberculosis. Clinical and post-mortem experience indicates that such lesions are so rarely due to other causes that they should be regarded as tuberculous until they can be proved otherwise. It must be admitted, however, that other organisms than the tubercle bacillus are capable of causing localized pulmonary infection, the physical signs of which are indistinguishable from those in tuberculosis. It must further be admitted, I believe, that although these confusing infections are more common in other parts of the lung, they do occasionally occur at the apex. No clinical diagnosis of non-tuberculous apical disease can safely be made, however, until this diagnosis is confirmed by negative tests with tuberculin. In a number of instances reported by various observers this has been done, and in 1905[4] I reported four cases in which, at autopsy, pulmonary induration and cavity formation were found in the superior lobes of the lungs, but without gross or microscopic evidence of tuberculosis.

In the individual case, the small chance that an apical lesion is of non-tuberculous origin brightens the chance of recovery, but cannot safely influence treatment, which must be for tuberculosis until tuberculosis can be excluded.

(2) *Pleurisy as a symptom.* — Not all pleurisies are of equal value in suggesting a tuberculous origin. It is especially the primary forms which should be regarded as probably tuberculous, and even the mildest attack of primary dry pleurisy is equal in significance to pleurisy with effusion. Recent observations have shown that at least three fourths of the primary pleurisies with serofibrinous effusion are tuberculous and that out of every 10 cases of either primary fibrinous or serofibrinous pleurisy at least three or four develop pulmonary or other tuberculosis within an average period of four to six years. When we consider the difficulty with which tubercle bacilli are demonstrated in pleural fluids and the not infrequent spontaneous cure of tuberculous pleurisy, it is fair to assume that these figures underestimate the true proportion. They have this hopeful aspect, however, that they are for the most part gathered from hospital patients, the medical supervision of whom terminated with their discharge. They thus represent the natural evolution of the disease, and a longer delay and even an arrest of the underlying tuberculosis may be expected by more careful and continuous oversight.

I am far from believing that every case of apparently primary pleurisy is actually tuberculous. Invasion of the pleura by other organisms may occur in the course of simpler infections. An apparently primary dry pleurisy may be due to plugging of the pulmonary arteries by emboli from an undetected source. Such a case was recently under my observation. In this patient, a man of thirty-nine, it was not until there had been two attacks of apparently primary dry pleurisy and two of dry pleurisy with hemoptysis that the diagnosis of embolism secondary to venous thrombosis in the left leg was made. Until the fourth attack there were no symptoms or signs of this condition. Malignant disease, primary in the lung or pleura, or secondary to an undiscovered source, may also be a cause of confusion. An occasional mistake in the diagnosis is inevitable if all primary pleurisies are regarded as tuberculous. The exceptions are not common, however, and there should be no hesitation whatever in treatment for tuberculosis until the condition can be proved to be due to another cause.

(3) *Hemoptysis as a symptom.* — It may in general be said that pulmonary tuberculosis is the most frequent cause of hemoptysis. The well-known frequency of this disease as a cause of death and the occurrence of hemoptysis in about 60% of all cases during some part of their course supports this. A distinction of some diagnostic value can be made between those hemorrhages which occur (1) as an initial symptom or early in the course of an otherwise apparently mild pulmonary disturbance, and (2) those which are associated with more or less marked symptoms of pulmonary or other disease.

(1) (*a*) Tuberculosis: What relation does tuberculosis bear to hemoptysis out of a clear sky or when cough and scanty expectoration alone cloud it? In clinical work it is well recognized that a large proportion of such cases can fairly be classed as certainly or probably tuberculous from their subsequent course. In a smaller proportion, however, the hemoptysis is the only symptom to darken the horizon, which thenceforth remains clear. What, then, shall we say of these cases? Are they also tuberculous?

In an attempt to answer this question I have been through the clinical records of 1,381 patients coming to autopsy at the Massachusetts General Hospital. Of this number, hemoptysis was a clinical symptom in 134, of whom 15 may be placed in this group. In 14 of these pulmonary tuberculosis was found at autopsy.

Two strikingly illustrative cases may be mentioned. In 1898, a man of forty-six died in the hospital of gastric cancer. The history states that twenty-four years before, after rowing a race, he coughed up a lump of blood as big as an egg. The hemoptysis was not preceded or followed by pulmonary symptoms. At autopsy (Number 274) the probable cause of the hemorrhage was found in obsolete tuberculosis of the lungs and bronchial lymph glands. The second case was that of a woman of twenty-six, who entered in 1896. Two years before, while stepping off a car, she had an hemoptysis. She began to cough only four weeks before entrance and died of a recurrence of the bleeding. At autopsy (Number XI, 204) tuberculosis with cavity formation was found at the apex of one lung.

(*b*) Syphilis: In only 1 of the 15 cases was another cause than tuberculosis found. This case has already been reported by W. W. Gannett.[5] The patient, a man of thirty-seven, had coughed without expectoration for three years. He had an abundant hemoptysis three days before entrance. Physical examination was negative. Death occurred in the hospital two days after entrance from a recurrence of the bleeding. At autopsy (Number 1196) it was found that a large branch of the pulmonary artery had ruptured into the right primary bronchus through a cicatrix, involving the wall of the bronchus and the artery. Other cicatrices were found in the trachea and the left primary bronchus. Interstitial orchitis, with the findings in the trachea, suggested syphilis as a cause.

Syphilis of the trachea and bronchi is of rare occurrence[22] and still more uncommon as a cause of hemoptysis. Moreover, when hemoptysis occurs, it is a predominant symptom in only about one half of the cases. Thus, of 16 cases of hemoptysis from syphilis of the trachea or bronchi collected from the literature, the bleeding was fatal in 7.[6–12] In 3[6, 7, 9] of the 7 cases, the fatal bleeding was preceded by hemorrhage. An autopsy was performed on 6 and disclosed ulceration of the trachea and bronchi with perforation of the pulmonary artery in 3,[10–12] and the aorta,[7] branches of the bronchial artery[8] and the superior vena cava[9] in 1 each. In 9[13–21] of the 16 cases, hemorrhage was a symptom of such minor importance as to justify their inclusion in the second group and was usually preceded by cough, dyspnea (continuous or paroxysmal) and stridor. Aphonia was present in 3 cases.[16, 19, 21] Autopsy was performed on 6 cases,[16–21] and disclosed, as in those fatal from hemorrhage, usually multiple ulcers of the trachea and bronchi. Stenosis was present in some cases.

In the clinical aspect of the 16 cases, evidence of late syphilis elsewhere suggested their syphilitic origin in 8, while in 2 cure followed anti-syphilitic treatment. Examination of the trachea may disclose ulceration or stenosis. Wassermann's serum test may suggest the diagnosis.

(2) Other conditions than tuberculosis more often enter into the problem when hemoptysis occurs as only one among other more or less marked pulmonary symptoms, such as cough and abundant sputum with or without dyspnea, pleural pain and physical signs of disease. To be sure, tuberculosis will then be found to be the cause in a large proportion of the cases, but its presence is more easily proved or disproved. Consider, for example, the hemoptysis which not infrequently occurs as a symptom of pulmonary abscess, gangrene or bronchiectasis. When pulmonary destructive lesions communicate with the bronchi, they lead to the expectoration of an abundant purulent sputum, which usually shows tubercle bacilli if tuberculosis is the underlying cause. If tubercle bacilli cannot be found after diligent and repeated search, the condition is not likely to be tuberculous. Hemoptysis in lobar pneumonia, chronic passive congestion, pulmonary infarction, malignant disease of the lung and aortic aneurism also belong in this group. Hemorrhage is here almost never the only symptom and, if the occasional severe hemorrhages from aortic aneurism be excepted, is seldom the most prominent feature. Syphilitic ulceration of the trachea and bronchi has already been mentioned. About one half of the cases appear to belong in this group. Syphilis of the lung is a cause only in very rare instances. Hemoptysis due to the Distoma Ringeri is as yet almost unknown here, but is endemic in certain parts of China, in Korea and in Japan (notably in Formosa). So far as I know only one case[23] has been reported in man in this country. Through the courtesy of Professor Inouye, of Chiba, Japan, I am able to show you several of the worms which are found in the smaller bronchi and in cyst-like dilatations in the lung itself. Vicarious menstruation is still occasionally mentioned as a cause of hemoptysis, but I can find no well-authenticated case in the literature. It is my belief that the condition does not exist apart from some pulmonary lesion, which is tuberculous in the majority of the cases.

X-ray examination. — This may disclose lesions not otherwise to be discovered in the lung or mediastinal glands. Several sources of possible error may be mentioned. It should be remembered that a negative plate does not justify the assumption that the case is not one of pulmonary tuberculosis. The x-ray tube should be carefully adjusted to coincide with the sagittal plane of the body. If this is not done, one apex may appear in deeper shadow than the other. Elevation of one shoulder may also cause a deeper shadow at one apex.

III. THE EARLY DIAGNOSIS OF PULMONARY ABSCESS OR GANGRENE.

For the patient, the early detection and localization of non-tuberculous destructive lesions in the lung may be of even greater importance than the early diagnosis of pulmonary tuberculosis. Advances in pulmonary surgery are responsible for this. To be successful, operation must usually be performed before the lesions have become multiple or surrounded by indurated tissue.

The more important features leading to early diagnosis may be briefly mentioned.

The history may be suggestive. Lobar pneumonia appears to be the most frequent single cause. Of 100 cases of abscess or gangrene (50 of abscess and 50 of gangrene) at the Massachusetts General Hospital, 22 followed lobar pneumonia. The inhalation of foreign bodies, submersion, etherization, operations about the upper respiratory tract or on an individual known to be the subject of bronchial or pulmonary inflammation, trauma or suppuration anywhere in the body, especially in the pleura or abdomen, are less frequent causes.

The general symptoms are those of sepsis. Cough is practically constant. The sputum is purulent. In typical cases, there may be the sudden expectoration of a large amount of pus, but this is relatively uncommon. Physical signs, if present, are those of pulmonary consolidation and cavity formation. Only the signs of cavity are typical of abscess and gangrene, and if operation is to be successful, one cannot always with safety wait for these. Dulness on percussion, with or without other signs, is common to the largest number of cases. The more frequent location of abscess or gangrene in the lower lobes of the lung, and especially the right, should lead to the examination of these regions with especial care in suspected cases.

The condition of the pleura, whether adherent or not, is of great moment in determining the operative risk. A previous history of pleurisy on the affected side, lobar pneumonia as a cause of the process, pleural pain during the development of the disease and diminished or absent pulmonary excursion, as shown by percussion of the pulmonary margin at the end of inspiration and expiration or the absence of the diaphragm shadow, suggest an adherent pleura. The condition of the pleura can often be correctly determined, but never with absolute certainty. It is well for the surgeon, therefore, to distrust the clinical diagnosis of adherent pleura and to proceed in his operation as if the pleura were free. Preliminary suture of the pleura lessens the danger of artificial pneumothorax and empyema.

The clinical diagnosis, with a view to operation, may well be based on the following triad of signs: (1) The presence in the sputum of elastic tissue or lung shreds establishes the diagnosis; (2) circumscribed dulness, with or without other signs, may indicate the site of the disease; and (3) examination with the x-ray may confirm the physical findings, disclose the presence of multiple areas, only one of which has been found, or locate a focus not otherwise detected. Lenhartz[24] states that the x-ray first disclosed the site of the disease in about ten of his cases and led to operative interference.

Exploratory puncture, as a means of diagnosis, can hardly be too strongly condemned. A dry tap does not exclude abscess or gangrene. The neighboring lung may have been punctured. The contents of a cavity may be too viscid to flow. On the other hand, pus from a bronchus may be thought to come from a pulmonary cavity. The procedure may be a source of great danger. Withdrawal of an infected instrument through an intact pleura has led to empyema. A troublesome superficial abscess may arise in the course of the puncture. The injury of blood vessels lining the walls or traversing the lumen of pulmonary cavities has led to fatal hemorrhage.

Indications for operation. — The site of the disease must be known. No reliance can be placed on its probable position. The results of operation are infinitely better when the process is single, but multiple areas are not necessarily a contra-indication. It must be constantly in mind that the chances of success diminish with the lapse of time.

Spontaneous and complete recovery occurs both in abscess and gangrene, and the attendant's judgment will often be taxed to its utmost to decide whether an expectant policy or operation is the wiser course. The knowledge that in many of the recovered cases there is permanent and distressing pulmonary damage may influence the decision. Lobar pneumonia as a cause may be considered of favorable moment in estimating the probable outcome. The clinical features are of more importance.

In the presence of a small area of abscess or gangrene, without marked symptoms of sepsis, a pure purulent rather than a foul sputum, without a large amount of lung tissue, an expectant policy may be followed. An estimate of progress may be made from the amount of sputum and the temperature chart. If recovery or marked improvement does not occur within three to four weeks, operation should be considered. Operation is indicated, on the other hand, in the presence of a large cavity, marked sepsis, putrid sputum and abundant lung shreds. If empyema is present it should be opened and drained. An accessible abscess elsewhere which has invaded the lung should also be opened.

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REPORT OF WORK ACCOMPLISHED IN THE CONTROL OF TUBERCULOSIS IN MASSACHUSETTS DURING THE PAST YEAR.*

BY ARTHUR T. CABOT, M.D., BOSTON.

When the Associated Committees were organized, in 1905, there were but 23 anti-tuberculosis associations, dispensaries, etc., in Massachusetts. There are now 120 such organizations in the state, and of these 14 have been organized in the past year. Many of these organizations are very active and doing first-rate work. I regret to say that some of them are not so active. I look forward to a good deal of excellent work, however, when the state hospitals which will co-operate with the different clinics in the state are started.

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* Read before The Massachusetts Medical Society, June 15, 1909.

As evidence of appreciation of our work I have the gratifying announcement to make that at the International Congress held at Washington a silver medal was awarded to the work done by this association. The certificate reads, "A silver medal has been awarded to the State of Massachusetts for the exhibit of the excellent work it has done in the control of tuberculosis." The only state organization is the one which we represent here, and we have rather a handsome medal, which may properly be deposited in this Medical Library, attesting the approval of the International Congress of our work.

I wish to speak mainly of our plans for the future, because before our next meeting the three state hospitals, which will probably be largely occupied by advanced cases, will be finished and in operation. It is evident that these hospitals, in order to do the best work, must act in hearty co-operation with these various anti-tuberculosis organizations throughout the state.

The commission that is building these hospitals has already been of some assistance to the Associated Committees and has received aid from them. The co-operation between them must now be made much closer, and I wish to say a word of some of the ways in which the various anti-tuberculosis associations and the state hospitals can help each other.

When the three hospitals now building are finished the commission which is building them will also take over the Rutland Sanatorium, and will act as a board of trustees for all four of these hospitals.

The object of these state hospitals is to take off of the hands of the local dispensaries those patients that cannot be properly cared for at home. It is evident that they can accommodate but a small proportion of the consumptives of the state, but by relieving the most difficult cases they will greatly lighten the burden of the local organizations.

It is manifestly of the greatest importance that in the transfer of cases from local organizations to hospitals, and in the return of those patients to the local organizations, the patients shall not be lost sight of. Heretofore patients have been sent to Rutland, and then gone home as arrested cases, and in not a few instances those arrested cases have appeared again at some of the clinics with a fresh outbreak of the disease. We are very reasonably sure that some of these relapses can be prevented in the future by notifying the local organizations at the time that a patient is about to return home, so that they can be on the lookout for him and not let him go back and resume a faulty habit of living. We have already made a step in this direction, and the commission, although not yet in charge of these hospitals, has made a number of lists of the local organizations in the state, and has sent them to the various hospitals,— to Rutland, Tewksbury, and to the various insane hospitals that have a considerable number of tuberculous patients, — with the request that the hospital authorities notify the local organization near the home of each patient about to return home. It is quite evident that if this notification is to be kept up the authorities at the state hospitals must see that their efforts in this direction bear fruit. It is the part of our committees and of the associations under their charge to be ready to see to it that, when they get information of a patient, something is done about that patient; that, if possible, he has suitable work found for him, and if he was working before he went there at a reasonably healthful work that his place is secured for him again if possible. It is well known that many patients can return to the very work which they were doing when taken sick, and if they sleep and live out of doors during the hours at home that they can work and still remain well. This is a thing which, it seems to me, the association should take upon themselves, — to follow these arrested cases, see that they come back to living under good conditions, that they sleep out of doors when possible, live out of doors, and in that way hold on to the good that they obtained at the sanatorium.

Physicians who send patients to the hospitals should send with them proper histories, and if any tests for tuberculosis have been made and found positive that fact should be transmitted to the hospital authorities at the same time the patient is sent. It will be of great assistance to them to know at once facts which it might take them a long time to find out by examination.

In closing, I wish to say a word or two about the state our work is in.

The hospital at North Reading will be finished this summer.

The hospital at Lakeville will be ready for occupancy in the autumn, and the one at Westfield will be ready to open next spring, so that at the time of our next annual meeting they may all be expected to be working to their full capacity, and I ask for them your fullest support.

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THE NECESSITY OF PROVIDING SUITABLE EMPLOYMENTS FOR TUBERCULOUS PATIENTS.*

BY ALFRED WORCESTER, M.D., WALTHAM, MASS.

In the warfare civilization is now undertaking against tuberculosis, we are hampered by various social and economic interests. Could we disregard these vexing factors and follow the single lead of sanitary science, our best line of attack would be far plainer. But this is impossible. And, instead, we find ourselves at every move forced to consider both its cost and the social objections thereto.

If, for instance, we could at once destroy all domestic animals found to be infected, and burn their barns, and then strictly quarantine all tuberculous patients as we do the lepers, doubtless the disease might within a generation or so become a rarity. Such radical measures are, of course, out of the question. The initial cost of such procedure, aside from its inhumanity, would be prohibitive. And yet, from the purely economic standpoint, at least partial quarantine measures are now demanded.

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* Read before The Massachusetts Medical Society, June 15, 1909.

Except for our ignorance regarding the sources of infection, instead of the present uncertainty, there would be a far better agreement as to the kind of quarantine necessary. First we are told that the disease is contracted by the ingestion of the bacilli in milk and meat. We, therefore, begin a vigorous crusade against tuberculous cattle. Then we are told that the cowless Japanese are peculiarly afflicted with the disease, and that the great expense of frequently decimating our herds is unnecessary. Accordingly our crusade along this line slows down.

Could we be as sure that the disease is communicated solely from one human creature to another as we are sure is the case, for instance, in leprosy, we should all agree to the desirability of as strictly quarantining our tuberculous patients as we do those suffering from scarlet fever, diphtheria or smallpox. But even then, because of the long years patients suffer with the disease, and also because of their multitude, such strict quarantine both for social and economic reasons would be well nigh impossible.

We are thus forced to be content with only a partial quarantine. And even this is impeded both by its cost and also by the separation of families thus entailed. As regards this latter objection, which, by the way, is very serious and demands far more attention from the sociologists than it has yet received, it must now suffice to point out that were it not for the increasing and amply justified hopefulness regarding the curability of the disease in its initial stages, even a partial quarantine of those infected would be far more difficult of attainment than it is at present. Merely as a protective measure, however desirable for other members of the family and for the rest of the community, it would be far harder than it is to send tuberculous patients to a hospital. It is the hope of cure, or at least of an arrest of the disease, that makes it so comparatively easy to fill our sanatoriums and to assemble our tuberculosis classes. It is, therefore, most desirable that tuberculous patients shall not be divided into curables and incurables, even if such divisions were possible.

From the sanitary point of view the quarantine of the sanatorium régime is nearly ideal. And, doubtless, the education there received lessens the menace of patients after their discharge, whatever their future history may be. But we know much more ought to be done than is now done by way of subsequent supervision of these discharged patients.

The tuberculosis camps and classes, too, in only lesser degree, are of great sanitary service. Patients there are taught how to avoid infecting others. Could we make sure that all tuberculous patients are henceforth to be quarantined as strictly as in the sanatoriums, or even as in the tuberculosis classes, and subsequently to be carefully supervised until either dead or completely cured, then we might rightly feel that the battle against the disease has really begun. But, alas, how far we are from that. As yet we are only skirmishing. We have not yet ascertained the numerical strength of the enemy, nor his exact location. We have not even marshalled our own forces. We who are here assembled are only a partially organized general staff. Our function is to study with utmost thoroughness the opposing forces and then to work out the best plan of attack.

The special task assigned to me, upon which to-day I make this preliminary and very inadequate report, is the consideration of one of the great economic obstacles in the way of establishing a partial quarantine of all tuberculous patients. This obstacle is the interruption of their earning power. And the question before us is that of their proper employment in order that this loss may be minimized.

Great is as the cost of supporting these patients in their enforced idleness, the sacrifice of their earning power is at least an equal cost. This fact very naturally has not as yet received sufficient attention. For the cost of supporting the patients falls in large aggregates upon the public treasury or upon the anti-tuberculosis associations; whereas the loss of wages falls separately upon the individual families of the patients.

If, in addition to this loss of earning power, any part of the quarantine cost also falls upon the family, the burden already heavy may easily become unbearable. Is it any wonder that the infected breadwinner for the family postpones as long as possible going into quarantine? Indeed, so long as his earning power remains, is not such postponement of admitting his infection the breadwinner's duty?

Broadly stated, then, the obstacle we face is that the quarantine measures, which are of such advantage in protecting the community from the spread of the infection, may very likely overwhelm the patient's family with financial disaster. It is true that by such measures the family is relieved, at least in part, of the care of the patient. And in the advanced stages of the disease, where the patient is wholly incapacitated, this advantage is plain. In the incipient stages, too, where there is good hope of the patient's health being restored, there is, or at least there ought to be, a future economic advantage to the family. But this is greatly diminished by the difficulty such patients now have in finding employment after having been discharged from the sanatorium even as cured.

In spite of these qualifications, the fact remains that the early acknowledgment of the infection causes a direct economic loss to the patient and to the patient's family. And yet our main hope in our struggles to stamp out the disease lies in just this early acknowledgment. We must, therefore, strive in every way to minimize this financial burden, which, while resting immediately upon the family, bears ultimately upon the community, not only financially, but even more importantly in preventing the early acknowledgment of the disease and the proper sanitary measures for its eradication. And any means that can be devised to save the earning power of tuberculous patients will thus be of immense public advantage.

The problem naturally divides into the two questions of employment for patients during their quarantine and after their discharge with their disease arrested. As regards the first question it may be seen that it ought to be left to the authorities in charge of the sanatoriums and tuberculosis classes. They, of course, are best able to decide upon the therapeutic value or disadvantage of some occupation for their patients. But even if the lungs heal and the body weight increases faster during the patient's absolute idleness, still greater advantages might result from the moderate employment of the patient's mind and muscles. If, for instance, patients might be taught some trade or art whereby, after their discharge, they might more easily earn their living, and under more healthful conditions than obtained in their former occupations, or if during part of the day they might have opportunity to earn even small wages for the benefit of their families or for their own future support, who can doubt the moral and mental, to say nothing of the economic, advantage of such provision for them? Moreover, it is plain that the patient cannot fairly be considered fit to be discharged from the sanatorium as cured, and able again to earn his living, until his ability to work, as well as his lung power, has been tested. And if any effort is to be made to secure new and more healthful occupation for the patient after his discharge, the first steps thereto can far better be taken while he is under sanatorium supervision. In connection with every sanatorium there ought to be a trade and industrial school where patients according to their several abilities might have the chance to learn how in future to earn their livings under least harmful conditions. Even if only common school opportunities were there offered, and availed of, that, besides increasing their usefulness, would go far to offset the degradation of stagnation. Enforced idleness of mind and body may cure the man of his disease, and yet spoil the man.

The danger of such a result is, of course, much less in the tuberculosis class and camp than it is in the sanatorium, where the patient is wholly removed from all immediate knowledge of his family's needs. Such knowledge, it is true, and the consequent worriment over it, if not tempered by some provision for the family's relief, might interfere with the patient's recovery. Herein lies the great opportunity for the social worker, in devising means whereby the patient's family may be helped until the wages previously depended upon can again be earned for them. This is a sanitary as well as a philanthropic necessity. For the family that has been exposed to infection surely ought not to be allowed to suffer for lack of most nourishing food while the breadwinner is being fattened in enforced idleness. If the patient be the mother of the family, the help of the social worker is even more necessary. Few families, at least without plentiful friendly assistance, can withstand the demoralization of the mother's absence.

If the patient himself can be given opportunity for earning even a small part of what his family needs, and especially if opportunity is provided whereby he can earn more and more as his recovery advances, there can be no doubt of the great therapeutic value of such incentive. From the economic standpoint, the advantage would be large; from the social point of view, it would be immense. It is, therefore, of highest importance that in all classes and camps, as well as in the sanatoriums, provision shall be made for the encouragement of every patient to undertake such employment of mind and body as will not retard his recovery. If, also, in this employment better ways of future earning may be acquired, so that his efficiency may increase rather than by idleness decrease, the patient can thus be given the best possible inducements to get well.

In some of the German sanatoriums patients are given such occupation, carefully graded according to their abilities. It is there recognized that it is too much to expect of the average man or woman to show much zeal in unremunerative labor, and they, therefore, pay patients for their work. These small earnings can either be sent directly to their families or retained as a credit to be paid the patients when discharged. Why cannot some such plan be tried in Massachusetts?

Let us now turn to the problem of proper employment for patients in the incipient or arrested stages of the disease who either have never entered, or who have been discharged from, sanatoriums and tuberculosis camps and clinics. Theoretically these two classes ought not, perhaps, to be considered together. For those who, under proper treatment, have had their disease arrested may, perhaps, be less likely to infect others than those who have never been taught how to take care of either themselves or others. But practically we may as well class them together, for in many cases the incipient disease can be as well arrested by a change of occupation as by a sojourn in the sanatorium.

We must consider the problem of the proper employment of such patients from two standpoints: first, that of the individual; and, second, that of the public.

In the interest of the public it is plain that individuals whose disease may at any time break forth ought not to be employed where the disease, before even its outbreak should be recognized, might be communicated to others. For instance, it would probably be considered only a sensible precaution on the part of any family to refuse to employ as a cook or as a child-nurse a woman whose lungs either were or had been tuberculous. And we should all prefer not to have a tuberculous man, even on the chance of his having been cured, employed in handling our milk supply. The public interests thus plainly conflict with the interests of the individual who has, or who has had, or who is even suspected of having, tuberculosis. For, in the instances just cited, employment as a child-nurse or as a milk handler might be ideal for the unfortunate individuals themselves. Where persons, in addition to their own afflictions, in the interests of others must suffer such restrictions, it is only fair that some compensating advantages shall be given them. Thus both for the public's protection and also for the relief of the handicapped individuals, proper employments for them ought to be provided.

In devising such employments, what requirements must be observed? First, the absolute safety of the public as regards the spread of the disease (*a*) directly to fellow-workers, and (*b*) indirectly through the products of the infected laborers. Second, the minimum interference by the fostered industries with the earning power of other workers in the same occupations. Third, (*a*) the most healthful environment for the affected workers, and (*b*) the least danger to them of overtaxing their strength. Here, then, we have our problem reduced to its simplest terms. What kinds of employment will best meet these requirements?

Inasmuch as all agree upon the necessity of outdoor life in curing tuberculous patients of their disease, or in arresting it, there would at first sight seem to be no question of the subsequent advantage to them of outdoor employments. And in more equable climates, where outdoor workers are not subjected to extremes of heat and cold, to say nothing of drenching storms, such employments would, of course, have precedence. But in our climate these vicissitudes of weather considerably lessen the advantages of outdoor work. It is one thing to recline outdoors wrapped in fur during the winter, or under the protection of shack roofs during the summer's scorching sun or storms of rain, and it is quite another thing to be working outside every day of the year in all kinds of weather. Moreover, those who all their lives have been used to indoor trades, and whose abilities lie wholly in such direction, find it almost impossible to become farmers and gardeners. This difficulty has been found to be so great by the national Jewish society for the relief of tuberculous patients that they have had to report the failure of their outdoor colony in Colorado, and now they are trying instead to provide for their patients opportunities to learn the electrician's and other mechanical trades in most favorable hygienic shops. They report their inability to turn the Jews into agriculturists. In Germany, on the other hand, the farming colonies seem to prosper. This, doubtless, is because of the German's greater love for such work, as is evidenced by the thousands of garden patches in the suburbs, where the city workers spend their scanty leisure hours.

Racial prejudices against ordinary farming and gardening and stock raising may not be conquerable, but there are many other profitable occupations for country dwellers, wherein, too, the disadvantage of climatic changes can be largely obviated. Thus more and more gardening is being done under glass. And then there is the great industry of poultry raising. There is no danger of glutting the market with eggs or squabs. This is an especially good chance for women. Forestry also offers good chances. But perhaps the best chance of all in this state can now be found in the crusade against the gypsy moths. What better employment could possibly be devised for a man seeking insurance against the return of his tuberculosis than in creosoting the nests of this modern pest that now threatens the existence of our forests?

Such occupations as these fulfill all the specified requirements. But, as already has been intimated, it is also necessary to select other occupations for those who have always worked in shops, and who either are disabled from other and more active employments, or who cannot be induced to move their families out of the cities into the more healthful country. For them opportunities must be provided where they can work in hygienic shops in an atmosphere free from dust and rich in oxygen. Such desirable conditions possibly cannot be secured in the large shops and factories. In them there would be the disadvantage, also, of intimate association with fellow-workmen, and the consequent danger, real or imaginary, of infecting them. There would also be the added disadvantage of obliging the somewhat handicapped workman to compete with his stronger fellows. These disadvantages would not be met in small handicraft shops, which now promise a most desirable revival of arts and trades that have been almost lost.

It now remains for us to consider the steps necessary to secure for men and women whose tubercular disease has been arrested such employments as have been here outlined. In the first place, every patient who is registered as tuberculous, irrespective of what quarantine he undergoes, should have his social and economic status studied as carefully as his physical signs. If it be found that his disease has not been caused nor fomented by the conditions of his former employment, and if it be further found that there is practically no danger to his fellow-workmen or indirectly to others by the possible infection of the products of his labor, then every effort must be made to secure his return to his former occupation. In this effort a mountain of prejudice will be encountered. For, where people are taught the real dangers of tubercular infection, it seems unavoidable that there shall simultaneously arise an unreasonable fear of those who have ever had the disease. So cruel is this effect of our tuberculosis exhibits and popular lectures on the subject that one might well be forgiven for preferring the bliss of ignorance. We physicians must, therefore, be ever mindful of our double duty, — that while teaching the laity the dangers of tubercular infection, we must no less vigorously assure them of what not to fear.

There can be no doubt that by far the larger proportion of employments are perfectly safe for the patients whose disease has been arrested, both for themselves and for others. It is our duty to persuade their former employers and fellow-workmen of this fact. But for the child-nurse and the bread-baker, the factory girl and the cigar-maker, the milk handler and the general housework girl, and for all others in whose occupations danger lies either for themselves or, in case of further outbreaks of the disease, to others, other forms of employment must be provided.

Upon whom does this duty rest, or, in other words, by whom can it best be done? Plainly, in this search for proper employments, the physician's service is indispensible. But it is unfair that the whole burden should rest upon the medical profession. Nor can such an enormous task be delegated to any small commission with any expectation of a few being able to meet such multifarious needs. It will never be advisable to arrange for the concentration of such aided individuals in large shops and industries, however hygienic such might be, and however wisely supervised. We must always remember that the family, and not the individual, is the real unit of the community, and that it is neither practicable nor wise to require the unnecessary removal of families, and far less so to aid and abet their separation.

The problem, then, although so general, is nevertheless a distinctly local problem, and so can best be solved by those who are in closest touch with the patients themselves and their families. The anti-tuberculosis societies would seem to be the best-fitted agents to undertake the task. Composed as they are of social workers and physicians, they are far the most likely to succeed. It is not enough for such societies, as some now seem to think, to send patients off to sanatoriums and hospitals. It is also their duty to search out all possible ways of aiding their embarrassed families, and then, after the patients' return with the disease arrested, it becomes their duty to secure for them proper employment. In return for this service to them it will be easy to secure their assent to the supervision that is so desirable. And in this way many of the unfortunate relapses that now occur might be prevented. Here, then, we have another reason for securing as soon as possible the organization of an anti-tuberculosis association in every city and town and village. And in order that their work in this as in every other line shall be most effective, such associations must be brought into co-operation.

DISCUSSION.

DR. J. H. PRATT, of Boston: I shall deal only with one aspect of the subject that Dr. Worcester has presented so interestingly, and that is the employment of the arrested cases. Personally, I think that the employment of patients with tuberculosis is something that must be carefully studied before we permit it to any extent. It is a very difficult question. Patients with acute disease cannot work. In the end we find it better for their families if these patients are given the rest treatment until the disease is arrested. While a patient has tuberculosis in an active stage, he can do very little work without jeopardizing his chance of recovery. The amount of money he can earn is slight while he has tubercle bacilli in his sputum. If he is given employment outside of a sanatorium, he may infect his neighbors. During the past fourteen years I have been interested in this work in connection with our tuberculosis classes, and our patients are all from the laboring classes, referred to us from dispensaries and the Massachusetts General Hospital, and they have to work with their hands, and that means hard physical labor. Not one of my patients has been a brain worker. It has been a very difficult matter to secure work for some of these patients, but I am glad to be able to say that all our graduates with the disease arrested are working to-day, with one exception, or I should say all are working who have remained well. Now, 35 have been discharged from the class with the disease arrested, and those 35 patients are all well to-day. Out of those, 2 have been re-admitted to the class, and 1 of them is almost ready to take up his work again. Many of these patients have been aided to find work. In the majority of instances they have found work themselves. As Dr. Cabot pointed out, we have found that it is possible for these patients to return to their former employment. A considerable percentage of these arrested cases of tuberculosis are now working indoors, and with scarcely any exceptions they have returned to their former employment. They can earn better wages, and it really makes less demands upon the nervous system. If the patient is working under distinctly mental tension, that would be impossible. We had one such case, but he left the class before the disease was arrested, and I understand he died the following year.

To give an idea as to the work these patients are doing, two are painters, several are laborers, one is a clerk in a jewelry store and obliged to work twelve hours a day, and the women are nearly all doing housework. Seventy per cent of the patients we have sent back to work have remained well. Two of the graduates have been working now for more than three years, and thirteen have been working two years, and three for over a year and a half. One of them worked from 7 A.M. to 9 P.M. five days in the week, and on Saturday from 7 to 12. He has shown no symptoms of the disease in seven months. A painter, after being examined, was found to have tubercle bacilli in his sputum. He was treated and remained well for three years. During the past year and a half he had insufficient nourishment and had a relapse. He returned for treatment, and the disease has been arrested so that he is now able to resume his work. We have had some advanced cases among those treated.

DR. HERBERT J. HALL, of Marblehead: I do not pretend to know from experience the effect of especial employments upon tuberculous patients. But if it is decided that employment under especial conditions is advisable, then the experience we have had at Marblehead in the employment of nervously handicapped people may be of value. Some of you may know that during the past five years we have maintained an institution where neurasthenic patients are given manual work to do, and that the plan not only helps to restore health, but represents fair remuneration. My experience allows me to suggest, rather vaguely, that the manufacture of artistic tiles from clay might prove practicable for convalescent tuberculosis patients, provided the designs were made by fully qualified designers and the execution, which may be made largely mechanical, could be directed by a competent craftsman. Even the limited strength of invalids, if carefully and intelligently directed, may produce articles of great value and in sufficient quantity to pay.

DR. CLEAVELAND FLOYD, of Brookline: I think one point should have special emphasis. It makes not so much difference what the occupation is that the patient takes up after his case has been arrested, unless it be one of the trades where there is dust and dirt, if he remains under observation for months and years after arrest has taken place. If patients come back to report every little while relapse is very much less liable to take place than when the patient has been turned loose and does not report for years or until relapse has taken place. Many patients do well in trades where they have been before, but prolonged oversight is necessary.

Dr. Frederick L. Hills, of Rutland: When the disease has been arrested, I think it is very important to urge the patients to do some kind of work. At Rutland we expect all patients to do a certain amount of work daily, and we give them a certain amount of remuneration, in that we remit the board. All who are able to, work about half a day for their board. In addition to that we have about 130 patients who are working from one and a half to two hours daily. Work is given to them as soon as the absence of activity of their disease is evident, and we consider them in a condition to be benefited by a certain amount of work. After they are discharged, one of the most difficult things is to find them suitable employment. Many of them are working half of the day before they return home, so that they are able to take up their occupation without breaking down when they return to work. We try to have them keep up the treatment and sleep out of doors at night. I think the night camp is a very excellent thing, and it will be a great aid in the future for the relief of the situation. It is proposed to have a night camp established here in Boston, and we are hoping to send some of our graduates to that camp. I think that it is something that should be developed in other cities. Since the first of April we have been notifying the local societies or the associated committees in the various towns and cities of the state upon the discharge of a patient, and asking them to supervise them as suggested by Dr. Cabot. We have had a number of replies from physicians and other health officers in the state, telling us that they are looking after these patients.

Dr. E. O. Otis, of Boston: I would like to call the attention of the gentlemen to the *night camp* which the Boston Tuberculosis Association has now under construction, under charge of Dr. J. J. Minot, the chairman of the committee. This camp is situated in Mattapan, upon a tract of land presented to the association by Mr. Prendergast, of Boston. Our plan is to afford an opportunity for arrested cases, discharged from Rutland, to sleep under practically open-air conditions. While working during the day in the city they come to the camp after their day's work is done, receive a nourishing meal, spend the evening in fresh air, and sleep in an open "lean to," have a good breakfast, and then go into the city for their day's work. In this way it is hoped that many relapses will be averted. During the day, when the men are away, the camp is to be used for the children who were at the open-air school during the school year — children who have early closed tuberculosis. The camp will soon be ready, and in behalf of the association, I cordially invite all interested in the new departure to visit it.

Dr. I. J. Clarke, of Haverhill: It seems to me that if all the physicians throughout the state would make special effort to place these arrested cases in the occupation of chauffeur that it would be very desirable for them. I have been able to place two or three cases to very good advantage in places where physicians or their friends have automobiles.

Dr. A. N. Blodgett, of Boston: I have been hoping that some plan might be thought of that would be of use for cases such as have been discussed, those with incipient disease or those discharged from sanatoriums as being "arrested." Many people who travel on the Continent engage the services of a courier, a not very laborious and a healthful occupation. The couriers make all arrangements for the comfort of their employers, and incidentally for the comfort and convenience of the courier as well.

This same arrangement is gradually being developed in our Maine forests, where, to my personal knowledge, many persons employ guides in their excursions for hunting and fishing, entire families taking guides to some of the remoter parts of the Maine woods, where they enjoy seclusion from the crowds at the more frequented resorts. This employment would seem an ideal occupation for "arrested" cases of tuberculosis, combining every essential element for their treatment, and would also be moderately remunerative in money — a very desirable consideration.

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A PROGRAM FOR TUBERCULOSIS SOCIETIES IN SMALLER CITIES AND TOWNS.*

BY CARL A. ALLEN, M.D., HOLYOKE, MASS.

Many of the smaller cities, as well as larger towns, are organizing anti-tuberculosis societies in response to the general awakening of the public and the increased interest of the medical profession in the disease and the possibility of its prevention and cure.

The object of this paper is to place before the medical profession in Massachusetts a general plan of organization and a practical working scheme which has been found valuable in actual practice in several of our cities and towns.

Inquiries are coming to us nearly every week from widely different sections asking advice as to methods of organization and the expense attending the formation of tuberculosis clinics, classes and day camps.

The following general plan will be found satisfactory:

ORGANIZATION.

Get together a few interested persons, with as many physicians among the number as possible; also business men, ladies prominent in social and charitable work, the Young Men's Christian Association, clergy and others interested, and organize.

Copies of a constitution and by-laws can be procured from any of the existing societies that can be modified to suit individual needs.

Every organization should have one central board of directors or executive council, who should have full control of the work.

Let them appoint a few essential committees, somewhat as follows: (1) On education and publication; (2) finance; (3) laws and ordinances; (4) hospitals and day camps; (5) membership; (6) statistics; (7) tenement and mill inspection; (8) relief.

These and other committees should be appointed according to the location, character and need of the community. It would seem wise to have the chairmen of all committees members of the Central Board, and let then appoint the other members from outside, so as to interest as many public-spirited citizens as possible. The committees should report to the Central Board at stated intervals, giving full detail of all work done or attempted. As soon as the society is fully organized, hold a general public mass meeting. See the editors of all local papers and get their assistance in advertising the meeting and its object.

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* Read before The Massachusetts Medical Society, June 15, 1909.

The daily press everywhere has been of untold assistance in helping the work along, and has always been ready and willing to lend its columns for the good of the cause.

Have some man of prominence in the work as the principal speaker, and invite all physicians, nurses, teachers, charitable and fraternal orders to attend, besides the general public. Following such a meeting, have the tuberculosis exhibit of the Boston Association for a week, if possible. The mass meeting, exhibit and free newspaper advertising will thoroughly awaken the community, and the work of the various committees will be greatly enhanced thereby.

Education is the keynote of the work of the first months of any tuberculosis organization. My own experience teaches me that, while we can save a few of those now afflicted with tuberculosis, our hope must be largely in teaching the children of the next generation so to live that they may escape the disease themselves or prevent giving it to others.

Very successful work has been done along this line in several of our cities by giving short lectures to the teachers in all the schools and distributing among the pupils suitable cards for hanging in their rooms, bearing brief sentences telling what to do and what not to do to keep well.

In Holyoke, the Educational Committee gave prizes for the best compositions on how to prevent tuberculosis, all the pupils of the three higher grades in the grammar schools participating. Much good work has also been done by lectures, with and without lantern-slide illustration, before fraternal and charitable orders, mothers' clubs, in churches, etc. The educational committees are constantly distributing literature concerning the cause, prevention and cure of tuberculosis; posting copies of anti-spitting laws on the streets, in public halls, schools, theaters, etc.; and contributing notices and articles to the daily press.

Dr. Rogers, of Yonkers, N. Y., considers lantern shows in public parks, using suitable pictures to interest the public, interspersed with slides containing pithy epigrams concerning the cause, prevention and cure of tuberculosis, to be one of the most effective means of educating the public.

TUBERCULOSIS CLASSES.

Class work, as formulated by Dr. Joseph H. Pratt, of Boston, and fully illustrated before this society, has been found equally successful in other places. But little expense need be incurred in forming such a class, and physicians can always be found who are ready to give their services, and a suitable meeting place should not be difficult to obtain. If there is a hospital in the place, a room can generally be obtained free, as at Salem in the out-patient department; or at a nominal rental, as in Holyoke and Springfield. Classes generally meet once a week, and each patient is taught to take their temperature and pulse twice a day, and to keep a daily record of their manner of life, symptoms, diet, exercise, care of sputa, etc.

Advice is given to each personally, their weight taken and cheer and courage promoted. Each patient thus becomes a living illustration of the modern means found best adapted to prevent and cure the disease.

In both Springfield and Holyoke classes have been formed for men and women separately, each class meeting once a week. In Holyoke the classes are held every Monday and Wednesday from 3 to 4 P.M., followed by a clinic from 4 to 5 P.M.

VISITING NURSES.

To make the work of the class successful there should be a visiting nurse to visit the patients each week in their homes, teaching them how to live so as to get the greatest possible amount of fresh air both day and night, how to care for their sputa, the need of scrupulous cleanliness, daily baths, care of teeth and hands, how to keep a daily record of pulse and temperature, when to take exercise, etc. The nurse should report her work and the number of calls made each week to the supervising physician. Salem pays such a nurse $600 per year and she gives all her time. Besides visiting the patients, she reports suitable cases to the Associated Charities, has patients examined for Rutland, enlists co-operation of the Board of Health in needy cases, etc. Fitchburg and Springfield pay $75 and $65, respectively, per month for the same line of work.

In Holyoke, our secretary is a trained nurse, and gives half her time for $300 per year. She also searches out new cases and reports them to the Board of Health, and gives special attention to the children in tuberculous families, finding some in all stages of the disease. The District Nurse Association has assisted in many of the advanced cases where nursing was imperatively needed, rendering most efficient aid.

CLINICS.

It is always difficult to get hold of new cases in the early or curable stage, and the forming of a free clinic for examination and advice has been found a decided aid in many cases.

In Fitchburg a clinic was opened last March. The rent of a suitable room was given and a pair of scales. The other fittings cost $45. The cost of running the clinic was practically $2 a week. Thirty-seven patients were treated the first seven weeks. In Salem the cost was only $8 last year, with 57 patients in attendance.

In Holyoke a free clinic was opened last January. The same rooms were used as for the class, the visiting nurse being in attendance and the work of the clinic being divided among three of our local physicians. The only extra expense was for the few medicines furnished. Forty-five patients have been in attendance.

DAY CAMPS.

While the clinic will bring you in touch with many new cases, the day camp is a local sanitarium, applicable to any community or location, and, aside from its value to the patients themselves, it is one of the best methods of practically illustrating to the public at large how to prevent and cure consumption. To procure a suitable location for a day camp is sometimes a difficult problem. It should be at a considerable elevation, with good water, plenty of shade, not too far from the center of population and easily accessible by the local car line. There should be at least one frame building of two or three rooms and several tents for rest and shelter in cold or stormy weather. The dining-room may be on a wide piazza of the main building or in a large tent, and reclining chairs and hammocks must be furnished for the patients. The general management of the day camps is about as follows:

The matron of the camp should be a trained nurse and capable of supervising the cooking as well, and she will need such assistants in the kitchen as the size of the camp demands. The rules of the camp should be few and simple, relating chiefly to the care of the sputa, good behavior, punctual attendance and personal cleanliness.

In general, the patients arrive at the camp about 9 A.M. They are given a luncheon of bread, milk and eggs, and are placed in comfortable positions in reclining chairs. Records of pulse, temperature and general condition are taken two or three times during the day. A good nourishing meal of meat or fish, with two vegetables and a suitable dessert is furnished at noon.

A temperature much above 99° requires absolute rest in the reclining position, but games and amusements suitable for individual cases are allowed. Another lunch or an egg nog is given before the patient's departure late in the afternoon.

In Springfield and Holyoke several patients were allowed to remain over night, some furnishing their own tents, others being supplied by the society.

Some of the patients, where the disease is in its incipient stage, will be able and willing to render much assistance as caretakers of the camp, thus saving some expense. The cost of establishing a camp will vary greatly. In Salem the initial cost was $260, the equipment being one large and four small tents. The entire cost for four months was $665. A three-room portable house is to be added this year.

In Springfield the equipment cost $431, including a portable house (which was donated), four tents and other camp necessities. The entire cost of the camp and maintenance for five months was about $1,300, or 70 cents per patient per day. The paid attendants were a trained nurse, who supervised the cooking, a woman to assist in the kitchen and a man to care for the sanitaries.

In Holyoke, a two-room building with a wide piazza for a dining room was erected, and three tents procured at an initial cost of $280. Most of the furnishings were donated. The entire cost of building, tents, rent and maintenance for five months was $1,057. There was no paid attendant except the supervising matron and nurse. Cost per patient per day was 54 cents.

FINANCES.

The cost of maintaining an active anti-tuberculosis organization is considerable, but thus far very little trouble has been found in procuring needed funds.

Besides membership fees and voluntary contributions, funds have been secured in various ways. Churches, fraternal organizations and charitable societies have contributed generously. In Holyoke the ladies raised $200 from a musical concert, $326 from two food sales, $206 from a whist party and about $225 from the sale of Red Cross stamps. Two games of baseball netted us nearly $500.

Springfield secured $235 from a benefit whist party, $436 from baseball games and nearly $600 from the sale of Red Cross stamps. Fitchburg raised $1,000 from Red Cross stamp sales and generous sums from a garden party and Carnation Day. Salem won the prize by making Carnation Day a grand success, selling carnations in such quantities at 10 cents each as to net the society $2,400.

Time would fail me to mention in detail all the work of the various committees, but carefully compiled statistics showing the number of deaths from tuberculosis during a series of years, with streets and houses in which the deaths have occurred, as well as the occupations having the highest mortality, are very effective in bringing home to the people, and especially the city government, the facts about the disease. Tuberculosis is a house disease, and certain streets and tenements will always be found showing a much greater number of deaths than others, and the imperative necessity of complete renovation and fumigation after death or removal. This committee should also keep track of all migratory cases as far as possible.

The committee on laws and ordinances will find plenty of work to do in securing a reasonable enforcement of the present registration laws, the anti-spitting law and all ordinances relating to municipal as well as individual cleanliness, pure air and drinking water, and especially a milk supply from healthy cows and clean dairies.

I do not think dispensaries are really essential except in large cities. Wherever anti-tuberculosis societies exist, physicians are in hearty sympathy with the movement as a rule and practically no opposition has been shown. Indifference on the part of a few, and more or less negligence in reporting cases to the board of health, are the chief faults.

In closing, let me urge my brother practitioners, in cities and towns not already having a society, to take the initiative at once and organize an anti-tuberculosis association.

To assist in lowering the death-rate in the *immediate* future, and to place the greatest scourge the human race has ever known in all time and in all ages in the same category as smallpox is surely an object as worthy as civic betterment, municipal reform, church federation and universal peace among the nations.

DISCUSSION.

DR. E. O. OTIS, of Boston: I am very sure Dr. Allen is mistaken when he says that the expense of the exhibit is about $300. I am under the impression that the expense is about $100. The aim of the Boston Tuberculosis Association is to make it as useful as possible, and only the actual expense of putting it into the different towns is considered. There is no intention of making any profit. I think Dr. Allen is mistaken about this.

DR. ALLEN: Of course I included in that statement the rent of halls and the other expenses that would come from the society. I think it cost us $200 to get the hall. The $300 covered the entire expense.

DR. E. A. DARLING, of Cambridge: I regret that I was unable to be here to hear the paper. I can only say a little about the Cambridge organization. Our association started in six years ago without any definite plan. We worked up the plans as we went along, and the association has developed along lines which were entirely unforseen at the beginning. The educational work has been similar to that carried on by the Boston society. We have aroused interest in the subject by giving talks before clubs, boards of trade, the Cambridge Club, church clubs, labor unions, in factories; in short, wherever we could get a hearing. We have had a large number of such meetings, and as a result there is a much better understanding of the problem by the public at large.

The most important work is that connected with the incipient cases. We begin by investigating every case of tuberculosis reported in the city. We have found it necessary to employ a trained social worker for this purpose, and now have two women who give practically all their time to the study of cases. If the case is an incipient one, a case for Rutland, we arrange to have the examination made. If the patient should go to Rutland we try to raise the money, and it is astonishing what results have followed from this plan. There is no patient so poor but that funds may be found for him, often from associations or the church to which the patient may belong, from friends, from former employers or from members of the family. The more advanced cases are now cared for by the Board of Health, in the day camp and hospital. In some instances the more advanced cases are cared for at home by the nurses of the Visiting Nurses' Association. They are visited from time to time to see that they are being cared for. We are striving to have the other members of families where tuberculosis is found examined. We have established a children's clinic, at which more than five hundred children have been examined. Many have been found diseased, not with tuberculosis wholly, but with adenoids, diseased tonsils, etc.

The financial question in the small cities seems to me a very important one. The question of raising money has bothered us from the very start. We depend upon voluntary contributions. We have sent out letters of appeal, and until the present year this method has been sufficient to raise enough money to carry on the necessary work. The expenses have been high. We have to pay rent for the rooms, which are used as office and dispensary. We have to pay half the salary of the nurse we employ, the remainder being paid by the Nurses' Association. Since the first of October the expenses have already been about $2,500, and in former years our total annual expenses were about that. This is quite a sum to raise by small subscriptions, and yet we do not see any other way of obtaining funds. We have had some assistance from concerts, but this has not played a very important part. This is the problem that is confronting us now, but we cannot carry on the work without additional funds. We try to interest manufacturers with regard to the class of people they employ, but they do not seem to see it in the right light. I do not know how much I have repeated the substance of Dr. Allen's paper. I am very sorry not to have been able to listen to it.

DR. HENRY DEARING, of Braintree: I want to say a word or two regarding the experience I have had in Braintree the past year. I believe that boards of health have a great deal to do with carrying on this work, and it is to them that townspeople look for help and aid. I believe they have it in their power to do a great deal of good in investigating these cases and in establishing day camps, an extremely important matter. Within the past three months we have been able, with the help of the Braintree Board of Health, which happens to be constituted of three physicians in our community, to establish a day camp. At present we have three patients under canvas. Food is furnished for the patients by the Overseers of the Poor, and we, as a health board, pay for the nursing. We hope to form an antituberculosis society in the near future.

There is one thing I wish to mention just now, because it has appealed to me for at least the last ten years, while having the care of a good many men under canvas. I think we readily find that there is a difference between sleeping indoors, in the shack, or sleeping in tents. It has been my experience that where men have slept in tents they have always taken care of themselves. The health of the men is almost always good. Those who have lived under canvas for two or three weeks during the year have found it very beneficial. When a man has been put into a shack, just as soon as we are able to get him out of that shack we put him into a tent. We have one such patient now, and he is making a splendid record, and I hope to report, very soon, his return to perfect health. I speak of these things as having observed good results in my experience, and I heartily endorse sleeping under canvas at night.

ASEXUALIZATION AS A REMEDIAL MEASURE IN THE RELIEF OF CERTAIN FORMS OF MENTAL, MORAL AND PHYSICAL DEGENERATION.

BY J. EWING MEARS, M.D., PHILADELPHIA.

IN the year 1890 I read a paper before the Philadelphia Academy of Surgery on "Ligature of the Spermatic Cord in the Treatment of Hypertrophy of the Prostate Gland." As will be recalled, the operation of castration was about that time under somewhat earnest discussion as a curative measure in the treatment of this affection. By some, its efficiency was highly vaunted, and many cases were recorded in which claims were made for permanent alleviative results, accompanied by marked atrophic changes in the affected gland. By others, its value as a curative procedure was denied, and grave objections were urged against the performance of the operation by reason of the mental effect produced upon the patient through the loss of the testes. A celebrated case was referred to in which a London surgeon was killed by a patient upon whom he had performed castration, mental alienation occurring subsequently, caused, it was believed, by the patient brooding over the loss of his testes. In order, therefore, to obviate the untoward conditions which might arise, and to obtain the more ready acquiescence in the adoption of a method of treatment regarded as possessing value, I suggested the production of testicular atrophy by ligature of the spermatic cords as a substitute for ablation of the glands. Through experimentation upon dogs, I learned that ligature of the cord produced atrophy of the testis without the complication of suppurative degeneration, the collateral circulation established being sufficient to maintain sufficient tissue nutrition of the gland. Operation by this method gave as satisfactory results as by that of castration, one case in particular having been reported to me by a a surgeon of the Pacific coast. The method of operation was simple, the cord being exposed by a small incision and ligatured *en masse* with an aseptic ligature. Although I am familiar with one recorded case of tetanus following this method, occurring some years ago in the experience of an English surgeon, owing, it is presumed, to inclusion of the nerve filaments of the cord in the ligature, such condition did not occur in my practice nor in that of surgeons who were accustomed to employ it in cases of removal of the testis with whose operations I was acquainted. In any case if deemed necessary to take precaution against such untoward results, the nerve filaments can be readily isolated and not included in the ligature.

Before leaving this part of the subject, it will be interesting to record in what manner possible mental disturbance was obviated in certain cases of operation by castration in the New York Hospital. At the time of the meeting of the American Surgical Association the surgeons of that institution exhibited to the Fellows present patients whom they reported were endowed with celluloid testes, these having been introduced into the scrotal cavities after removal of the normal organs, — the reparative process had taken place favorably and the patients seemed to be quite satisfied with the harmless substitutes, — the senses of sight and touch received through them impressions which did not dislocate the mental equilibrium.

As one of the objects set forth in the preamble of the constitution and by-laws of the Academy of Surgery, founded by the great surgeon, Samuel D. Gross, was announced to be the promotion of the public good, I was led in the consideration of the subject to broaden the field of investigation and to suggest as legitimate the discussion of the application of this simple surgical procedure in the male, and ligature of the tube in the female, in the treatment of certain classes who are a charge to the state and communities in which they live, and a constant and perilous menace to the well-being and welfare of the human race. In these classes are included perverts and degenerates, idiots, imbeciles, epileptics and the vicious insane, as well as criminals of a certain type who, as a rule, are the subjects of sexual perversions and abnormal indulgences. The argument adduced in support of the proposition was that these defectives, armed with the potentiality of propagating their kind, were as dangerous to the integrity of the community and state as the foe armed with weapons of warfare. In truth, it may be averred that they are more dangerous, since the balm of passing years heals the wounds of strife, the sword converted to the plow share gives bounteous prosperity to the land, enjoying the fruits of well-earned peace, order evolves from chaos, the power of the state is restored, and its integrity is maintained. Such results flow not from the degenerate, permitted to wield his weapons of offense — the production of his kind. The circle of degeneracy is ever widened; each succeeding generation is more degenerate than that which preceded it; the inborn vices are intensified; the moral sense disappears; mentality exhibits itself only in the vaporings of the idiot, the incoherent ravings of the vicious insane, the cackle of the imbecile; and this is the human being who claims the care of the state, to which he he is an ever-increasing burden, who claims the protection of society which he pollutes and, by his contaminating influence, would degrade to his level. What is the remedy? How shall this most important problem be solved? The state when attacked sends forth its best citizens to battle in its defense; some are slain, some are disabled, but the state is saved, and the slain are entombed with the honors of wars, garlands cover their biers, the world proclaims them heroes, valiant sons of the state who gave their lives that it might survive.

Is it asking too much, is it requiring more than is due, when the state, through carefully considered legislation, which in every detail shall safeguard the inalienable rights of the individual, seeks to protect itself against the degrading influences of the continually flowing stream of transmitted pollution, which saps the mental, moral and physical vitality of its citizens, by asking the parents and guardians of the irresponsible defectives to yield their consent to the performance of an operation which in some instances may prove to be curative and in many to be palliative, by abrogating sexual perversions and thus establishing conditions favorable to mental and moral cultivation, and in all, through its far-reaching result, is able to render them impotent to do harm? Failing to obtain this consent, has not the state the right to adopt such measures in the interest and in the protection of its citizens? Nay, further, is it not compelled to so act in the performance of its full duty to its citizens? The education of public opinion has so far progressed that, to-day, communities, through their appointed officers, exercise the right to deprive citizens of their liberty in order that a focus of infection may be stamped out; in epidemics of certain infectious and contagious diseases the citizen is compelled to receive prophylactic treatment to render him immune, and in this way, the spread of the disease is checked. Within a short period of time an entire block in the city of Philadelphia has been quarantined. No resident within this district was permitted to leave, no one to enter it, and this quarantine was not raised until 4,000 men, women and children had been examined and of the number, it is stated, some 500 vaccinated. This action was taken by the health officials when it was discovered that a negro infected with smallpox had returned to his home within the block. This is encouraging evidence of an advanced state of public opinion which approves of the adoption of such drastic measures to conserve the public health, to protect the citizen in the exercise of his privileges and rights.

A few years since, having been honored by an invitation to attend a meeting of a state medical association and to participate in its proceedings, I read a brief paper before it upon the subject to which I now call attention. At that time I was not able to report any positive results as to the action of any state in the enactment of a law which would invest the officers of public institutions with authority to apply the remedial measures suggested in the cases indicated. Subsequent to the publication of my first paper, and through which attention was drawn to the subject, I had correspondence with a number of the executive and medical officers of these institutions; some were ready to accept the suggestions made as opening the way to the amelioration, in marked manner, of the condition of many of the unfortunate subjects included in the classes set aside, to the positive protection of society and to the lessening, in time, of the burden imposed upon the state by their care; others, inspired by ignorance and moved by that false sentiment which so often defeats the aims of true progress and of true charity, refused acceptance, proclaiming loudly that it was invasion of the rights of the indidividual, and that public opinion could never be lead to give its approval. The movement made was not permitted to slumber, and at a recent meeting of the Legislature of the state of Pennsylvania, a bill was introduced which included certain disorders of the type under discussion, in the treatment of which, by the method proposed, the effort was made to achieve the results desired, and passed both branches of the Legislature and was presented to the governor for his approval, but which, unfortunately, did not receive his approval to enact it into a law. While thus disappointed, those interested were not disheartened. This result was not altogether unexpected, and it has been accepted, not as a defeat, in the battle which has been waged for what may be truly esteemed the cause of right and of justice, but as a temporary check, which will contribute increased activity and effort to the movement. The education of public opinion, which is justly a plant of slow growth, not the mushroom product of the hot house, had, as manifested in the action of the members representing the different sections of the state, progressed so far as to obtain, through them, the approbation of the people. Back to the people it has again gone, with the assuring hope that the "*vox populi*" more forcibly pronounced, if need be, will give to the citizens the right to protect themselves against the deadening influences of degeneracy, and, through the measures sought to be applied, give to the classes of unfortunate defectives, paradoxical as it may seem, their only true protection.

Since writing the above my attention has been called by my friend, Dr. Thomas L. Stedman, the able editor of the *Medical Record*, to the paper of Dr. William T. Belfield, read at a joint meeting of the Physicians' Club and the Law Club of Chicago, Dec. 13, 1907. In this paper Dr. Belfield advises vasectomy in order to produce sterilization in confirmed criminals, idiots, imbeciles and rapests. Dr. Belfield records the fact that in March, 1907, the Legislature of the state of Indiana passed a bill authorizing sterilization in those subjects who were confined in the state institutions of Indiana. He stated that in the prison at Jeffersonville over three hundred convicts under the age of thirty years have been sterilized, some by authority of the state, but over *three hundred of them at their own request.* In February, 1909, the Legislature of Oregon passed a duplicate of the Indiana bill and added a clause defining "confirmed criminals." I shall be glad to accept the operation of Dr. Belfield — vasectomy — in the place of ligature of the cord, if extended experience proves it to be effective, and in the case of the female, *tuberotomy* or *tuberectomy*, which may be performed through the vagina.

The members of our noble profession are not only the conservators of the public health, but are, or should be, in every sense the promoters of the public good. Equipped through training for the effective performance of their professional duties, with cultured mentality, with courageous convictions to do the right, they stand at the gateway of civilized conditions, ever able, ever ready, to lend a helping hand in promoting that which is for the public weal. May we not ask that the study and investigation of this subject shall be approached with the "open mind," with the judgment unwarped by an emotional sentimentality. May we not feel assured that, when so studied, there can be but one verdict — that of enlightened approval.

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THE INTRAVENOUS USE OF STROPHANTHIN IN BROKEN CARDIAC COMPENSATION.*

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All persons engaged in the active practice of medicine have felt the need of a quick acting cardiac stimulant, one that shall bring up the flagging action of the heart for a time until the patient shall have a chance by elimination or other means to get rid of the toxin which is destroying his vitality, or removing the load which is being put on the overworked heart. While in certain instances alcohol may help in favoring metabolism, the majority of the physiologists and pharmacologists tell us that it is a very broken reed on which to rely in cardiac stimulation. Tracings shown by Crile in this building, and the work of others, have shown that strychnia has but little or no influence on the blood pressure in collapse. Digitalis, in its various forms, acts but slowly; often hours must elapse before we get a response after its administration, and in this time the patient may die. In the majority of cardiac conditions, relief is best obtained from morphia, which reduces the pain and distress to such an extent that the patient becomes quiet and husbands his strength until the time shall arrive when the digitalis is able to take effect.

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* Read before The Massachusetts Medical Society, June 15, 1909.

There are times when the distress of the patient with broken compensation is so great that it is most pitiful to see. There is an air of hunger, restlessness and a sense of impending danger. Usually there is great discrepancy between the frequency of the pulse, as it is felt at the wrist, and the number of contractions of the heart, as shown by the stethoscope or by the recording cardiogram. The whole organism is at such a state of low vitality that absorption of drugs administered by the mouth is greatly prolonged, and even results from subcutaneous injection are by no means as prompt as under more normal conditions.

The need of a drug which shall act quickly and effectively, under such conditions, has long been appreciated. Hence it was that the report of A. Fränkel, in 1903, was received with much enthusiasm. This paper, presented at the Congress for Internal Medicine, describes the action of strophanthin introduced intravenously into patients suffering with broken compensation. In substance, Fränkel said that with strophanthin the amplitude of the pulse was increased in three or four minutes, and at the end of five to ten minutes the pulse rate was decidedly slowed, and that in most cases diuresis promptly set in. He did not recommend the use of strophanthin as a general routine, but only when the heart failure was in a threatening degree, it was to be used as a life saver, and in the treatment only of chronic cases where it was impossible to use the stomach. Incidentally, it cost less and the dose was many times smaller than the digalen, which had been used intravenously by himself and others.

Dr. Boos, who was working in the laboratories of Strassburg, when Fränkel determined to try his experiment on the intravenous use of strophanthin, prepared the first solutions which he used. Shortly after his return, Dr. Boos called my attention to Fränkel's experience, and told how specially successful it was in relieving the distressing symptoms which so often arise in the course of failing compensation. I did not have any opportunity to give the drug a trial until the summer of 1908. My experience then verified Fränkel's statements, and made me feel that in strophanthin, given intravenously, we have a new ally, which in a number of cases will aid us in our efforts to alleviate pain and distress, and in some few instances enable us to save life;[1] and all this in a way that has heretofore been impossible.

Strophanthin is a glucocide derived from the seeds of the strophanthus plant, and is a stable definite substance. When first introduced, it did not gain favor, because, though it acted well when administered by the mouth, it was found to be irritating to the stomach, and in a short time set up gastric disturbances which seemed greater than the digitalis compounds. For the most part, digitalis has been considered the drug to be used in the management of cardiac conditions. The crystalline strophanthin is considered by Hatcher to be a "perfectly definite uniform substance," and of very nearly uniform activity. It is certainly a very stable substance, as we proved at the Massachusetts General Hospital the past summer, when the standard glass ampules of Bœhringer manufacture were used up, and more strophanthin was needed. Some of Merck's strophanthin which had been in the hospital for eight or ten years — and possibly longer — was used, and found to be exactly as potent clinically as the more freshly made preparation. I have recently seen a physician who felt that Merck's preparation was not as carefully standardized as was the Bœhringer.

The strophanthin is an amorphous or crystalline powder soluble in alcohol, and what is more important, in water. The strophanthin recommended by Fränkel is put up by Bœhringer in glass ampules, each containing 1 mgm. of strophanthin to 1 ccm. of sterilized water. This makes a perfectly clear watery solution.

This preparation is so standardized that each milligram has the potency of twenty frog units; that is to say, that the milligram of strophanthin properly applied has the power to stop the hearts and produce deaths of twenty frogs, of similar size, and under similar conditions of temperature, time of year, and all other precautions that have to be observed in dealing with such a variable until as a living animal.[2]

A dose for an adult who has not been taking any other form of digitalis or strophanthus medication, and especially in all those cases where sudden collapse has occurred, should be 1 mgm. This will give immediate and powerful results, and will not have to be repeated for eighteen to twenty-four hours at the earliest, and there is practically no danger of heart block. Should, however, there be any question of previous digitalis medication, it is better to use a smaller dose and be on the safe side, even though the intravenous injection has to be repeated. And it will be found that many, even very sick, patients, and especially women, object to this operation, while others will beg for a repetition of the dose.

[1] My experience in this regard, which has been quite remarkable, will be found in a paper read before the American Climatological Association, and published in the BOSTON MEDICAL AND SURGICAL JOURNAL for Aug. 19, 1909.

[2] There seems to be a doubt as to the exact strength of various makes of strophanthin. In the *Journal of the American Medical Association* for May 9, 1909, page 1499, it is stated that the crystallized strophanthin is twice as strong as the "official," though identical in its action. Hence I should strongly advise any one to use Bœhringer's standardized preparation, and if any other is offered, be sure that it is standardized in like manner with this. Any deviation from this rule will lead to disaster.

In some favorable cases a single injection will suffice to restore tone to the heart and stimulate diuresis. In other cases the strophanthin will have to be resorted to time and again to help carry the patient along his downward course with the maximum of comfort. Here the physician will learn the size of the dose of strophanthin that is required to relieve the distress of the patient and to make the struggling ventricle work effectively enough to carry its load for the time being.

The immediate result of the intravenous administration of strophanthin is to increase the amplitude of the pulse wave. The frequency of the heart is at the same time slowed within a few minutes, almost, if not quite, as completely as can be accomplished by the administration of digitalis preparations by the mouth in the course of several days. Therefore, when it is desirable to get speedy relief in broken compensation where the heart is rapid and the blood pressure lower than is needed to retain the balance of the fluids in the body, when the apex and wrist are far apart, when there is great distress and restlessness, with a sense of impending disaster, strophanthin intravenously will give in most instances immediate relief, which will last from twelve to seventy-two hours, and in some cases even longer, and this relief will be accompanied by free diuresis, or will permit diuretics previously inert to become once more active.

There are dangers in the intravenous use of strophanthin which must not be underestimated. The therapeutic dose and the poisonous dose are near together, and as the elimination of the drug is slow, one can easily get toxic symptoms of slowed pulse and of heart block from too frequent administration. The previous administration of digitalis is an almost sure contra-indication to the use of strophanthin. Cases where the renal conditions are prominent do not respond as favorably to the use of strophanthin, and it is in these cases, especially, where digitalis had been previously used to some extent, that the majority of the deaths that have been attributed to strophanthin have occurred. Of the eight reported deaths which have been ascribed to strophanthin, it is certainly doubtful whether all of them were really due to the drug. Indeed, the experience of one man is worthy of note. A cardiac patient was having his arm sterilized preparatory to the intravenous administration of strophanthin when he fell forward and died. Had death taken place a few moments later, it would have been added to the deaths caused by strophanthin. Nevertheless, the user must bear in mind what Mendel — who is not favorable to strophanthin — has said (though to my mind it is one of the best endorsements of strophanthin): "The medicament is brought with a blow directly upon the weakened heart, which is pushed immediately to its highest work requirement."

Besides care in the selection of the case and a knowledge of the previous medication, the administrator must be skillful in the administration, taking care not to let the fluid solution escape into the tissues or into the wall of the vein. In the one instance marked painful irritation with swelling and redness will appear about the strophanthin solution, and in the latter case thrombosis may occur so as to give considerable anxiety and certainly great discomfort. (The digitalis preparations that are used intravenously have the same irritant preperties.) Repetition of a milligram dose should not be made under twenty-four (24) hours, except in exceptional cases, and the condition of the pulse should be carefully noted before any such repetition is made. A high blood pressure is not necessarily a contra-indication, but marked brachycardia always is.

The excretion of strophanthin, according to Hatcher, is probably much greater by the intestine than through the kidneys. In his experiment on rats, where the drug was used subcutaneously, only a very little strophanthin could be found in the urine, while the amount in the intestine was much greater. When it was administered in the food practically none was eliminated by way of the kidneys. This, in a way, explains why the strophanthin tends to accumulate in the system as elimination by the intestinal tract is much slower than through the kidneys.

I shall only attempt to report briefly three cases as illustrative of broken cardiac compensation that is relieved by the use of strophanthin.

The first case was that of a woman forty-three years of age who was supposed three years previously to have had manifestations of cerebral syphilis, although at the autopsy there were no gross evidences of syphilis found anywhere upon the body. For a year or more she had had "indigestion," manifesting itself by dyspnea on exercise after meals. This of late had increased rapidly, so that all exercise produced dyspnea. She entered the Massachusetts General Hospital on account of this great shortness of breath on exertion. For some time before entrance she had been obliged to sit up in bed on account of a distressing, choking feeling. The blood pressure varied from 250 mm. to 180 mm. of mercury. An x-ray plate showed no dilated arch of the aorta. Examination of the eyes showed no changes in the fundus. The urine was without albumen, and of a specific gravity of 1,011. The heart was not enlarged, and a systolic murmur at the apex was heard and also a diastolic murmur at the base of the heart. The liver and spleen were both distinctly hardened and enlarged. The superficial arteries were not specially palpable. After some stay at the hospital, she was transferred to the House of the Good Samaritan. She had been somewhat relieved, but the dyspnea returned on the slightest exertion. There was insomnia, great restlessness and distress which nothing seemed to relieve, although digitalin (Merck's) seemed to give the most relief. She became much worse and delirious. Edema of the extremities and albuminuria (over ¼%) appeared. Apparently, she was about to die. At this time I used strophanthin for the first time and repeated it two days later. To my great surprise she improved rapidly, the delirium disappeared, as did also the edema. She was about the wards and fairly comfortable. This continued for three weeks, when she again received a dose of the strophanthin, as the restlessness and distress were returning. The injection was not well administered and she had much discomfort resulting, with redness, tenderness and swelling at the place of administration, and considerable edema of the arm. There was later evident phlebitis. In spite of this she called in a few days again for strophanthin, and from then on, from time to time, as the terrible restlessness and distress appeared, she would ask for the strophanthin, which gave her immediate relief and kept her comfortable for two or three days or even longer. In all she had twenty injections between May 26 and her death on Oct. 15. In almost all of the injections was there some local inflammatory reaction from the drug. The immediate cause of death was pneumothorax from a softened area in the lung. No emboli or thrombi were to be demonstrated. The aorta had areas of thickening, especially in its lower third, also about the left coronary artery. The right renal vein was much thickened and the right kidney was markedly smaller than the left. The heart was hypertrophied and dilated and the myocardium had a yellow tinge. The large liver and spleen appeared to be due only to chronic passive congestion.

The next case to be reported is that of a man aged fifty-two years. He weighed 245 lb. at his best condition. He had never previously been sick. In January, 1908, he began to have "indigestion," that is, distress if he exercised after eating. This he first noticed after an attack of the "grippe." By March the dyspnea had increased greatly and he slept poorly. Enema began to develop in the extremities. He entered the Massachusetts General Hospital in May, 1908. His heart was not enlarged nor were there any signs of valvular disease or irregularity of the rhythm. There was no fluid in the belly. Under digitalis marked diuresis set in in four days, and his weight fell rapidly from 233 to 211 lb., and later to 206 lb.; compensation had just begun to fail and he responded quickly and well to treatment.

Two months later he re-entered the hospital for persistent dyspnea on any exertion, no matter how slight, and for insomnia, which had increased so that for two nights before entrance he had been obliged to sit in a chair all night. The heart this time was dilated and enlarged to the right of the sternum. There was fluid in the belly, and the liver was enlarged and tender. There were no heart murmurs and no irregularity of the heart. The blood pressure was 176 mm. of mercury. There was now a slight trace of albumen and the specific gravity was 1,010. He was given, shortly after entrance, 1 mgm. of strophanthin. The blood pressure rose at once to 205 mm. of mercury in a few minutes, then fell to 200 and remained there. During the night he passed 170 oz. of urine, and in the next twenty-four hours over 200 oz. of urine were voided. Two days later he was up and comfortable. The edema and ascites had disappeared, and also the tenderness from the liver. The dyspnea would return on slight exertion, however. When he left the hospital he rested for a time, then moved his household effects and over-exerted himself, and the broken compensation came on rapidly, and he re-entered in a little worse condition than at the previous time. Having been on digitalis medication, he was put to bed and given theobromine, which in a few days produced marked diuresis up to 200 oz., and soon he was able to leave the hospital. In only three weeks after his discharge he was back, again a little worse than before. Rest in bed, morphia and theobromine again caused a diuresis of 110 oz., and soon after he left the hospital against advice.

The case is interesting as showing the ready response of the patient to all treatment, and the almost instantaneous relief given by the intravenous strophanthin injection as compared with the four days required by the digitalis treatment on the first entry, when the symptoms were less marked than at the second entrance.

The cases reported show a type of arteriosclerosis, so-called, accompanied with great dyspnea and with few renal symptoms. The next case presented the history of valvular disease of the heart. This man first entered the Massachusetts General Hospital in 1892 for acute articular rheumatism. Again in 1898 he was admitted for rheumatism and double mitral disease. In 1906 he entered again for mitral disease. Since his discharge in 1906 he was well until one week before entrance, when he was suddenly taken with pain in the left shoulder when going to work. There was no palpitation, but a sense of depression under the sternum. On entrance there was orthopnea. The heart was moderately enlarged, and signs of double mitral disease were present. The pulse was rapid and irregular. There were râles in the bases of both lungs. The liver was enlarged to the umbilicus, and was firm, resistant and rather tender. He was given strophanthin and the blood pressure rose from 110 to 125 in a few minutes, and he improved rapidly, so that after two days the belly was flat and the liver smaller and not so tender. He did well as long as he remained quiet. He went home and soon began to have smothering attacks with great distress. He went for a time to another hospital and then returned to the Massachusetts General Hospital. His face was anxious and he appeared to be suffering greatly. The heart was much dilated, very irregular as to rate, force and rhythm. He was at once give a quarter of a milligram of strophanthin and the blood pressure changed from 110 to 125, and he experienced great relief.

This was on Oct. 8, and between then and Dec. 29, 1908, he received forty-five intravenous injections; from then on till his death on Jan. 6, 1909, he was kept under the influence of large doses of morphia.

His attacks of distress would come on suddenly at times and be most harrowing. The pulse waves appearing at the wrist and the contractions of the heart at the apex showed very far apart upon the chest. The injection of a quarter to a half a milligram of strophanthin would give most surprising relief. I have seen the pulse come up in volume and the patient fall quietly to sleep during the time it took the house officer to clean up his syringe and return to the bedside after giving the injection. Nothing else that was tried while I was on duty gave anything like the relief as did the strophanthin. Sometimes the dose had to be repeated each day; at other times there were respites of several days of comparative comfort.

On two occasions attempts were made to give the strophanthin by injecting it into the muscle, but in each instance after having no alleviation of the symptoms an intravenous injection had to be resorted to in order to secure the desired relief.

At the autopsy an adherent pericardium was found in addition to the deformed mitral valve and dilated heart. At no time was there any sign of strophanthin poisoning from any of the forty-five injections. The dose was either a quarter or half a milligram of Merck's strophanthin.

These cases will, I think, suffice to show that in strophanthin we have a powerful agent for good if used with discretion, and I am sure, one with which disastrous consequences may occur if it is used recklessly.

DISCUSSION.

Dr. W. A. Boos, of Boston: In the summer of 1907 I introduced the intravenous application of strophanthin at the Massachusetts General Hospital. I had closely followed the work of A. Fränkel and I felt convinced that this body was the one active principle of the digitalis group which could safely be injected directly into the blood.

In 1903 Fränkel[3] carried out a series of experimental studies on the pharmacological action of digitoxin, digitalin (digitalinum verum) and strophanthin, the three pure active drugs of the digitalis group. His aim was to find a pure drug which, with easy solubility, would combine prompt action and a minimum cumulation. He gave the drugs subcutaneously, his experimental animals being cats.

It was never possible for Fränkel to produce a decided therapeutic effect (slowing of the pulse) in his animals with a single dose of digitoxin without at the same time producing symptoms of poisoning. If, however, he gave daily small doses, one of which was neither toxic nor therapeutically active, he succeeded after a few days in producing a lowering of the pulse rate by cumulation. Once established, this effect could be maintained for months and months without apparent injury to the animals; they ate well, slept well and seemed perfectly happy in spite of their slow pulse.

He produced the desired effect by giving the animals every twenty-four hours .02 mgm. digitoxin per kilo body weight, the change in the pulse rate appearing on the fifth day. If, however, the injection was made fourteen hours instead of twenty-four hours after the previous one, the animals invariably vomited, this being the initial sign of intoxication. A slight increase in the dose from .02 mgm. to .03 mgm. per kilo body weight was sufficient to cause slowing of the pulse after the second injection, and vomiting after the third. These results show how very near together the toxic and the therapeutic doses of digitoxin are. They also show that digitoxin always retains its action; the system does not become "accustomed" to the drug as in the case of morphia.

Digitalin was found by Fränkel to be similar to digitoxin in its behavior, except that there was a greater latitude between the toxic and the therapeutic doses of the drug. This was also true of strophanthin.

All three drugs showed a decided cumulative action which proved to be quite independent of their solubility. *The degree of cumulative action is dependent on the stability of the union between the active drug and the poison-sensitive elements of the mammalian heart.* The solubility of the drug determines the rapidity of its action, the more soluble the quicker the action.

When the three drugs are given in equivalent toxic doses subcutaneously the action appeared from strophanthin in four to five hours; from digitalin, in forty-eight hours; from digitoxin, in sixty hours.

Digitoxin has by far the most pronounced cumulative action. It was sixty hours before the pulse showed the effect of the drug, but when the action had appeared it continued for seven days, the pulse becoming slower and slower until the animal died.

Koppe,[4] furnished on himself a most striking illustration of the cumulative action of digitoxin. He took .5 mgm. of pure digitoxin. The next day he took 1 mgm. When no action appeared after four days he took 2 mgm. at 10 A.M. on the fifth day. At 11 A.M. he felt exhausted and his pulse dropped from 78 beats to 58. At 3.30 P.M. he vomited. The vomiting was frequently repeated during the afternoon. Meanwhile the pulse fell to 40 and intermitted after every two beats. He could not stand, his vision became clouded and light objects in the room looked yellow. He vomited four times during the next night. After this he recovered slowly, but it was five days before he could walk unaided.

Strophanthin, because of its quick action and slight cumulation, makes exact dosage possible. Strophanthin, moreover, is the one active principle of the digitalis group which approximates most closely in its action to the effect produced by the combined digitalis bodies as they occur in extracts from the digitalis leaves.

Gottlieb and Magnus,[5] Kobert[6] and others claim for the bodies of the digitalis group a powerful action on the vessel wall. Digitalin is said to act more particularly on the vessels of the splanchnic area, producing a contraction, which in turn leads to a reflex dilatation of the peripheral blood vessels. Digitoxin is said to produce a general vascular contraction. If this is true, digitoxin is decidedly contra-indicated in degeneration of the heart muscle, in atrophy or dilatation, in atheroma of the vessel wall.

Strophanthin has practically no action on the vessel wall.

Although digitoxin is quite insoluble in water, a proprietary preparation purporting to contain digitoxin in solution was introduced some years ago by Cloetta under the name "Digalen" or "Digitoxinum Solubile." In this preparation the digitoxin is held in solution by a mixture of alcohol, glycerine and water; the name of "soluble digitoxin" is, therefore, a misrepresentation of fact. Digalen is open to all the objections which apply to any form of digitoxin; its insolubility and great cumulative action make it unfit for intravenous use. Dr. A. K. Stone reports in his paper the remarkable case of Sherwood, who received forty-five intravenous injections of strophanthin; such therapy would be utterly impossible with digalen or any other preparation of digitoxin.

Digitalin acts too slowly; strophanthin is, therefore, the choice. Strophanthin is, of course, not ideal in its action and cannot replace the true digitalis effect produced by extracts of the digitalis leaves; but when immediate results are necessary to tide over conditions of collapse, or when, as is frequently the case, digitalis by mouth does not produce its effect, strophanthin given intravenously will usually give the desired impetus toward re-establishment of compensation, so that medication by mouth may be continued successfully.

At the Congress for Internal Medicine held last April in Wiesbaden, Fleischer reported on the intravenous use of strophanthin. He considers it a sovereign drug in cases of broken compensation due to valvular disease. Personally, I have found the drug very efficient also in cases of myocarditis, where one would perhaps expect but little result.

I report three cases of this class, which I think will serve to illustrate the many-sidedness of strophanthin action.

CASE I. In the fall of 1907, I saw Mr. S., eighty-two, retired merchant, in consultation with Dr. C. R. Draper, of Medford. The patient was in the last stages of myocarditis. Profound dyspnea, a very irregular, rapid and weak pulse, general edema, particularly marked in the legs and scrotum, and great mental distress, were the most prominent features of the case. There were no heart murmurs present.

One milligram of strophanthin was injected into the median cephalic vein. The dyspnea was relieved almost immediately, and the pulse, slowing from 128 to 84 beats in the minute, became regular and of good quality. During the day increased diuresis set in and the bloating about the legs and scrotum diminished greatly.

Three injections were given in the following four days and improvement was noticed following each injection.

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[3] Arch. für Exp. Path. u. Pharm., li, 1903, p. 84.

[4] Arch. für Path. u. Pharm., iii, 1874, p. 274.

[5] *Ibid.*, xlvii, 1901, p. 185.

[6] *Ibid.*, xxii, 1886.

During these days, while strophanthin was being given, the patient was able to move about the room, a thing he had not been able to do for weeks before. He slept well after weeks of insomnia and his mental condition was much happier. The patient died suddenly while going to the bathroom about six hours after the fourth injection.

Case II. On Feb. 5, 1909, I saw Mr. P. P., fifty-two, banker, in consultation with Dr. H. F. R. Watts, of Dorchester. The patient had been suffering from increasing dyspnea, and disturbed sleep associated with dyspnea, for over a year. To-day at 8 p.m. there was a sudden collapse with pulmonary edema. I saw the patient at 10 p.m.; meanwhile Dr. Watts had given him adrenalin and digitalin subcutaneously and whiskey by mouth, and his condition was better. The patient was still very pale and somewhat cyanotic. He had considerable dyspnea. The heart was appreciably enlarged, there was gallop rhythm, no murmurs to be heard. Throughout both lungs medium and fine moist râles were heard. On account of the recent injection of digitalin I decided to wait before giving strophanthin intravenously. The patient slept very little and had much dyspnea all night.

Feb. 6. Considerable dyspnea, some cyanosis. Pulse, 104; irregular, of poor quality.

Strophanthin, 1 mgm., given intravenously. The result was striking; within five minutes the dyspnea was entirely gone. The cyanosis disappeared rapidly, the pulse dropped to 84, was regular and of excellent quality. The following night the patient slept from eight to ten hours without a break, a thing he had not done for years before. The dyspnea did not return for months.

Case III. On March 10, 1909, I saw Mrs. K., seventy-two, in consultation with Dr. T. C. Erb, of Boston. The patient had considerable dyspnea, the pulse was very irregular, intermittent and of poor quality. The heart was not enlarged, the sounds were weak, there were no murmurs. Edema was absent. The patient was in very depressed spirits, she vomited practically all food and suffered from a persistent diarrhea. Her nights were almost sleepless.

One milligram of strophanthin was given intravenously. The pulse fell during and immediately after the injection to 42 beats per minute. Then it rose gradually to 65. It remained at 65 for over a week, was not intermittent, but regular and of good quality. The dyspnea disappeared soon after the injection. The gastro-enteric symptoms quieted down and the patient slept well.

Two more injections have since been necessary. The sleep-producing effect of the injections was particularly gratifying. Before the intravenous application of strophanthin it was impossible to give the patient digitalis preparations by mouth on account of extreme gastric irritability. The latter having disappeared under careful diet and strophanthin, it is now possible to give the patient infusion of digitalis by mouth with excellent result.

Strophanthin given intravenously is frequently a godsend to patients in the later stages of phthisis. A man who had been carried about for weeks walked upstairs without dyspnea shortly after the injection. Strophanthin intravenously is particularly valuable to sustain patients during the crisis of pneumonia.

The drug should be injected only by physicians who have had much experience with cardiac disease and who are sure of their intravenous technic. I have given strophanthin intravenously over fifty times without a single death attributable to the drug. I make it a rule to wait long enough with the injection to be sure that all digitalis previously given has been excreted.

Reports of Societies.

THE AMERICAN DERMATOLOGICAL ASSOCIATION.

Thirty-Third Annual Meeting, Held at the Bellevue-Stratford Hotel, Philadelphia, Penn., June 3, 4 and 5, 1909.

First Day, Thursday, June 3.

The President, Dr. Thomas Caspar Gilcrist, of Baltimore, in the chair.

ADDRESS BY THE PRESIDENT.

Dr. T. Caspar Gilcrist, is his opening address, referred to the fact that dermatology was now taking its proper place in the curriculum of the majority of our medical schools. The results, he felt assured, would bring forth much good and we would hear less often the remark that the practitioner knew less about skin diseases than other branches of medicine. The teaching of dermatology to-day and for the future meant much harder work than formerly, as the dermatologist must not only convey his knowledge to the student by personal practical teaching, but he must also advance the knowledge of this branch of medicine by investigation and experiment; otherwise, his horizon was not apt to be very broad. Dr. Gilcrist then referred briefly to some of the more recent advances in dermatology. He mentioned first the striking advance which had been made in the etiology of syphilis in the serum deviation test of Wassermann and Noguchi, and in the dark-field illumination for the detection of the spirocheta pallida. Since Schaudinn's discovery of its origin, only about three years ago, confirmatory evidence had accumulated to such an extent that the spirocheta pallida was now accepted by practically all authorities as the cause of syphilis. Neisser's wonderful work on the investigation of syphilis in apes ranked with Schaudinn's discovery. The speaker also referred to the value of the Von Pirquet test in cutaneous tuberculosis, especially in children, which had proven to be reliable and had received confirmation from a number of sources. He regarded the use of the bacillus acne vaccine as a valuable addition in our treatment of acne vulgaris, and stated that the etiological relationship between the bacillus acne and acne vulgaris was now being confirmed by various investigators. The fact that the bacillus was usually present in large numbers in the skin did not weaken its causal relationship to acne; like the tubercle bacillus and many other micro-organisms which were normally present in the human body, the staphylococcus albus was also normally present on the skin, and only became pathognomonic when the occasion arose. In closing his remarks, Dr. Gilcrist said that the epidemic of pellagra in some of the Southern states should receive more attention from the dermatologists in that section of the country, as it offered such a good field for investigation into the etiology of the disease.

A TUMOR OF THE HYPOPHYSIS (PITUITARY BODY) ASSOCIATED WITH ADIPOSITAS CEREBRALIS.

Dr. George Pernet, of London, England, reported this case, which was demonstrated by microscopical sections.

THE PSYCHOLOGICAL ASPECT OF DERMATITIS FACTITIA.

By Dr. George Pernet.

The speaker stated that the psychological aspect of dermatitis factitia, or of feigned eruptions, as they were sometimes called, had attracted him for many years. He referred to the work of Dr. Harvey P. Towle, of Boston, who had published a very comprehensive paper on the subject in the Massachusetts General Hospital Publications. After briefly reporting a number of cases of dermatitis factitia that had come under his observation, Dr. Pernet said he believed that in some instances we had to deal with altered personality, such as had been so ably dealt with by Pierre Janet in his notable and classic book on "L'Automatisme Psychologique," and by Morton Prince in his delightful "Dissociation of a Personality." Some of these patients appeared to be honestly unable to account for the presence of self-inflicted cutaneous lesions, and there was a possibility that, though self-inflicted, this may have been done whilst in another state of personality, of which the patient at the moment of cross-examination remembered nothing.

Dr. Louis A. Duhring, of Philadelphia, said that personally he had seen remarkably few cases of dermatitis factitia. Most of the cases he had seen were to be classified in the non-factitious group. He could recall certain cases that had been regarded by other physicians as factitious eruptions in origin which were subsequently proven, by careful examination and observation, not to have been so.

Dr. James C. White, of Boston, believed that these patients should be regarded as responsible for their lesions until they were proven innocent. No certain rule could be laid down regarding them; each case had to be judged on its own merits. He recalled two cases where surgeons cut out a supposed area of gangrene which proved to be purely artificial.

Dr. James Nevins Hyde, of Chicago, said the lesions in these cases were usually associated with hysterical stigmata, and in many instances their artificial character was so apparent that in their dermatological features they could not be mistaken for anything else, and this in spite of the patients' denial that they were self-produced.

Dr. Francis J. Shepherd, of Montreal, said there were two kinds of factitious eruptions: one, where the persons produced the lesions in order to avoid work and the other where they could not help doing it. The speaker said he had prevented many operations on persons who were suffering from some form of factitious eruption.

Dr. Charles J. White, of Boston, said the contour of the lesions in these cases of factitious dermatitis was usually unlike that of any other form of skin disease.

Dr. Martin F. Engman, of St. Louis, was inclined to agree with the view generally held by neurologists that hysterical stigmata were frequently founded on a sexual basis.

Dr. Henry W. Stelwagon, of Philadelphia, said he had never been able to avoid the conclusion that the so-called hysterical eruptions were self-produced.

Dr. Harvey P. Towle, of Boston, said these patients, as a rule, were exceedingly cunning and skilful, and it was not surprising that the physician, who was working in the dark, should not be able to detect the method by which the eruption was produced.

Dr. William S. Gottheil, of New York, suggested that the plaster of Paris occlusive dressing was an invaluable aid to diagnosis.

Dr. M. B. Hartzell, of Philadelphia, said that these patients should be looked upon as mentally rather than bodily ill. They mutilated themselves because they could not help it.

Dr. A. Ravogli, of Cincinnati, said that in the comparatively few instances he had seen, the patients always had some object in producing the lesions.

Dr. S. Pollitzer, of New York, referred to the lesions produced under the influence of experimental suggestion, such as had been described by the psychiatrists of the Nancy school in France. He thought those experiments were authentic and had a distinct bearing on these cases.

Dr. Grover W. Wende, of Buffalo, believed there were two types of this affection, — one self-inflicted; the other due to purely natural causes.

NOTES ON THE TREATMENT OF ALOPECIA AREATA AND DERMATITIS EXFOLIATIVA.

Dr. George T. Jackson, of New York, said that during the past four or five years he had treated 8 cases of alopecia areata with the Piffard iron spark lamp, and a study of these cases had convinced him that the use of this lamp was of decided benefit in the treatment of this affection. Even in long-continued general alopecia it had brought the hair in, although not permanently. In all the usual cases, recovery had taken place. The hair, when it returned, was of normal color and texture. The only objection to the treatment was that it required the expenditure of a good deal of time.

Dr. Jackson also reported a number of cases of dermatitis exfoliativa in which the eruption was favorably influenced by large doses of quinine.

Dr. Jay F. Schamberg, of Philadelphia, said that if one could subject a separate series of cases of long-standing alopecia areata to various therapeutic measures, a valuable judgment of their respective values could be arrived at. In the interpretation of results, we must always take into account the capricious character of alopecia areata, and hesitate long before attributing the cure to any particular method of treatment.

Dr. J. Nevins Hyde, of Chicago, briefly reported 4 cases of dermatitis exfoliativa, one of the Hebra type, in which large doses of quinine were given.

Dr. William S. Gottheil, of New York, mentioned 1 case of dermatitis exfoliativa of the Hebra type in which the skin eruption was benefited by large doses of quinine, but the general condition of the patient suffered thereby.

Dr. Pernet did not favor pushing the quinine too far, and he thought the dosage of the drug should be increased very carefully.

Dr. Jackson, in closing, said that in a case of pityriasis rubra, with atrophy, he did not think that quinine would do any good.

LYMPHANGIOMA XANTHELASMOIDEA.

Dr. William S. Gottheil, of New York, read a paper on this condition, which he described as a capillary lymphangioma, with colloid degeneration of the elastic tissue. It appeared in the form of faint yellowish or brownish-white plaques, of very slow growth, so slightly raised above the general surface as to be impalpable as a tumor, and of a soft velvety consistence. Each plaque was composed of a multitude of closely aggregated angular lesions. There were no vesicles, and no fluid was obtainable by puncture. The microscope showed dilatation and minute cyst formation of the most superficial and sub-papillary lymphatics, with degenerative changes in the elastic tissue. There were no other abnormalities, no fat and no xanthoma cells. The clinical appearance resembled some forms of xanthoma planum. Dr. Gottheil said the only other case he could find recorded was that by Thibierge, in the Ikonographia Dermatologica, Fasc. II, Tab. 15. The abnormality was probably less rare than this fact would seem to indicate.

Dr. Douglass W. Montgomery, of San Francisco, said that in all conditions where the skin became flabby, the elastic tissue degenerated, or we might possibly have an acute degeneration associated with a toxin.

The paper was further discussed by Dr. S. Pollitzer, of New York, and Dr. Hyde, of Chicago, and the discussion was then closed by Dr. Gottheil.

A FEW CONSIDERATIONS ON A CASE OF ERYTHRODERMA SQUAMOSUM (PARAPSORIASIS).

Dr. A. Ravogli, of Cincinnati, said that this affection, which had been known only recently and was of rare occurrence, was a variety of *erythrodermie pityriasique en plaques*, consisting of patches formed by licheniform papules aggregated and covered with thick scales. The microscopical examination showed that the lesion was not very superficial, as reported in some cases, and was capable of causing atrophic spots in the site of the primary lesion; the disease was chronic, improvement being followed by relapses. Thus far, the remedies internally given and externally applied had produced very unsatisfactory results. Injections of a 10% solution of cacodylic acid were the only means with which he succeeded in producing a visible improvement in the eruption. In conclusion, Dr. Ravogli said that after studying this obscure disease in its hybridity, we could not refuse entirely the opinion of Civatte that tuberculosis might have some influence in the production of the eruption, and that with successive studies and more observations the disease might finally be ranged among the tuberculides.

Dr. Louis A. Duhring, of Philadelphia, said he had seen two or perhaps three of these cases that he had been able to follow for some time, and, basing his views on personal observation, he did not hesitate to express the belief that syphilis was not concerned with this rare form of cutaneous disease. He was also disposed to think that they had little or perhaps nothing in common with psoriasis, excepting the symptom of scaling; therefore, he regarded para-psoriasis as a somewhat unfortunate term to apply to them.

Dr. Hyde said that in any case of this character where there was any suspicion of syphilis, the Wassermann test should be made, while in any case where a tuberculous element was suspected the tuberculin test should be tried. By employing these various tests, and keeping the patients under careful and long observation, the diagnosis should be assured in time.

Dr. George Henry Fox, of New York, said the photograph of the case reported by Dr. Ravogli was different from the cases of para-psoriasis which he had recognized and some of which he had undoubtedly seen and not recognized. It seemed different from the cases which he had associated with that name.

The discussion was continued by Drs. Schamberg, Pernet and Pollitzer, and was closed by Dr. Ravogli.

SOME OBSERVATIONS ON THE RESULTS OF THE WASSERMANN TEST IN SCLERODERMA.

Dr. Henry H. Whitehouse, of New York, in this paper, reported 5 cases of diffuse scleroderma. Three of these gave a strongly positive Wassermann reaction, one was faintly positive and one was negative. The two latter, however, had been under anti-syphilitic treatment, the first for over a year, and the second for six months, a sufficient length of time in each instance to negative the test had both been cases of undoubted syphilis. In two cases of the band-like morphea type, the reaction was negative in both instances. These seven Wassermann tests were made by three different investigators, and in each instance the original Wassermann and the Noguchi modification was done, in some instances more than once, and in all with numerous control experiments. Dr. Whitehouse said that while the facts here presented could be little more than suggestive, the possible results of further observations along this line might well excite our interest. If, as most believed, the vascular changes were primarily the seat of the trouble in scleroderma, it was not improbable, in view of the histological similarity of these changes to those in syphilis, that, should the Wassermann observations here recorded be later confirmed, syphilis might be found to be an etiological factor in this disease.

Dr. Duhring said he thought there might be a good deal of truth in the views put forth by Dr. Whitehouse in regard to the etiology of certain cases of scleroderma. The great majority of cases, however, he believed were not syphilitic or specific in origin, either directly or indirectly.

Dr. M. B. Hartzell, of Philadelphia, said that scleroderma or morphea might occur in syphilitic subjects, and because we obtained a positive Wassermann reaction it did not follow that they were of syphilitic origin.

Dr. William A. Pusey, of Chicago, said the suggestive fact was that Dr. Whitehouse reported a positive Wassermann reaction in four or five out of seven cases of scleroderma. That was a larger percentage than the ordinary ratio of syphilis would account for.

The discussion was continued by Dr. Howard Fox, of New York, and was closed by Dr. Whitehouse.

RESULT OF THE VON PIRQUET AND WASSERMANN TESTS IN TWENTY-NINE ORTHOPEDIC CASES. (OSTEOPATHIES OF QUARTERNARY SYPHILIS, GAUCHER.)

By **Dr. James M. Winfield**, of Brooklyn.

In age, these patients ranged from six months to fourteen years. Ten were suffering from Pott's disease; in eleven, the hip-joint was involved; three had disease of both hip and spine; two had suppurating sinuses of the ankles and two had disease and sinuses of the wrist and fingers. Ten of the 29 presented somatic evidence of inherited syphilis, while 16 had no bony malformations suggestive of hereditary lues. All of the 29 were tested for tuberculosis by the von Pirquet method, and in all, excepting one, the result was positive; some, however, reacted more positively than others. The Wassermann and Noguchi tests were made at different times and at long enough intervals between to prevent either from modifying the other. Four of the cases that showed syphilitic stigmata were positive to the Wassermann test; 6 who did not show any such evidence were also positive. Those that were most markedly positive were the cases that had two or more dystrophies. Since all of the cases reacted to the von Pirquet test, it was strong presumptive evidence that all were suffering from tuberculosis, and if the Wassermann test was to be relied upon, it brought up the question, Was it possible for tuberculosis and syphilis to exist simultaneously in the same individual, and could you always get a positive Wassermann reaction in all cases of inherited syphilis, providing, of course, that the child had received no mercurial treatment? From a study of these cases it was safe to conclude that syphilis was an important factor in many of the suppurating osteites of childhood. Perhaps it would be questionable to assume that all cases of suppurating bone disease in childhood that had the somatic evidence of syphilis and were positive to the Wassermann test were examples of quarternary syphilis, but one would be justified in assuming that in many cases the underlying etiological factor was syphilis and that the inherited taint had rendered the resistance of the individual so low that he became an easy victim of tuberculosis.

A COMPARISON OF THE WASSERMANN AND NOGUCHI COMPLEMENT-FIXATION TESTS.

By DR. HOWARD FOX, of New York.

The following were the author's conclusions: 1. Of all the methods depending on complement-fixation which had thus far been devised for the serum diagnosis of syphilis, that of Noguchi seemed to be the most perfect from a theoretical standpoint. 2. From the standpoint of simplicity in technic, the method of Noguchi had no rival. 3. The writer's experience with the Wassermann and Noguchi tests showed a larger percentage of positive reactions with the Noguchi than with the Wassermann test. It was only fair to say that at present the two tests gave approximately parallel results in the writer's hands. 4. As to whether the Noguchi test would prove to be as nearly specific for syphilis as the original Wassermann method could only be judged in the future after a large number of cases had been simultaneously tested by the two methods.

EXHIBITION OF DERMATOSES BY LUMIERE PLATES. STEREOPTICON.

By DR. HOWARD MORROW, of San Francisco, and DR. M. B. HARTZELL, of Philadelphia.

SECOND DAY, FRIDAY, JUNE 4.

MERALGIA PARESTHETICA.

By DR. SAMUEL SHERWELL, of Brooklyn.

This was a brief report of a typical case of meralgia paresthetica, occurring in the person of the author. For about the past ten years, in the outer and lower two thirds of the left thigh, after strenuous and long-continued exertion, as of walking, riding or cycling, there occurred in the region supplied by the external femoral cutaneous nerve the following symptoms: The region became the seat of a variety of perverted sensations, as of tingling, tenseness, or still more acute superficial tearing and darting pain, with numbing of sensation just above the patella. The rest of the limb or its cutaneous envelope was unaffected and entirely normal, and the symptoms enumerated soon subsided on resting, but could be brought on readily by resumption of exertion. The painful sensations were like nothing so much as those of zoster, and in the writer's belief they were caused by the same mechanical means, namely, pressure on the nerve in its continuity, although probably not from the exudative pressure which occurred in zoster. No objective phenomena accompanied the attacks. As regarded treatment, rest and perhaps slight massage brought on rapid though unfortunately only temporary relief.

(*To be continued.*)

Book Reviews.

The Faith and Works of Christian Science. By the writer of "Confessio Medici." Pp. 232. New York: The Macmillan Company. 1909.

Of the many discussions of Christian Science from sympathetic and unsympathetic sources this is by all means the most searching in its criticism and the most forcibly written which has as yet come to our notice. Fortunately, the author, well known by reputation if not by name, through his volume of essays entitled "Confessio Medici," has an abounding sense of humor and, what is more, the unusual capacity to express it in most telling fashion. It must not, however, be thought that this book is anything but a serious attempt to combat in a fundamental way both the principles and practice of so-called Christian Science. In fact, as one reads, one is continually tempted to feel that the author has taken too seriously and devoted too much care to the refutation of the extraordinary doctrine. In carrying out his design he has collected, no doubt with much labor, a long series of cases which he has subjected to careful analysis, with the result, undoubtedly, that the skeptical will be rendered more skeptical, and, we fear, the believers made more secure in the principles of their hopelessly illogical theory. However this may be, the book is unquestionably of great value as a contribution to the literature of this strange cult, which, in spite of its vagaries, has extended its influence far and wide. We commend the book most cordially, not only as a keen criticism of a widespread faith, but also as a literary contribution of unusual charm.

Physiology and Hygiene for Secondary Schools. By FRANCIS M. WALTERS, A.M., Professor of Physiology, State Normal School, Warrensburg, Mo. Pp. 424. Boston, Mass.: D. C. Heath & Co. 1909.

The author's attempt "to adapt the book to as wide a range of usefulness as possible" has led to the introduction of topics in physiology, apart from the "practical" or laboratory exercises, suited only for pupils who are to specialize in this study. That the author could have presented the essential facts in a simpler and more attractive manner is evident from some of his paragraphs, which are beyond criticism.

His plan of considering, first, "the essential relation of the bodily activities," which he terms "The Vital Processes" (Part I), and, second, "the problem of adjusting the body to and of bringing it into proper relations with its surroundings," which he discusses under "Motion, Coordination and Sensation," departs from the general custom of studying first the framework of the body, and is in some ways confusing.

It is to be regretted that only one topic on hygiene was mentioned in the table of contents, namely, "Hygiene of the Nervous System." This chapter and the sections on the hygiene of the circulation, of the respiratory organs, of digestion, of the skin, etc., etc., alone make the book worth while.

The last chapter, on "The General Problem of Keeping Well," contains some practical general rules covering the hygiene already presented, which should prove helpful.

The book as written is superior to many textbooks of its kind now in use in schools.

Clinical Lectures on Neurasthenia. By THOMAS DIXON SAVILL, M.D. Fourth edition. Pp. xvi, 226. London: Henry J. Glaisher. New York: William Wood & Co. 1908.

The only material change in this new edition is the addition of a few pages on the psychology and psychotherapy of neurasthenia, which add little to our knowledge of the subject.

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VACCINATION.

The reopening of the public schools has brought up the annually recurring question of compulsory vaccination and its relation to the public health. As usual, the practice of inoculation is being damned by a prejudiced and ignorant minority as ineffective in the first instance and as productive of disease in the second. Later the matter will, in all probability, be the subject once more of legislative hearings, and opposition in its many forms with an enthusiasm worthy of a better cause will be launched against a procedure which, since its discovery by Jenner, has proved itself one of the greatest boons ever conferred upon mankind.

A single statement is sufficient to prove to the unprejudiced mind the value of vaccination as a preventive of smallpox. Germany, which has had since 1874 not only compulsory vaccination at the end of the first year of life, but also compulsory revaccination at the age of twelve, has suffered since that year not a single epidemic of smallpox. From 1893 to 1897 there were in the whole German empire only 287 deaths from smallpox. During the same period there died from this disease in the Russian empire 275,502 persons; in Spain, 23,000; in Hungary, 12,000; in Austria and Italy, 11,000. In Philadelphia alone, from 1901 to 1905, 5,000 persons had the disease and 500 died. There was no death of persons who had been successfully vaccinated within ten years.

The stamping out of smallpox, therefore, requires not only vaccination soon after birth, but revaccination at least once, and better twice, at intervals of ten or twelve years. A single vaccination cannot be expected to protect an individual indefinitely. In fact, experience shows that it does not.

The opponents of vaccination claim that it is dangerous because it induces other diseases. It is true that within a few weeks at least one child has died in the vicinity of Boston of tetanus following vaccination. Careful investigation, however, has shown that the original inoculation was done with care, but that the family neglected to have the wound properly supervised by a physician. Such cases, however, are seized upon greedily by the anti-vaccinationists as ammunition for the winter's campaign, and not unnaturally such cases, if not thoroughly explained, carry great weight with the unknowing.

The daily press, furthermore, contributes to the great harm done when it describes such unfortunate results as "due to vaccination," when dirty methods or lack of after-care alone are responsible for the miscarriage of what should have been a surgically clean procedure.

For the carrying out of vaccination it is, of course, of absolute importance that the vaccine used and the methods of its production should be beyond suspicion, and Massachusetts is fortunate in having at its command in the vaccine produced under the supervision of the State Board of Health a product of the highest excellence. Used with surgical cleanliness, and given proper after-care, it cannot cause bad results, and the same statement is also true of other carefully supervised sources of supply.

In view of the large mass of evidence favorable to the practice of vaccination, it behooves medical practitioners and all friends of humanity to urge the general practice of vaccination against smallpox, and that under proper medical control. Inasmuch as a common method of attack by the opposition has for its object the repeal through the legislature of laws requiring the compulsory vaccination of school children, it is manifest that the medical profession must make it its business to educate properly those who represent them in the General Court. As in many other matters, legislators are anxious to do the right thing, and do otherwise many times simply through lack of knowledge of the facts.

It is, furthermore, of the greatest importance that the idea of preventive inoculation should be given very wide circulation, for its use is becoming quite common in other diseases, such as cholera, plague, bacillary dysentery and typhoid fever.

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MEDICAL EXPERT TESTIMONY.

The question of medical expert testimony is to be discussed Oct. 30 before the Suffolk District Medical Society in a somewhat unusual way so far as the medical profession is concerned. The distinguished speakers on this occasion, led by Hon. William Schofield, judge of the Massachusetts Superior Court, are with one exception members of the Massachusetts bar. It has long been apparent, if any definite reforms are to be made, that they must be effected through a completer co-operation than has yet been attained between the two professions. The evils of the present situation have been generally recognized, but the attitude of the law, as represented by many of its prominent members, has often been that, imperfect as the present system may be, no other is possible under the existing judicial procedure of trial by jury. Suggestions made by the medical profession have been listened to with courtesy, discussed at length, but have failed to pass legislative bodies upon whom the decision must ultimately rest. The medical profession is, we believe, practically united in desiring a change in the present method of expert testimony. It remains for the lawyers to see the necessity for change with equal unanimity and positively to help in the needed reform. It is to be hoped that a meeting such as the Suffolk District Society has arranged will conduce to a clearer understanding of this necessity and of the means by which it may be brought about under our present judicial system. If the law as a profession were as united in the matter of reform as medicine, we have not the slightest doubt that the present disrepute into which medical expert testimony has fallen could be removed. The meeting should be largely attended.

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PRESIDENT ELIOT'S ETHER ADDRESS.

The annual observance of Ether Day at the Massachusetts General Hospital not only keeps fresh the memory of one of the greatest events in the history of medicine and of the world, but usually gives occasion for worthy utterance by the principal speaker at the exercises. The text of President Eliot's address this year will be printed in full in the issue of the Journal for Oct. 28.

It is matter of congratulation for the profession and for all sincere lovers of truth that he took this opportunity to present a sober and impartial exposition of the justifiability and desirability of humane animal experimentation, popularly termed vivisection; of the advantages that have already accrued from it to humanity, and of the beneficent possibilities that may be hoped from it in the future. Such an exposition from such a source will have influence and authority in a community not always ready to listen to supposedly partisan argument, and will afford valuable defense of medical science against some of those who are unfortunately at present its opponents. In this connection the reference to vaccination was timely and will be serviceable.

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INFANTILE PARALYSIS IN MASSACHUSETTS.

The prevalence in Massachusetts this summer of acute anterior poliomyelitis, generally known as infantile paralysis, has attracted considerable popular as well as medical attention. Since July 1, 1909, there have been reported to the State Board of Health over 300 cases. Analysis of the distribution of these cases is interesting and suggestive. Of 308 cases, from 76 cities and towns, 85% were east of the meridian of Newton, and the majority of these were grouped in the district closely around Boston. The next largest group, representing 5%, was in the extreme northwest of the state, in and about Adams, the region of the epidemic of the summer of 1908. This striking localization of the disease seems strongly confirmatory of its probably infectious origin.

Another significant characteristic of the disease is its prevalence in hot weather, and practical disappearance during the winter months. Its resemblance in this respect to yellow fever suggests the possibility that an insect may be the agent in transferring the infection. Determination of this and of the nature of the infecting organism must be the result of systematic clinical and laboratory investigation. Such work is now being carried on by the Massachusetts Board of Health, and there is hope that anterior poliomyelitis may in time be added to the slowly growing list of curable and preventable diseases.

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MEDICAL NOTES.

Bequests. — By the will of the late Mrs. Sarah Morris, of Chicago, $400,000 is left to charitable institutions. The most notable bequest is one of $300,000 for a children's hospital in memory of her husband, Nelson Morris.

Cholera in Seoul. — The epidemic of Asiatic cholera in Seoul, Korea, is daily becoming more serious, in spite of active efforts on the part of health officials to check its spread. The city offers fertile field for infection, for, although its sanitary facilities have been much improved since the Japanese occupation, they are still fairly primitive, and the hereditarily unclean habits of the native population make them slow to coöperate with medical attempts at prophylaxis.

Appointment of Medical Supervisor, Indian Field Service. — The United States Civil Service Commission announces an examination on Nov. 24, 1909, to secure eligibles from which to make certification to fill a vacancy in the position of medical supervisor in the Indian field service, at $250 a month and expenses, and vacancies requiring similar qualifications as they may occur in that service, unless it shall be decided in the interests of the service to fill the vacancy by promotion, reinstatement or transfer.

Army Medical Corps Examinations. — The Surgeon-General of the Army announces that the War Department has appointed permanent boards for the preliminary examination of applicants for appointment in the Medical Corps of the Army, to meet at Washington, D. C., Fort Sheridan (near Chicago), Ill., and San Francisco, Cal., in addition to the usual preliminary examination boards that are assembled at various army posts throughout the United States from time to time. The permanent boards will hold sessions on the second Monday of each month.

Present Status of Obstetrical Teaching in Europe and America. — The President of the American Gynecological Society has appointed a committee to report at the next annual meeting in Washington on the Present Status of Obstetrical Teaching in Europe and America, and to recommend improvements in the scope and character of the teaching of obstetrics in America.

The committee consists of the professors of obstetrics in Columbia University, University of Pennsylvania, Harvard, Jefferson Medical College, Johns Hopkins University, Cornell University and the University of Chicago.

Communications from any one interested in the subject will be gladly received by the chairman of the committee, Dr. B. C. Hirst, 1821 Spruce Street, Philadelphia, Penn.

Hygiene of Infancy and Childhood: School Hygiene. — The third section of the fifteenth International Congress on Hygiene and Demography, which, on the invitation of the Department of State of the United States Government, convenes in Washington for the first time on the American continent from Sept. 26 to Oct. 1, 1910, will occupy itself with the above subjects. "The Hygiene of the Home," "The Hygiene of the School Child," "The Hygiene of the School Building," "Hygiene of Instruction," Hygiene with Reference to Physical Defects," "The Hygiene of the Teacher," "The Hygiene of Open-Air Schools," "Out of School Hygiene," "Municipal Hygiene with Reference to Children" and "Propaganda of Child Hygiene" are the sub-headings in this general section. The President of the section, Dr. A. Jacobi, or the Secretary, Dr. Luther H. Gulick, would be glad to know of any original work which is being done bearing upon these topics.

Monument to Dr. J. Edward Turner. — The American Society for the Study of Alcohol and Other Narcotics has erected a monument to the memory of the late Dr. J. Edward Turner, of Wilton, Conn. Dr. Turner was the first to urge that inebriety was a disease and curable in institutions, and founded and built the first asylum in the world at Binghamton, N. Y., for this purpose. The dedicatory services at the unveiling of the monument will be held Oct. 27, 1909, at 2 p.m., at Wilton, Conn. Dr. L. D. Mason, of Brooklyn, N. Y., president of this society, will give the dedicatory address. Dr. H. O. Marcy, of Boston, Mass., will deliver an historic address on "Heroes and Martyrs in Medical Science." Dr. T. D. Crothers, of Hartford, Conn., will deliver the memorial address on "Dr. Turner, His Life and Work." Remarks will be made by distinguished physicians, and the public is cordially invited to be present.

BOSTON AND NEW ENGLAND.

Acute Infectious Diseases in Boston. — For the week ending at noon, Oct. 12, 1909, there were reported to the Board of Health of Boston the following cases of acute infectious diseases: Diphtheria 55, scarlatina 22, typhoid fever 35, measles 22, smallpox 0, tuberculosis 51.

The death-rate of the reported deaths for the week ending Oct. 12, 1909, was 16.74.

Boston Mortality Statistics. — The total number of deaths reported to the Board of Health for the week ending Saturday, noon, Oct. 16, 1909, was 181, against 200 the corresponding week of last year, showing a decrease of 19 deaths and making the death-rate for the week 15.15. Of this number 96 were males and 85 were females; 172 were white and 9 colored; 117 were born in the United States, 63 in foreign countries and 1 unknown; 50 were of American parentage, 111 of foreign parentage and 20 unknown. The number of cases and deaths from infectious diseases reported this week is as follows: Diphtheria, 54 cases and 2 deaths; scarlatina, 28 cases and

0 deaths; typhoid fever, 31 cases and 5 deaths; measles, 22 cases and 0 deaths; tuberculosis, 56 cases and 21 deaths; smallpox, 1 case and 0 deaths. The deaths from pneumonia were 8, whooping cough 0, heart disease 16, bronchitis 3 and marasmus 3. There were 13 deaths from violent causes. The number of children who died under one year was 39; the number under five years 47. The number of persons who died over sixty years of age was 50. The deaths in public institutions were 69.

Of the above the following were non-residents: Consumption, 2 cases and 2 deaths; Diphtheria, 1 death.

Deducting deaths of non-residents, the total is 147. The corrected death-rate is then 12.30.

Pauperism in Cambridge, Mass. — It is reported by the Board of Overseers of the Poor of Cambridge that during the year April, 1908, to April, 1909, 376 persons were fully supported by the city, and 1,106 were partially supported. But 2 of the 371 were placed in the category of the insane.

Vermont State Medical Society. — The ninety-sixth annual meeting of the Vermont State Medical Society was held in Foresters Hall, White River Junction, Oct. 14 and 15. The President was Dr. C. W. Peck, of Brandon; Vice-President, Dr. S. W. Hammond, of Rutland; Secretary, Dr. C. H. Beecher, of Burlington; Treasurer, Dr. B. H. Stone, of Burlington; and Auditor, Dr. J. H. Blodgett, of Bellows Falls.

Massachusetts State Conference of Charities. — The seventh session of the Massachusetts State Conference of Charities is being held in Boston this week. The object of these conferences is to stimulate an interest in the problems confronting the charitable organizations of the state, both public and private, and to bring together for free discussion all those interested in these problems. Of particular interest to the medical profession is the conference on sex hygiene, presided over by President Eliot. Many of the topics under discussion, however, demonstrate the increasingly close relationship between medicine and civic welfare.

Delivery of Modified Milk. — The work of the Committee on Milk and Baby Hygiene has been of the greatest value to the poor in Boston by making it possible for them to obtain at a nominal price good modified milk for their babies. This field of service is now to be extended by the provision for delivery of such milk to families in Roxbury, South Boston, Dorchester, Chelsea and Somerville who are inaccessible to the present distributing stations. This arrangement will be gratefully welcomed by physicians and all others interested in the care of babies and the reduction of infant mortality among those who would otherwise be unable to procure suitable milk.

Reopening of Frost Hospital. — The Frost Hospital, which was burned in the Chelsea fire a year and a half ago, has been rebuilt and was reopened Oct. 11. On the evening of that day the trustees and guests inspected the new building, and on the 13th it was opened for the reception of patients. Miss Della B. Folger has been appointed superintendent of the hospital, and is to be assisted by Miss E. W. Brigham, both graduates of the Massachusetts General Hospital. There are at present 80 beds in the hospital, with capacity for 20 more. The building is constructed of red brick; in its central portion it is three stories high, flanked by wings of two stories. The general equipment of the hospital is admirable for the work which it is expected to do.

Co-ordination of State and Municipal Boards of Health. — In accordance with a recommendation in the recent report of Mr. McSweeney, chairman of the board of trustees of the Boston Consumptives' Hospital Department, Mayor Hibbard, of Boston, has been in communication with Governor Draper relative to the possibility of co-ordinating to better advantage of effort and economy of expense the work of the Boston and of the State Board of Health. It has been suggested that a medical expert be detailed by the national government to act as advisor in this reorganization, but the necessity or desirability of such a step has not yet been demonstrated. It would seem advisable that all municipal boards of health should as far as possible act in conjunction with and under the general direction of the State Board. How close this connection and dependence should be is matter for careful determination.

NEW YORK.

Quinine Poisoning. — A male child, three years old, in Paterson, N. J., is reported to have been fatally poisoned by taking 14 gr. of quinine. He found a box of two-grain quinine pills in a closet, and, believing them to be candies, swallowed seven of them. Shortly afterward he was seized with alarming symptoms and an hour later died in the General Hospital.

Ophthalmia Neonatorum. — In accordance with the plan previously announced, the State Health Department has begun the distribution of tubes containing Credé's solution for the prophylaxis of ophthalmia neonatorum. These are prepared by the State Hygienic Laboratory at Albany, and are being sent to health officers and to those physicians who have signed the department's pledge to use an efficient prophylactic in all obstetric cases.

Physicians in New York State. — The total number of physicians in lists contained in Volume XI of the Medical Directory, published by the Medical Society of the State of New York, which has just been issued, is 16,785; of which 13,023 are in New York State, 2,458 in New Jersey and 1,304 in Connecticut, 4,865 are credited to the Boroughs of Manhattan and the Bronx, 1,778 to Brooklyn, 184 to Queens and 62 to Richmond, a total for the City of New York of 6,889; making the number of physicians residing in the rest of the State, 6,134. The total number of names in last year's Directory was 16,514. In the State of New York there were 12,711, of which 6,642 were in New York City.

Case of Smallpox among Immigrants. — On Oct. 14, in consequence of the discovery of a case of smallpox among their number, it became necessary to remove to Hoffman Island and quarantine some 800 immigrants who had landed at Ellis Island the day previously from the steamship *Argentina*, coming from Mediterranean ports. Unfortunately, about 70 of the *Argentina's* steerage passengers had already reached the city and disappeared, but since all such passengers were vaccinated before embarking, there would appear to be little danger of their spreading the disease. It is seldom that a case of contagious disease gets past the health officers at quarantine, and as the case was a mild one, it is believed that the patient had either concealed himself or had been concealed when the examination of the steerage passengers was made. The immigration officials lay the blame for the landing of the patient upon the ship's surgeon.

Benefits of Water Filtration. — The benefit of the installation of water filtration is strikingly shown in the case of the cities of Albany and Binghamton. In Albany, during the ten years prior to the construction of the slow sand filter, in September, 1899, while unfiltered Hudson River water was supplied to the citizens, there were 863 deaths from typhoid fever. During the ten years since the filter plant has been in operation the deaths from this disease have amounted to only 217. If an average of ten years' prolongation be allowed to the 646 persons who were thus saved from death by typhoid, we have a total of 6,460 years of life. In the smaller city of Binghamton, during the seven years prior to the installation of the mechanical sand filtration plant there, in June, 1902, while the supply was unfiltered Susquehanna River water (probably not nearly so deleterious as that of the Hudson at Albany), there were 101 deaths from typhoid. During the seven years since the filter plant has been established there have been 43 such deaths.

The Value of Lost Limb. — Justice Garrison, of the Supreme Court of New Jersey, has recently rendered a decision which, while highly complimentary to the manufacturers of artificial limbs, is not very consolatory to persons who have been so unfortunate as to lose natural ones. Filing an opinion at Trenton on Oct. 14, he laid down the principle that juries, in the awarding of damages for personal injuries, must give consideration to the great value of artificial limbs. He held that, with the modern perfection in the construction of these substitutes, victims of accidents entailing loss of limbs were at the present time entitled to correspondingly less damages, since there resulted less suffering and inconvenience than was formerly the case. This opinion was given by the Justice in setting aside a verdict of $8,500 damages received in the Essex County Court by Dorothy MacDermott, four years of age, in a suit against the public service company. The child had lost a leg by being run over by a trolley car. The cost of artificial legs should, however, be considered.

Act Regarding Tuberculosis Sanitaria. — It may be remembered that the last legislature passed an act specifying that any application for the establishment of a tuberculosis sanitarium which receives the approval of the State Commissioner of Health and of the local health officer must be granted. The first instance of a clash of opinion between two such officials has now come up. Upon the application of the Workman's Circle for permission to establish a sanitarium and camp for the treatment of tuberculosis in the town of Liberty, Sullivan County, a public hearing was held, as required by the law, on Aug. 24, before the State Commissioner of Health and the health officer of the town of Liberty. Later, the local official decided against the application, while the state official rendered a decision favorable to the application. In cases of this kind the petitioners have the right to appeal to a board consisting of the Lieutenant-Governor of the State, the Speaker of the Assembly and the State Commissioner of Health. Such an appeal has already been made, but the case has not yet been decided.

Exhibit of Work of State Health Department. — The *Monthly Bulletin* of the State Health Department reports that during the annual State Fair at Syracuse in September an exhibit of the work of the department was a feature of interest. It was held in the fine new State Institutions Building on the fair grounds, where there were exhibits contributed by all the departments of the state government and by various state institutions. The divisions of the Health Department represented were those of publicity and education, vital statistics, engineering, the state hygiene laboratory and communicable diseases. In the exhibit of the last named there was a map illustrating the value of health department work, which bore the legend: "Stop and listen. In 1888 New York State lost 6,488 lives from diphtheria. In 1908 we lost 2,468. Antitoxin did it." It might have been added that, taking into consideration the great increase in population, the percentage of improvement was even higher than indicated by these figures. In movable frames were exhibited on a small scale all the features of the department's traveling tuberculosis exhibition, and, in addition, there was shown in the Woman's Building at the fair a much larger tuberculosis exhibit, which was contributed jointly by the department and the State Charities Aid Association.

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Current Literature.

Medical Record.

Sept. 11, 1909.

1. Gould, G. M. *The Rôle of Visual Function in Animal and Human Evolution.*
2. *Porter, R. H. *The Medical Management of Degenerate Children.*
3. *Gant, S. G. *Surgical Treatment of Diarrhea, with a Description of a New Cecostomy.*
4. Clark, L. P. *A Note on the Village Treatment of Nervous Invalids.*
5. Rosenwasser, C. A. *The Liquor Problem. Some Suggestions for Its Solution.*
6. *Barnes, H. L. *The Amount of Lung Involvement at the Onset of Pulmonary Tuberculosis.*

2. Porter's article contains vivid descriptions of cases which have been cured by the methods he advocates, but the methods themselves are not made clear in the article.

3. Gant describes a method by which irrigation of both the small and large intestines can be accomplished. The method, the author claims, has many advantages over appendicostomy and other cecostomies. He has obtained many favorable results with this method.

6. The author presents statistics to show the extent of lung involvement at the onset of pulmonary tuberculosis. Out of 120 cases examined within two months of the onset of symptoms, 25% were incipient, 65% were moderately advanced and 9% far advanced. One lobe was involved in 20.8%, two lobes in 30%, three lobes in 22.5%, four lobes in 18.3%, and five lobes in 8.3%. Signs of disease were present in both lungs in 72% of the cases; 56.6% were discharging tubercle bacilli. [W. B. R.]

New York Medical Jounral.

Oct. 9, 1909.

1. Konkle, W. B. *An Appreciation of Evolution and Darwinism.*
2. Kerr, W. M. *A Review of the Important Pathogenic Protozoa Found in Man.*
3. Proescher, F. *A Danger Free Method of Using Freshly Prepared Virus (Virus Fixe) from the Brain of the Hydrophobic Rabbit.*
4. Lange, S. *Isolated Fracture of the Transverse Process of a Lumbar Vertebra.*
5. Thomas, B. A. *Tracheobronchoscopy and Its Merits in a Case of Foreign Body in the Bronchus.*
6. Weeks, S. M. *Orthodontia as Related to Medicine.*
7. Askenstedt, F. C. *A Practical Test for Indican ($C_8H_7NSO_4$: Indoxylsulphuric Acid) in Urine.*
8. Wood, C. E. *Mental Hygiene.*

The Journal of the American Medical Association.

Oct. 9, 1909.

1. *Coleman, W. *Diet in Typhoid Fever.*
2. Grinker, J. *Intradural Tumor of the Mid-Dorsal Cord: Operation: Complete Recovery of Sensation and Partial Restoration of Motion.*
3. Gardner, W. S., and Novak, E. *The Endometrium and Some of Its Variations.*
4. McCampbell, E. F., and Cooper, H. T. *Myiasis Intestinalis Due to Infection with Three Species of Dipterous Larvae.*
5. Harris, S. *Prevention of Malaria.*
6. Stone, I. S. *Minor Gynecologic Matters Often Overlooked.*
7. Foster, N. K. *The Sanitary Regeneration of San Francisco.*
8. Dowling, F. *The Government Tobacco Factory at Issy, near Paris. Hygienic Notes.*
9. *Simpson, F. F. *Factors which Contribute to a Reduction in Mortality in Abdominal Surgery.*
10. *Gilmore, C. *Vaccine and Serum Therapy in Children.*
11. Mitchell, J. K. *Massage in General Medicine.*
12. Stucky, J. A. *Intestinal Auto-Intoxications as a Factor in the Causation of Pathologic Conditions of Ear, Nose and Throat.*

1. Coleman states that there is strong clinical and experimental evidence that the typhoid patient should have sufficient food to meet his energy expenditures and that the starvation diet is detrimental. The amount of food varies with the individual, but he should be given at least food to equal 40 calories per kilogram of body weight. Coleman gives milk, cream, milk sugar and eggs in about these proportions: Milk, 1½ qts.; 1–2 pts. of cream; ½ to ¼ lb. of milk sugar; and 3 to 6 eggs daily. Patients do well on this diet and many gain weight.

9. Simpson believes that an accurate knowledge of the nature, extent and trend of disease, and exact determination of the patients' margin of reserve strength, a judicious adaptation of the time and type of operation to the individual needs, a group of competent operative co-workers, a minimum amount of anesthetic, a rigid aseptic technic, and speed with precision, are factors which will yield a low mortality and highly satisfactory operative results.

10. Gilmore reviews vaccine and serum therapy in children and states that the vaccines have given the best results in staphylococcus infections, especially in furuncu-

losis and acne. Doses of of 20 to 50 million are given on every sixth or seventh day; streptococcus infections are not so successfully treated, but warrant a further trial. The dose is about one third that in staphylococcus infections. In scarlet fever injections of dead streptococci have not been followed by favorable results. They are encouraging in adenitis, otitis and osteomyelitis. No benefit has been obtained in the gonorrheal vaginitis or vulvitis of little girls. In meningitis the results cannot compare with Flexner's serum. Colon cystitis is usually greatly improved under vaccine treatment. Local tuberculous lesions have been treated by injections of very small doses of tuberculin with good effect. This is true of chronic local tuberculosis without constitutional symptoms, especially in bone, joint, gland, skin and eye affections. In pulmonary tuberculosis of a chronic type, running a nearly apyretic course, tuberculin is also of value. [E. H. R.]

British Medical Journal.

Sept. 4, 1909.

Educational Number. No original articles appear in this number.

Sept. 11, 1909.

1. Evans, J. E. *Observations on Injuries of the Optic Nerve.*
2. Isaac, C. L. *On the Value of Surface Signs in the Diagnosis of Deep-Seated Disease.*
3. *Carter, R. M. *Oriental Sore of Northern India, a Protozoal Infection.*
4. Hayes, R. *The Intensive Treatment of Syphilis by Aachen Methods.*
5. Magian, A. C. *A Case of Syphilis without a Primary Chancre.*
6. *French, H. *A Note on Very High Specific Gravity of the Urine of Healthy Women.*
7. Robinson, H. B. *Partial Gastrectomy for Gastric Carcinoma; Recovery.*
8. Edlerton, R. S. C. *A Case of Viper or Adder Bite.*

THE BRITISH MEDICAL ASSOCIATION.

Section of Physiological Medicine.

9. Wood, T. O. *Introductory Remarks.*
10. MacCormac, J. M. *Discussion on the Superficial and Deep Reflexes.*
11. Mercier, C. A. *Somatic Delusions and Local Lesions.*
12. *Crothers, T. D. *Heredity in the Causes of Inebriety.*
13. Shuttleworth, G. E. *Mongolian Imbecility.*
14. Dawson, W. R. *Considerations upon the Report of the Royal Commission on the Care and Control of the Feeble Minded.*
15. Schofield, A. T. *The Present Position of Medical Psychology.*

Section of Anatomy and Physiology.

16. Sherrington, C. S. *Introductory Remarks.*
17. Dixon, A. F. *The Skeleton in Achondroplasia.*
18. Spicer, R. H. S. *Some Points in the Mechanics of Respiration.*
19. Maclean, H. *Phosphatides in the Light of Modern Research.*
20. Sherrington, C. S. *Discussion on the Deep Efferents: their Function and Distribution.*
21. Waterson, D. *Reconstruction Models of the Fetal Pelvis.*
22. Hill, L. *A Reply to Certain Criticisms of Observations as to the Effects of Inhalation of Oxygen on Muscular Exertion.*
23. Goodall, J. S., and Earle, H. G. *The Structure of the Pancreas in Relation to Function.*
24. Moore, B. *The Bio-Chemistry of Hemolysis.*
25. Thompson, P. *Some Notes on the Development of the Heart.*
26. Johnston, H. M. *Notes on the Distribution of the Intercostal Nerves.*
27. Anderson, R. J. *Some Features that make for Persistence.*
28. Anderson, R. J. *Some Results of Uniformity of Action and Habit.*
29. Dickey, J. S. *On the Cervical Pleura.*
30. Rutherford, N. C. *The Chondro-Cranium of the Trout with Reference to the Brain and Cranial Nerves.*

Section on Hygiene and Public Health.

31. O'Neill, H. *Discussion on the Discharge of Sewage Effluents into Tidal Waters.*
32. Paterson, J. J. *Measles in Schools: an Account of a Recent Epidemic in St. Helens.*
33. Niven, J. *The Prevention of Tuberculosis in Cattle with Reference to the Communication of the Disease to Man.*

3. Carter describes the organism which causes "Oriental sore," the best means and medium of cultivating it, and gives a table in which he differentiates it from kala azar.

6. French presents tables showing the very high specific gravity which the normal urine of healthy women may attain even in the winter months. He believes it is important to recognize that this is compatible with perfect health. The specific gravity in many instances ranged from 1,035 to 1,044.

12. Crothers, discussing the causes of inebriety, states that alcoholic ancestors transmit to the next generation not only states of exhaustion, low vitality and feeble resisting power, but marked impulses to use alcohol for its pleasing narcotic effects. [J. B. H.]

Deutsche Medizinische Wochenschrift. No. 36.

Sept. 9, 1909.

1. Krönig, B. *Auto-infection in Obstetrics.*
2. Payr, E. *Pathogenesis, Indications and Treatment of Round Ulcer of the Stomach.* (To be concluded.)
3. Rothe and Meinicke. *The Occurrence of Vibrios in the Small Intestinal Contents and in the Stools of Man.*
4. *Bychowski, Z. *The Diagnosis and Treatment of Tumors of the Hypophysis.*
5. Schnitter. *Detection and Importance of Tubercle Bacilli in the Circulating Blood of Tubercular Individuals.*
6. Schulz, E. *The Granular Form of Tubercle Virus in Pulmonary Expectoration.*
7. Hugel, K. *The Radical Operation for Inguinal Hernia according to Kocher.*
8. Froehlich, E. *Gynoval, a New Balduan Preparation.*

4. Bychowski reviews briefly the cases of tumor of the hypophysis which have come to operation. He then reports a case of his own, which, for a couple of years, had shown signs of brain tumor and which then showed evidence of pressure on the chiasm by the ocular symptoms of bitemporal hemianopsia. As the ocular symptoms were rapidly growing worse, operation was advised. A cyst was removed and found non-malignant. Meningitis set in and lasted for some time, but the patient finally recovered. Vision improved, the excessive fatness from which the patient suffered disappeared and menstruation for the first time appeared.

The author then goes into a theoretical discussion in regard to the relation between the hypophysis and the genital organs and the hyphophysis and adipose tissue, also the relation between the hypophysis and acromegaly. His case adds to the data in regard to the first two, but not much in regard to the latter relation. [C. F., Jr.]

Münchener Medizinische Wochenschrift. No. 38.

Sept. 21, 1909.

1. *Baisch, K. *Transmission of Syphilis Studied by Serological and Bacteriological Means.*
2. *Emmerich, R. *Demonstration of the Cholera-Poison.*
3. Steinert, H. *Polyneuritis Syphilitica.* (To be concluded.)
4. Samajloff, A., and Steshinsky, M. *The Rise in the Electrocardiogram Due to the Auricle in Mitral Stenosis.*
5. Friberger, R. *Studies of the So-called Salt-Fever and the Excretion of Chlorine in Infants.*
6. Rose. *Miliary Tuberculosis Immediately Following Childbirth.*
7. Grüter, W. *Studies of the Bodies Found by Prowazek in Trachoma, and Their Diagnostic Value.*

8. KAESTLE, C. *Diagnosis of Dermoid of the Mediastinum.*
9. HAMMERL, H. *Hemogenization of the Sputum.*
10. HUISMANS, L. *Typhoid Reinfection.*
11. HEERMANN-ESSEN-RUHR. *Esophagoscopy and Bronchoscopy.*
12. ZENKER, P. *A New Nasal Speculum.*
13. RIEBES, W. *A New Method of Estimating the Coagulation Time of the Blood.*
14. HENKEL. *Official Precautions against Infectious Diseases.* (Continued.)

1. From a study of 140 instances of supposed hereditary syphilis, Baisch draws the following important conclusions: (1) For determining the laws of hereditary syphilis the Wassermann test alone is insufficient, and that a bacteriological examination of the fetus and of the placenta must also be undertaken. (2) When the reaction in the parents is negative, syphilis can be excluded only by absence of spirochetæ in a fetus that is not altogether macerated. (3) The hemolytic substance does not pass from mother to child or *vice versa* through the placenta. (4) The presence of the hemolytic substance is associated with the existence of spirocheta in the organism. (5) Syphilis is responsible for maceration of the fetus in 80% of cases. The other cases are due to strangulation of the cord, to abnormalities of development of the fetus or to nephritis in the mother, or, perhaps, also, to tuberculosis. (6) The typical habitual abortion of the first four months does not belong to the symptomatology of syphilis. (7) About 75% of all mothers of luetic infants show no signs at all, or only slight signs of syphilis. (8) When they react positively, they are, in fact, syphilitic, even though other signs are absent. (9) Those giving negative reactions are in all probability syphilitic. These are instances of a failure of the reaction. (10) Colles' law that the mothers of syphilitic children are immune, and Profeta's law that the children of luetic parents are immune, are explainable on the ground that these mothers and children are immune because they have been, in fact, already infected. (11) Colles' has, in fact, no exceptions. (12) The raising of healthy children demands an energetic and systematic specific treatment before and particularly during the pregnancy.

2. It having been demonstrated that the cholera bacillus more than any other organism has the power of reducing nitrates to nitrites, that in the presence of lactic acid nitrous acid is liberated, that proteus mirabilis, streptococcus enteritidis and paratyphoid bacillus have similar action and that they may cause in cholera nostras and in cholera infantum symptoms very like those of Asiatic cholera, Emmerich formed the hypothesis that the common symptoms of tnese diseases might be due to nitrous acid poisoning. All the above mentioned bacteria have the powei of thriving throughout the intestinal tract, whereas bacillus coli inhabits only the large intestine. As very little nitrate normally finds its way into the large intestine, bacillus coli cannot produce nitrite poisoning unless large quantities of bismuth subnitrate are given. Emmerich then showed by animal experimentation that by giving a mixture of nitrate and of cholera bacilli death could be caused and that either given alone had no effect. Later he produced symptoms very like those of cholera by giving a mixture of sugar, vibrios and nitrate. By a study of actual cases of cholera it was found that the vomitus early in the disease contains much nitrous acid and that it frequently can be demonstrated in the rice-water stools. The writer believes that the symptoms of cholera are the result of nitrous acid poisoning, that the essential cause of death is due to destruction of hemoglobin and that the decolorization of the bile and the state of the intestines are due to the action of the acid. The symptoms of cholera nostras and of cholera infantum he attributes to the same cause. Fatal attacks of cholera may be prevented by taking a diet free from nitrates. Treatment should be directed toward eliminating the poison and neutralizing that in the stomach by alkaline lavage. Deaths from deficient oxygenation may be prevented by the use of oxygen under pressure in a cabinet. Many cases of cholera do not come under treatment until the intestinal mucous membrane has been destroyed. There is then the additional danger of infection with pyogenic organisms. [G. C. S.]

BERLINER KLINISCHE WOCHENSCHRIFT. NO. 39.

SEPT. 27, 1909.

1. *HELBING, C. *Results of Fifty-three Operations for Cleft Palate, with Remarks on Operative Technic.*
2. KLINGMÜLLER, V., AND BERING, F. *Experiments in the Penetration and Therapeutic Use of Heat Rays.*
3. HIRSCH, K. *Bursal Cysts about the Shoulder-Joint, Containing "Rice Bodies."*
4. MÜNTER. *Heterotopia and Metaplasia of Epithelial Tissue.*
5. REITER, H. *The Structure of Opsonins.*
6. *BEITZKE, H. *The Biology of the Adrenal System. 2.*

1. Helbing encourages operations on infants. His statistics show no mortality and perfect healing in 75% of his cases after a single operation, and no cases which failed to heal after the second operation.

His conclusions are that operation on infants is no more difficult or dangerous than on older children, and that the prognosis for function is better the younger the child.

His technic is that of Langenbecker modified by Wolff. He declares that this method is applicable to every case. It is indispensable to make it a two-stage operation, first cutting the structures over the hard palate and three to four days later suturing the cut edges. The advantages of this are several. Small children are given time to recuperate after the unavoidable hemorrhage and shock of the first step. The cut edges are less liable to undergo anemic necrosis because the blood supply becomes readjusted. Suturing is facilitated by the absence of hemorrhage and by the thickening and broadening of the flaps which occurs. For suturing he uses silk and in addition three to four strengthening silver wire sutures in the hard palate. Success requires practice, proper instruments and the close and easy approximation of tissues.

6. Beitzke reviews the pathology of the adrenal, calling attention to the active congestion which occurs in many of the acute infections, especially diphtheria, tetanus, anthrax, pneumonia and general sepsis. Da Costa has found the Negri bodies in the adrenal in cases of rabies. The spirocheta pallida may occur in such abundance in the adrenal as to furnish the best means of diagnosis in obscure cases of congenital syphilis. Wiese and Schmorl have described characteristic change in the glands in arteriosclerosis and chronic nephritis.

Tumors of the adrenal include carcinoma, sarcoma and glioma; the latter metastasize in the liver, joints and female reproductive organs. New growths affect the gland in opposite ways. The symptoms may be those of hypersecretion producing increase in blood pressure and death from cerebral hemorrhage much as in nephritis, or they may be associated with complete atrophy of the adrenal and give the clinical picture of Addison's disease. The cancer cells may manufacture both adrenalin and melanin. Definite changes in the adrenals have been described in status lymphaticus.

Hemorrhage into the adrenal is not an uncommon thing. Its pathogenesis is unknown. It may produce sudden death with symptoms of delirium, convulsions or coma, accompanied by meteorism and severe epigastric pain. Beitzke then reviews Addison's disease, calling attention to the group of cases which are not tuberculous, and mentioning several hypotheses bearing on the relation between histologic structure and function. Lastly, he urges the need of more experimental work in this field. [H. P. G.]

ZEITSCHRIFT FÜR KLINISCHE MEDIZIN. BD. 68.

HEFT. 3 AND 4.

1. *ADAM, H. *The Viscosity of the Blood.*
2. *EPPENGER, H., AND HESS, L. *The Pathology of the Vegetative Nervous System.* (Second communication.)
3. *EPPENGER, H., AND HESS, L. *The Pathology of the Vegetative Nervous System.* (Third communication.)
4. *REHBERG, T. *Alternating Heart.*
5. *v. KOZICZKOWSKY, E. *The Examination of Pancreatic Secretion and Its Importance in Diagnosis.*
6. *BARANKEIEFF, V. *Experimental Investigations on the Effect of Fever on the Course of Infection.*
7. JONESCU, D., AND GRÜNBERG, V. *The Purin Metabolism in Fever.*

8. *SKIROKAUER, H. *A Study of Iron Metabolism.*
9. *D'AMATO, L. *Bronchial Breathing as a Sign of Mediastinal Affections.*
10. BRAUNSTEIN, A. *Schürmann's Color Reaction in Syphilis.*

1. According to Adam, the viscosity of the blood depends on many factors. Determination of the viscosity alone, without a knowledge of the number of red cells, the gas content and the amount of salts and albumen in the plasma, has little value, either clinical or theoretical.

2. The authors divide the nerve fibers innervating the various viscera into two groups: First, those arising from the sympathetic system; and, secondly, the autonomous nerves, arising from either the mid-brain and medulla or the sacral cord. Among the autonomous nerves the vagus, oculomoter and pelvic nerves are the chief. The two systems are antagonistic to one another. Almost all of the smooth muscle cells, including those of the vessels, the pupil of the eye, and of the stomach and intestine, are innervated by fibers from both these systems. The state of the tonus in these cells will depend on which of these two systems is in the ascendant. The authors maintain that all phenomena which are brought about by pilocarpin, and inhibited by atropin, are effected through the autonomous nerves, while adrenalin acts as a stimulant to the sympathetic alone. We possess no drug that paralyzes the sympathetic, but stimulation of the autonomous nerves (pilocarpin) may be taken as equivalent to paralysis of the sympathetic, and *vice versa.* This accounts for the fact that atropin and adrenalin both have a favorable influence in bronchial asthma, in which state we must assume an increased irritability of the vagus.

In the previous communication the authors found those people who react strongly to adrenalin administered subcutaneously, showing glycosuria and polyuria, are not affected by pilocarpin and atropin, while those who react to pilocarpin with sweating, salivation and diarrhea, and to atropin with marked increase of the pulse-rate, are not susceptible to adrenalin. In no case was a strong reaction to both types of drugs obtained. Since adrenalin acts only on the sympathetic, and atropin and pilocarpin only on the autonomous nerves, it may be taken as proven that in one group of people the sympathetic system is in the ascendant, in the other the autonomous. The authors propose for the former term "sympathicotonic," and for the latter, "vagotonic."

They then applied this pharmacological method of testing functions, and found in some pathologic states a marked increase of the tonus of the autonomous nerves. Such conditions had been described previously by Van Noorden and others under the name of vagus neurosis. The chief symptoms are cardiac pains, bradycardia with irregularity, irritability of the stomach and disturbance of respiration, i. e., irritation of the vagus. The authors found in such cases (usually young girls) a tremendous susceptibility to atropin and pilocarpin, while adrenalin was ineffective. The bradycardia and arrythmia disappeared after atropin was given.

The study of bronchial asthma showed that there is in this condition an increased irritability of the autonomous nerves, with marked reaction to atropin and none to adrenalin. The symptoms may be referred to contractions of the bronchioles, which has been demonstrated to follow the injection of pilocarpin. The eosinophilia likewise is probably a symptom of vagus irritation, and can be produced in normal individuals by pilocarpin. "Vagotonic" persons usually show a relatively high eosin count, while in the "sympathicotonic" the eosins are low. The very prompt relief obtained from the injection of adrenalin is to be referred to a stimulation of the sympathetic, which, being antagonistic to the vagus, is equivalent to a paralysis of that nerve. The secretion of the stomach is governed by the vagus. Patients with ulcer of the stomach are found to have a high acidity if they are vagotonic, low if sympathicotonic. The hyperacidity can be reduced by atropin.

3. In the third communication, Eppenger and Hess seek to apply the rules already laid down to the explanation of some of the symptoms of exophthalmic goiter. As is well known, at one time this goiter disease was referred to an irritation of the sympathetic system. The authors show that some of the symptoms can be referred to a stimulation of the sympathetic, but that many of the others can be explained as due to the stimulation of the autonomous nerves. In the former group of symptoms may be mentioned polyuria, glycosuria, alimentary glycosuria, protusion of the eyeballs, increase of the metabolism, and probably fever when this occurs without obvious cause. To the group of symptoms due to irritation of the autonomous system belong the Von Graefe sign, sweating, subjective feelings of heat accompanied by blushing, disturbances of the breathing, diarrhea and vomiting. It follows that the substances produced by the thyroid in exophthalmic goiter must act both on the sympathetic and autonomous systems. In most cases both groups of symptoms occur, but occasionally patients are met with who show almost entirely the one group or the other. For example, the authors report a case in which the main symptoms were sweating, diarrhea and disturbances of breathing, with eosinophilia and hyperacidity, all of which are symptoms of irritation of the autonomous nerves. These symptoms were much improved by atropin. The patient did not react to adrenalin. In another patient, on the other hand, the above symptoms were absent, and polyuria, protusion of the eyeballs and alimentary glycosuria pointed to increased tonus of the sympathetic system.

4. Rehberg discusses the question of alternating heart, and reports four cases. In this interesting condition, every other beat of the ventricles is weaker. It is due to a disturbance in contractility, in which, according to Hering, certain parts of the heart wall do not contract. The arterial pulse also shows an alternation of weak and strong beats. In the cardiogram the beats are usually all of equal height, though sometimes alternating. The important point is that the rhythm is regular, the smaller beat being never premature, as it is in extrasystoles. The venous pulse usually shows an apparent alternation of the auricles, which is really due to transmission from the carotid. The diagnosis is not possible without graphic records of the arterial and venous pulses, and preferably, also, of the apex beat. For clinical purposes, however, it is sufficient if a bigeminal pulse due to extrasystoles can be excluded. For the technical details of the differential diagnoses, the reader is referred to the original article.

5. Using the oil test breakfast, the author has made a large series of investigations on the presence of trypsin in the gastric contents in various diseases. He confirms Lewinsky's observation that trypsin is frequently absent after the oil meal if large amounts of hydrochloric acid are present, and that trypsin may be demonstrated in such cases if the hydrochloric acid is neutralized by the use of magnesia given shortly before the oil. By this device he was able to demonstrate trypsin in the gastric contents in 72 out of 80 cases. He proposes as superior to olive oil the use of 250 ccm. of cream. With this test meal he could find trypsin without using magnesia, even in cases which before had shown hyperacidity, owing to the fact that the hydrochloric acid was bound by the proteins in the cream. The 8 cases in which the test for trypsin was always negative included four groups: First, cancer of the stomach; second, diabetes mellitus; third, pernicious anemia; fourth, affections of the liver. In the first of these the reason was probably mechanical — stenosis of the pylorus. In the cases of diabetes, three in number, the cause was probably disease of the pancreas. The absence of trypsin in cirrhosis of the liver was also probably due to a complication with chronic pancreatitis, which is frequently present in this disease. In a case of cholelithiasis, a stone in the common duct had probably obstructed the pancreatic outflow. Large amounts of trypsin were found after gastroenterostomy, also frequently in gastroptosis and in cases with hypo- and an- acidity. The author concludes that the presence of trypsin in any considerable amount after the oil or cream breakfast precludes the existence of any serious disturbances of the pancreatic secretion, while, on the other hand, repeated negative findings in the absence of obstruction of the pylorus render disease of the pancreas almost certain. He points out that the cause of apparent absence of hydrochloric acid may really be due to regurgitation of duodenal contents, and advises for this reason against the use of fat in the test breakfast when the functions of the stomach are to be examined. It should be noted, however, that bile is almost never absent in the

gastric content if regurgitation has taken place, so that a simple inspection would often be sufficient.

6. Fever has often been considered in the past a useful feature of nature's combat with disease. Barankeieff's investigation, however, seems to point to the contrary conclusion. She studied the effects of aseptic fever, produced by means of Aronsohn's fever puncture, on experimental infection. The fever is produced by puncturing a certain part of the brain and lasts for about two days, during which time the animals appear otherwise well. In case, however, the animals were killed at the height of the fever, staphylococci or streptococci were regularly found in the cultures made from the organs, showing that an invasion of the circulation by bacteria had taken place. Since the animals did not appear sick, this is probably bacteriemia without infection in the proper sense of the word. The Friedländer's bacillus is not pathogenic for normal rabbits, but intravenous inoculation of this organism into rabbits after fever puncture resulted in fatal infection. Furthermore, the inoculation of a mild strain of staphylococcus albus into animals with fever puncture resulted fatally, although normal rabbits showed no effects. It follows, therefore, that fever puncture made rabbits susceptible to infection which would not otherwise occur, even in the case of an organism to which they are naturally immune.

8. It has been claimed that the organic preparations of iron are not broken down completely before absorption, and are, therefore, of more avail for the building up of hemoglobin. Schirorauer, however, shows that all preparations of iron, whether organic or inorganic, are broken up in the stomach by the action of hydrochloric acid to a dialyzable form, the protein part of the molecule being changed to peptone. Since all the preparations of iron are absorbed in the same form, the only possible advantage of the organic preparations is that they are often better borne by the stomach.

9. D'Amato calls attention to the fact that in mediastinal tumors and aneurisms bronchial breathing is frequently to be heard over the sternum and clavicles, and also along the vertebræ, even down to the ninth or tenth dorsal spines. Bronchial breathing may sometimes be heard in normal persons in this situation, but usually not with easy breathing and not in the same intensity. He lays especial stress on the fact that in many cases the bronchial breathing behind extended much farther downwards than is physiologically the case. [W. T.]

Die Therapie der Gegenwart.

September, 1909.

1. Zinn, W. *The Symptomatology and the Aspiration of Pericardial Effusions.*
2. *Fricker, E. *The Influence of Saliva on Secretion of the Gastric Juice.*
3. Jacobsohn, L. *The Present Status of Our Knowledge of Brain Tumor.*
4. Sternberg, W. *The Kitchen in the Modern Hospital.*

2. Fricker has made an experimental study of gastric secretion, determining the percentage of free hydrochloric acid, the total acidity and the amount of pepsin before and after ingestion of food and saliva. He finds that saliva has a specific action, increasing the flow of gastric juice; the exact nature of this action is unknown, but it is probable that the carbonic acid of the saliva is a factor. Secretion from the eating of a test meal is brought about in three ways: (1) By direct action of the ingesta on the stomach; (2) by direct action of the saliva on the stomach; and (3) reflexly by stimulation of the sense of taste in the act of chewing. [L. D. C.]

Revue de Médecine.

September, 1909.

1. *Alexieff, W. *Local Atrophy of the Kidney, Due to Arterial Thrombosis.*
2. *Turretini, G. *The Pathogenesis of So-Called Orthostatic Albuminuria.*
3. *Goldschmidt. *Thirty-five Years' Experience with Smallpox Vaccines. A Statistical Review and a Consideration of the Results.*
4. Macaroff. *The Therapeutic Influence of Cantharides upon Renal Permeability in Cases of Epithelial Nephritis.*

1. Alexieff calls attention to the frequency of slight depressions in the renal cortex met at autopsy. These areas present an atrophy of the tubules and glomeruli, with an increase of connective tissue, corresponding to the distribution of a thrombosed or endarteritic vessel. This condition is to be distinguished from infarction, since it is an atrophic rather than a necrotic process. Atheroma, which is manifested elsewhere in these cases, is the fundamental origin of the endarteritis. Consequently, the symptomatology is merely a part of a general arteriosclerotic process. The characteristic symptoms, which are found only in the severe cases, are great variations in the total quantity of urine, as well as of the chlorides and a diminished permeability of the kidney to methylene blue.

2. There exists, according to Turretini, among children from ten to fourteen years of age, a syndrome which he considers as "essential," and calls orthostatic albuminuria. The condition is evidenced by headache, shortness of breath — in fact, all the symptoms of anemia — in nervous children. The "essential" element is the appearance of albumen in the urine while the patient is in an upright position. The albuminuria, which appears as soon as ten minutes after the change of posture, is accompanied by an oliguria and a concentration of the urine. In the study of four cases, he has observed the following interesting points: (1) The condition is absolutely independent of nephritis and even of any previous infectious disease; (2) it is accompanied generally by a pulse of hypotension; (3) in the common dorsal position there is no albuminuria, but when artificial lordosis is produced, it appears at once; (4) similarly, the albuminuria is present in lordosis due to disease; (5) the albuminuria, which is present while standing, disappears if the body be flexed on the pelvis to an angle of 45°. From these observations he concludes that the process is almost entirely mechanical and is probably due to a local circulatory stasis, dependant upon the conformity and position of the lumbar spine.

3. Goldschmidt states that the degree of immunity against smallpox is proportional to the number and quality of the pustules artificially produced. Quoting from a series of 11,400 primary vaccinations, he calls attention to the decrease in the percentage of successful inoculations (1) since the introduction of animal virus, and (2) since the reduction of the number of scarifications from six to four. His results from arm to arm inoculation were almost perfect and he feels that the animal virus is too weak because of dilution and from the prolonged action of glycerine upon it. The arm to arm inoculation yielded only 1.23% of failures, while the animal virus gave 18.7%. He advocates the use of as freshly prepared virus as possible, in that respect differing from Paul, the chief vaccine official of Vienna, who states that a vaccine three weeks to one month old is not only safer because of its assured sterility, but is more powerful. But all agree that since individuals with only one "scar" are more liable to contract the disease and those with several suffer a very mild form of smallpox, the number of scarifications should not be reduced. [L. H. S.]

Revue de Chirurgie.

September, 1909.

1. Villard, E., and Desgouttes, L. *Treatment of Hemorrhoids by Total Circular Excision.*
2. *Binet and Trénel. *Cephalic Tetanus.*
3. *Piquand, G. *Subphrenic Abscesses.* (Conclusion.)
4. *Duval, P. *Operative Results in the Treatment of Megacolon.*

2. The authors describe a case of cephalic tetanus, observed in Gross's clinic, and take occasion to review the etiology, symptoms, diagnosis, pathogenesis, prognosis and treatment of this rare malady. The patient in question recovered under isolation, bromides, chloral and antitetanic serum.

3. Piquand continues and completes his study of subphrenic abscesses, classifying them under the following categories of causation: Perforation of the colon and of the jejuno-ileum, abscesses of appendicular origin, abscesses of hepato-biliary origin, those secondary to lesions of the spleen, those of pancreatic origin, those secondary to a

lesion of the kidneys, those secondary to a lesion of the female genital organs, those secondary to thoracic lesion, tuberculous abscesses, and those of traumatic origin.

4. In a critical study, Duval discusses the operative results in the 35 surgically treated cases of Hirschsprung's disease from the collection of 110 cases made by Danzinger. The different procedures employed were colotomy with suture, colostomy, coloplicature, valvular colic resection, colopexy, intestinal anastomosis and colectomy. Any of these he considers preferable to medical treatment, but believes that under ideal conditions colectomy will become the operation of choice. [R. M. G.]

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Obituaries.

HENRY CADWALADER CHAPMAN, M.D., D.Sc.

Dr. Henry C. Chapman, of Philadelphia, died suddenly from hemorrhage of the stomach in Bar Harbor, Sept. 7. He was born in Philadelphia in 1845. His father was an officer in the navy, and his grandfather, Dr. Nathaniel Chapman, professor of theory and practice of medicine and clinical medicine in the University of Pennsylvania. He graduated from the academic department of that university in 1864, and in medicine in 1867, receiving the same degree from the Jefferson Medical College in 1877. After graduating he served two years as resident physician at the Pennsylvania Hospital, and then spent three years in study abroad, in Vienna, Berlin, Paris and London, devoting himself mainly to anatomy and physiology. From 1875 to 1876 he lectured on these subjects at the University of Pennsylvania. From 1876 to 1880 he served as coroner's physician. He was one of the promoters of the Zoölogical Society of Philadelphia, was made the prosector, and in that capacity contributed numerous papers of value in the procedings of the Academy of Natural Sciences. He was at this time appointed lecturer at the Jefferson Medical College on general physiology and comparative anatomy, and in 1879, on the death of Professor Meigs, was made professor of the Institutes of Medicine and Medical Jurisprudence. His teaching continued to be chiefly in physiology, and he was for nearly thirty years a member of the faculty of the Jefferson School. He retired last June with the title of professor emeritus of physiology and biology, and received from the University of Pennsylvania the degree of Doctor of Science.

Dr. Chapman wrote a brief history of the the Discovery of the Circulation of the Blood, a Treatise on Human Physiology and a Manual of Medical Jurisprudence and Toxicology. He also made numerous contributions to the proceedings of the Academy of Natural Sciences. He delivered the address at the recent dedication of the statue of Prof. Joseph Leidy, for whom he always cherished a warm admiration. He was chairman of the board of curators of the Academy of Natural Sciences, a member of the American Physiological Society, of the American Philosophical Society, and a fellow of the College of Physicians of Philadelphia.

Dr. Chapman was a most companionable and lovable person, a brilliant and entertaining talker, and had a large number of friends in all classes of society. His was an unusual combination of social charm and interests with industrious devotion to serious scientific pursuits. He leaves a widow, but no children.

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JOHN PHILLIPS REYNOLDS, M.D.

Dr. John Phillips Reynolds died Oct. 10 at his home in Boston, at the age of eighty-three, after a brief illness. Dr. Reynolds was born in Boston, Nov. 20, 1825, the son of a physician, Dr. Edward Reynolds, who, although a general practitioner and an obstetrician, was also an ophthalmologist and the founder of the Massachusetts Charitable Eye and Ear Infirmary. Dr. Reynolds' grandfather was John Phillips, the first mayor of Boston, and his grandmother, Margaret Wendell Phillips, a sister of Wendell Phillips. Dr. Reynolds was graduated in 1845 from Harvard College and did not immediately enter upon the practice of medicine. After a period of teaching in the Boston Latin School, he entered the Harvard Medical School, and thereafter began the practice of his profession in this city, which remained his home through his long life. He was for a number of years instructor and later professor of obstetrics at the Harvard Medical School, his activity as a medical teacher covering a period of twenty years. He retired from active practice about twenty years ago and divided his time between Boston as a winter residence and the coast of Maine as a summer residence. During this period of professional inactivity he remained keenly interested in educational affairs and in the progress of his profession. He was also identified with Nahant, where for many years he was the physician during the summer months.

During his active life Dr. Reynolds held many offices of trust both within and without the profession, among them being the presidency of the American Gynecological Society. He married early in life Jane Minot Revere, a granddaughter of Paul Revere, and last year he and his wife celebrated their golden wedding. His wife survives him, together with a sister and eight children, well known in the varied civic and professional activities of the city. Dr. Edward Reynolds, of Boston, has followed in great measure in his father's footsteps, pursuing with distinguished success the branch of gynecology and obstetrics which his father and grandfather had also cultivated.

In the death of Dr. Reynolds, Boston and the medical profession lose a man of the older generation whose place in the profession and the community will be difficult to fill. As a practitioner, he was beloved by his many patients, and was universally respected outside of his profession as a good citizen and a courtly gentleman. He inherited also in marked degree the eloquence which distinguished his kinsman Wendell Phillips. His death will be felt not only by his broad family connection, but also by the community in which he remained a notable figure up to the very end of his life.

RECORD OF MORTALITY

FOR THE WEEK ENDING SATURDAY, OCT. 9, 1909.

CITIES.	Reported deaths in each.	Deaths under five years.	CITIES.	Reported deaths in each.	Deaths under five years.
New York	—	—	Waltham	10	6
Chicago	599	191	Pittsfield	7	4
Philadelphia	—	—	Brookline	9	—
St. Louis	—	—	Gloucester	1	—
Baltimore	198	55	North Adams	7	1
Cleveland	—	—	Northampton	9	1
Buffalo	—	—	Chicopee	5	4
Pittsburg	—	—	Medford	5	1
Cincinnati	—	—	Beverly	1	—
Milwaukee	—	—	Leominster	3	—
Washington	—	—	Hyde Park	0	—
Providence	—	—	Melrose	3	0
Boston	201	56	Newburyport	1	—
Worcester	43	15	Revere	2	1
Fall River	45	28	Westfield	6	3
Cambridge	24	5	Woburn	4	1
Lowell	34	15	Peabody	—	—
New Bedford	37	25	Marlboro	8	2
Lynn	19	5	Attleboro	—	—
Springfield	24	7	Adams	3	—
Lawrence	25	8	Clinton	5	2
Somerville	15	5	Gardner	2	0
Brockton	14	3	Milford	2	0
Holyoke	17	11	Watertown	4	0
Malden	10	6	Plymouth	—	—
Chelsea	6	2	Southbridge	4	2
Newton	5	2	Weymouth	3	3
Salem	11	2	Framingham	—	—
Haverhill	7	1	Wakefield	—	—
Fitchburg	7	3	Webster	—	—
Everett	10	5	Arlington	—	—
Quincy	—	—	Greenfield	5	—
Taunton	17	3			

LIST OF CHANGES OF STATIONS AND DUTIES OF COMMISSIONED AND OTHER OFFICERS OF THE PUBLIC HEALTH AND MARINE-HOSPITAL SERVICE FOR THE SEVEN DAYS ENDED OCT. 6, 1909.

BANKS, CHARLES E., surgeon. Granted one day's leave of absence, Oct. 3, 1909.

ROSENAU, M. J., surgeon. Granted two days' leave of absence from Sept. 29, 1909, without pay.

ROSENAU, M. J., surgeon. Relieved as Director, Hygienic Laboratory, to take effect Oct. 1, 1909.

ANDERSON, JOHN F., passed assistant surgeon. Detailed as Director, Hygienic Laboratory, to take effect Oct. 1, 1909.

BILLINGS, W. C., passed assistant surgeon. Granted five days' leave of absence from Oct. 6, 1909.

HOLT, J. M., passed assistant surgeon. Granted six days' leave of absence from Oct. 4, 1909.

BOGGESS, J. S., passed assistant surgeon. Leave of absence for seven days from Sept. 24, 1909, amended to read six days from Sept. 24, 1909.

SWEET, E. A., passed assistant surgeon. Leave of absence granted Sept. 9, 1909, for twenty-one days amended to read twenty-two days from Sept. 9, 1909.

GUTHRIE, M. C., passed assistant surgeon. Granted thirty days' leave of absence from Oct. 10, 1909.

WOOD, C. E., assistant surgeon. Granted sixteen days' leave of absence from Oct. 5, 1909.

LYON, R. H., assistant surgeon. Granted two days' leave of absence in September, 1909, under paragraph 191, Service Regulations.

ALTREE, G. H., acting assistant surgeon. Granted thirty days' leave of absence from Oct. 2, 1909, without pay.

CLEBORNE, A. B., acting assistant surgeon. Granted seven days' leave of absence from Oct. 2, 1909, under paragraph 210, Service Regulations.

DEERHAKE, WM. A., acting assistant surgeon. Granted one day's leave of absence in September, 1909, under paragraph 210, Service Regulations.

GLEASON, C. M., acting assistant surgeon. Granted fifteen days' leave of absence from Oct. 1, 1909.

GREGORY, G. A., acting assistant surgeon. Granted ten days' leave of absence from Oct. 1, 1909.

HUME, LEA, acting assistant surgeon. Granted ten days' leave of absence from Sept. 30, 1909.

HUNTER, W. R., acting assistant surgeon. Granted fourteen days' leave of absence from Oct. 5, 1909.

MACCAFFRY, W. B., acting assistant surgeon. Granted two days' leave of absence in September, 1909, under paragraph 210, Service Regulations.

ONUF, B., acting assistant surgeon. Granted two days' leave of absence from Sept. 21, 1909, under paragraph 210, Service Regulations.

SINCLAIR, A. N., acting assistant surgeon. Granted fifteen days' leave of absence from Sept. 5, 1909.

WALKER, R. T., acting assistant surgeon. Granted nine days' leave of absence from Oct. 18, 1909.

WETMORE, W. O., acting assistant surgeon. Granted one day's leave of absence, Sept. 20, 1909, under paragraph 210, Service Regulations.

ROGERS, EDWARD, pharmacist. Granted three days' leave of absence from Sept. 23, 1909, under paragraph 210, Service Regulations.

BIERMAN, C. H., pharmacist. Granted thirty days' leave of absence from Sept. 30, 1909.

ELDREDGE, M. B., pharmacist. Granted twenty-four days' leave of absence from Sept. 28, 1909.

SOCIETY NOTICES.

BOSTON MEDICAL LIBRARY IN CONJUNCTION WITH THE SUFFOLK DISTRICT MEDICAL SOCIETY. — Medical Section Meeting, John Ware Hall, Wednesday, Nov. 17, 1909, 8.15 P.M. "The Practical Value of the Examination of the Feces in Diagnosis and Treatment," H. F. Hewes, M.D. "Recent Progress in Our Knowledge of Digestive Processes," W. B. Cannon, M.D. Discussion by Drs. E. P. Joslin, F. W. White, J. H. Pratt and others. Light refreshments after the meeting.

EDWIN A. LOCKE, M.D., 311 Beacon St., *Secretary.*	HENRY JACKSON, M.D., 380 Marlborough St., *Chairman.*

SUFFOLK DISTRICT MEDICAL SOCIETY. — Stated meeting, Saturday, Oct. 30, 1909, at 8.15 P.M. Paper: "Medical Expert Testimony," by Hon. William Schofield, Judge of the Superior Court of Massachusetts. Discussion by District-Attorney Arthur D. Hill and the following additional members of the bar: Messrs. Thomas W. Proctor, Ezra R. Thayer, Charles F. Choate, Jr., Henry F. Hurlburt and William G. Thompson, and George W. Gay, M.D. Business: Election of Nominating Committee. Refreshments after the meeting.

GEORGE H. MONKS, M.D., *President.*	DAVID D. SCANNELL, M.D., *Secretary.*

THE NORFOLK DISTRICT MEDICAL SOCIETY. — A stated meeting of the society will be held at Masonic Temple, 171 Warren St., Roxbury, on Tuesday, Oct. 26, at 8 o'clock. Business, Communication: "Food Poisoning," Wm. F. Boos, M.D. Refreshments after the meeting. The Censors will meet at the Norfolk House, Nov. 11, at 2 P.M., for the examination of candidates.

BRADFORD KENT, M.D., *Secretary*,
798 Blue Hill Ave., Dorchester.

MASSACHUSETTS MEDICAL BENEVOLENT SOCIETY. — The annual meeting of the society will be held at the Boston Medical Library, Thursday, Oct. 28, at 5 P.M.

W. H. PRESCOTT, M.D.,
Secretary.

PHYSIOLOGICAL SEMINAR. — On Mondays and Thursdays, from five to six o'clock, in the Harvard Medical School, Building C, Room 351, Prof. W. T. Porter will give a physiological demonstration with an informal lecture. Physicians and other qualified persons are welcome. The Thursday demonstration is open to women.

RECENT DEATH.

HOWARD SUMNER DEARING, M.D., M.M.S.S., died in East Waterboro, Me., Oct. 4, 1909, aged fifty-two years.

BOOKS AND PAMPHLETS RECEIVED.

Nervous and Mental Disease Monograph Series No. 1. Outlines of Psychiatry. By William A. White, M.D. Second edition. 1909. Reprint.

Fiske Fund Prize Dissertation. No. LII. The Mode of Infection and Duration of the Infectious Period in Scarlet Fever. By Charles V. Chapin, M.D. Providence. 1909.

Nervous and Mental Disease Monograph Series No. 4 Selected Papers on Hysteria and Other Psychoneuroses. By Prof. Sigmund Freud. Authorized translation by A. A. Brill, Ph.D., M.D. Reprint.

Address.

THE FRUITS OF MEDICAL RESEARCH WITH THE AID OF ANESTHESIA AND ASEPTICISM.*

BY CHARLES W. ELIOT, LL.D., M.D. (HON.),
President Emeritus of Harvard University.

THE first public demonstration of surgical anesthesia, which took place in this hospital on the 16th of October, 1846, was the great event that we celebrate anew to-day. From this building the blessed art spread rapidly over the civilized world, the most beneficent gift which chemical and medical science has conferred on mankind. "The Death of Pain," of which Dr. Weir Mitchell sang on the fiftieth anniversary of this memorable event, has not, however, been the only precious fruit of that successful use of anesthesia in surgery. Dr. Mitchell pointed out that the anesthesia which was here demonstrated was no comet thought, which shone for a time but gave no constant light. On the contrary, the discovery was not only to revolutionize surgery and obstetrics, but also to yield unimagined beneficial results, because it would steadily enlarge the range of medical research, and particularly would open to humane and far-seeing investigators the great field of animal experimentation.

> "The radiant morning broke, and ampler hope
> To art and science gave illumined scope."

Seventeen years after the discovery we here commemorate came the wonderful invention of the antiseptic treatment of wounds, whether the results of accident or of surgical interference. These two discoveries together enable the surgeon and the medical investigator to count, first, on painless operations, and, secondly, on safe recoveries. In animal experimentation both the painless operation and the safe recovery are usually necessary to any instructive results. Together they have made the extraordinary development of modern surgery possible, and they have opened a great field of animal experimentation which has already yielded invaluable additions to our knowledge of physiology, pharmacology and pathology. Animal experimentation has already given mankind by far the larger part of all the exact knowledge of medicine now possessed, since medical and surgical experimentation on human beings has ordinarily been impossible, at least until animal experimentation has shown the profitable direction and safe limits of experiment.

Three doubts are often suggested concerning the value of the animal experimentation which, with the help of anesthesia and asepticism, has been earnestly prosecuted by many disinterested and humane seekers for truth during the past forty years. The first doubt relates to the connection between medical research and medical practice. Is there, as a matter of fact, any close connection between medical and surgical research and the treatment of diseases or wounds? Or, in other words, has biological research really contributed to the success of the medical art? The second doubt is more complex and obscure, but not less crippling. What is the use of trying to ascertain the nature of a disease in animals when it is not known that the same disease occurs in men, or that the treatment successful for an animal would be successful for men? Or, in other words, is the search for truth through experiments on animals justifiable when it is not known that the scientific results, though true or sound as knowledge, can have any effect whatever on human well being? The third doubt is felt most commonly by persons who make pets of domestic animals, and particularly of dogs. It may be fairly stated in this form, Is truth-seeking in biology commendable, even with the help of anesthesia and asepticism, if the search be conducted at the expense of the comfort, joy or life of animals? In the minds of many intelligent persons these questions are at the stage of doubt or inquiry; but by many others, whose temperaments and mental habits are more impetuous, these questions have already been hotly answered in the negative.

The first doubt may be resolved in two ways: first, by mention of the actual achievements in medicine which have unquestionably resulted from the last century's studies in comparative medicine and from fifty years of active animal experimentation; and, secondly, by describing the legitimate hopes for the future of medicine and surgery which are founded on the rapid progress of medical science and art since bacteriology became a recognized science.

The first immense practical result of the combined study of diseases in animals and man was vaccination instead of inoculation as a protection against smallpox. It is not too much to say that the most destructive and appalling scourge of mankind [1] has been brought under control by Jenner's discovery "that the cowpox protects the human constitution from the infection of the smallpox," the source of the infection for cowpox being "a peculiar morbid matter arising in the horse." Aristotle, Galen, Leonardo da Vinci and Harvey studied animals and experimented on them in making their great contributions to anatomy and physiology, but their discoveries, though fundamental, did not have such immediate and world-wide applications to medical art as Jenner's discovery had. Moreover, to maintain vaccination as a universal practice among civilized nations requires the constant use of heifers to supply an uncontaminated vaccine.

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* Address delivered at the Massachusetts General Hospital on the sixty-third anniversary of Ether Day, Oct. 16, 1909.

[1] Careful records give documentary evidence that "in the twenty-eight years before vaccination in Sweden there died each year from smallpox, out of each 1,000,000 of population, 2,050 persons; during the forty years following vaccination, out of each 1,000,000 of population, the smallpox deaths annually averaged 158. Such figures might be multiplied by reference to the records of other countries. . . . The decline in death-rate has been limited entirely to persons below the age of fifteen. The percentage of mortality borne by children, the subject of measles, scarlet fever and whooping cough, does not differ materially from what it was a century ago." J. F. Schamberg, Jour. Am. Med. Asso., 1909, lii, p. 69.

"The mean number of deaths from smallpox per 1,000,000 inhabitants for twenty years (1880–1899) was: In the German Empire, with compulsory vaccination and revaccination, 1.8; in Belgium and Spain, without compulsory vaccination, respectively, 206 and 605. In the Prussian army there has not been a single death from smallpox since the vaccination law was first enforced in 1874." S. W. Abbott, Buck's "Handbook of the Medical Sciences," 1904, viii, pp. 126, 130.

"In seven provinces of the Philippine Islands there has been for a number of years an annual mortality from smallpox of more than six thousand, indicating about twenty-five thousand cases. In the twelve months following the completion of vaccination in the seven provinces there was not reported one death from the disease." Annual Report of the Bureau of Health for the Philippine Islands, 1907, p. 20.

Another great gain in medical art, and consequent great gain for the human race, is the newly acquired power to control infectious diseases which has resulted from the discovery of their living contagia and of the means of defeating those contagia. Under this head comes serum therapy, which is now applied with extraordinary success in diphtheria,[2] tetanus and meningitis. These three diseases might fairly be said to be uncontrollable by medical art until comparative medicine and animal experimentation discovered and brought into use their appropriate treatments. The mortality from these diseases was frightful, and the terror and suffering they caused was, therefore, extreme. Many other formidable diseases have been brought under much better control through the results of medical research, such as dysentery, cholera, typhoid fever, the plague, puerperal fever,[3] tuberculosis, syphilis, and certain tropical diseases caused by parasites. Sanitary science, including the diagnosis and control of contagious diseases and the detection of injurious foods and adulterated drugs, is deeply indebted to the new biological science of bacteriology, the whole of which has been built up by researches on and with lower forms of life in connection with higher. In thus obtaining through animal experimentation a better knowledge of the causes and sources of disease in both men and animals, the economic results have had very great importance in addition to the deliverance of the human race from suffering and untimely death. Thus, the discoveries that Texan fever was induced in cattle by the bite of a tick, that chills and fever were produced in human beings by certain parasites in the blood corpuscles introduced through mosquitoes, and that the contagion of yellow fever was carried from one human being to another through the body of another kind of mosquito, are all triumphs of comparative medicine and animal experimentation whose economic value is very high. The men who did this work had spent their lives in laboratories, and all their conceptions in research were based on animal experimentation. It should also be observed that the successful treatment of diseases in man which can be controlled through the use of antitoxins depends as yet upon testing those antitoxins on animals, after they have been prepared from the blood of animals inoculated with them. For example, there is no way at present of determining that a given sample of diphtheria antitoxin made from the blood of a horse is strong enough to use on a human child except by trying it on a guinea pig or some such animal. The day may come when men will be able to prepare synthetically the effective agent of diphtheria antitoxin in a pure and isolated form; but at present biological chemistry is utterly unable to say what that effective agent is, or what proportion of it exists in a given sample of serum. Medicine is making successful use of a complex preparation which it can neither analyze nor compound synthetically. On the whole, is it not clear that the comparative exemption of the human race to-day from the occasional pestilences and the ordinary contagious diseases which used to agonize and devour it is due to the fact that biological research has placed at the service of every surgeon and physician effective means, first, of preventing disease, and, secondly, of curing it? In other words, the human race received during the nineteenth century immense benefits, hardly yet understood and appreciated, from the contributions of biological research to the medical art.

So much for actual achievements. A few words now on the legitimate hopes for the future which these achievements inspire. The prospects are brilliant indeed. In the first place, we have already learned much about the means of overcoming the peculiar difficulties of biological experimentation. That sort of experimentation is, in general, slower than experimentation in the exact sciences which do not deal with living bodies and vital processes. A single biological experiment may need to run through generations of living and breeding animals. With prolific animals whose generations are short the element of time may not be exorbitant, but with the slow breeding the time for the complete performance of a satisfactory series of experiments may be long in proportion to the thinking life of the experimenter. Thus Jenner's demonstration of the value of vaccination took many years[4] of his observing life, and Pasteur's series of connected experiments covered his observing, imagining and reflecting lifetime.[5] In the next place, biological experimentation is more difficult than experimentation in chemistry, physics or mechanics, because of the obscurity and complexity of vital processes, and because exact weighing and measuring, which are the ordinary methods of exact inquiry, are not always possible where the subjects of experimentation are living bodies in health or in disease. In spite of these formidable obstacles, an extraordinary increase of knowledge applicable to the medical art has actually taken place since surgical anesthesia was demonstrated in this hospital, and many men have learned how to overcome, in part, the peculiar obstacles which beset the path of the biological inquirer. A second reason for expecting more rapid progress hereafter than was possible in the third quarter of the nineteenth century — productive as that period was — may be discerned in the fact that in recent years the medical inquirer has been supplied through the progress of physical science with new instruments of precision for observing and recording his facts. Thus the telephone, the x-rays and all the electrical apparatus for recording fluent observations and making note of very minute portions of time and space have been valuable additions to the resources of the medical investigator. Again, in advancing into new fields, and winning their great successes, biologists have clearly seen that they were only working on the edges or outskirts of a great field of beneficent discovery. Every achievement has justified a great new hope. Every success in the past justifies a strong expectation of triumphs to come. We have seen how prodigious have been the successes of medical research of the past fifty years. The legitimate hopes for the future based on these successes justify us in looking forward with delight to the continuation and enlargement of medical research and to an endless series of its invaluable contributions to medical practice and public medicine. Now well-grounded hope is a powerful and legitimate motive in guiding human conduct. Indeed, there is none more so, except love.

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[2] "In the year 1883 (the year before the bacillus of diphtheria was discovered), in the eighteen greatest cities of the world, 97 in each 100,000 of population died of diphtheria; in 1893, 81; in 1894 (just before the general introduction of serotherapy), 79 died, and in 1904 only 20. In twenty years, therefore, the mortality had been reduced to less than one fourth of what it had been. In New York City alone the reduction in mortality means a difference of 3,000 lives annually." W. H. Park, Department of Health, New York City, in a pamphlet on diphtheria.

"In 1888, before the discovery of serotherapy, there were 1,729 deaths from diphtheria in Paris; in 1895 the practice of serotherapy became general in Paris and the number of deaths was 435. By 1902 the best methods of using the serum were learned and definitely established; the mortality for the three years, 1903–1905, was 288." Richet: Pros and Cons of Vivisection, p. 123.

[3] Frequently, in maternity hospitals, outbreaks of puerperal fever occurred that had appalling mortality. In Vienna from October, 1841, to May, 1843, 5,139 women were delivered and 829 died. In Paris, during April and May, 1856, 64 of 347 patients died; in 1864 there were 310 deaths in 1,350 cases; in 1866, 28 deaths in 103 cases. "Women of the lower classes looked upon the Maternité as the vestibule of death." In 1877–78 came the use of carbolic acid and mercury perchloride. The death-rate in maternity hospitals to-day is about 0.02%. Paget: Experiments on Animals, pp. 80, 83. Richet: Pros and Cons of Vivisection, p. 45.

[4] In conversation with John Hunter, in 1770, Jenner suggested the prophylactic power of cowpox. A dread of disappointment led him to spend many years in observation and investigation before promulgating his discovery. He performed his first public inoculation with vaccine on May 14, 1796; and in 1798 appeared his first publication, "An Inquiry into the Cause and Effects of Variolæ Vacciniæ," detailing his views and giving his proofs.

[5] In 1853 occurred Pasteur's crucial observation that penicillium glaucum destroyed the dextro-tartaric, not the levo-tartaric, acid, which indicated the relation between fermentation and living organisms. His papers on lactic acid in 1857 inspired Lister. In 1860 he began his studies of spontaneous generation and, by disproving its existence, supported his experiments on fermentation. The years from 1865 to 1884 were spent in practical application of his previous work: Silkworm disease (1865), studies on beer (1871), the determination of the constancy of species, the ammoniacal fermentation of urine and its check by boracic acid (1873), anthrax (1877), furunculosis and his hospital investigations of puerperal fever (1878), chicken cholera (1880), rabies (1884).

The second doubt, whether biological research through experiments on animals is justifiable when it is not sure that the results obtained, though true, will have any immediate application to human uses in medical and surgical practice, is best allayed or removed by considering how impossible it is to tell beforehand what the ultimate results of a scientific discovery are to be. A discovery which to-day seems to be what is called "pure," that is, without application, turns out to-morrow to have applications of incalculable value. This is quite as true in biological science as in physical. Galvani was a comparative anatomist who studied osteology, and made excellent observations on the kidneys and the ears of birds. His observation that the dissected legs of frogs twitched when brought in contact under certain empirical conditions with dissimilar metals turned out to have corollaries and applications which neither Galvani nor any man of his generation could possibly have imagined. The invention of the compound microscope and the introduction of the oil immersion lens, which increased illumination and diminished spherical and chromatic aberration, made it possible to discover the infective agents which cause disease and to study the minute changes they produce in living tissues. But these improvements in the microscope have been due to investigation of the way in which light is refracted when passed through media of different density; that is, they were obtained through physical researches not in the slightest degree prompted or guided by any concern for human suffering, or any hope or expectation of contributing to the better treatment of disease in men or animals. Again, the ophthalmoscope, called by Helmholtz his *optical toy*, was another application of inventions in physics which has had great value, not only in studying and treating diseases of the eye, but also in discovering abnormal conditions of the brain. Again, in modern medical and surgical practice the x-rays proved of great value for detecting bone fractures or displacements, calculi, pulmonary tuberculosis, aneurisms, foreign bodies and many other pathological states, for investigating the functions of internal organs like the stomach and intestines, and for curing superficial cancer. Now the x-rays were discovered in the course of a research on electrical discharge through attenuated gases, with no idea in the mind of the discoverer of any resulting values in medicine. Again, the researches on oxidation and combustion and the proofs of the conservation of energy were at first interests of chemists and physicists alone. The application of these conceptions to food values, to respiration and animal heat, and the demonstrations that animal bodies obey these physical and chemical laws, are seen to-day to be essential to any rational conception of bodily activities in both health and disease. And yet Lavoisier, who first stated the true theory of oxidation and combustion, never could have had the smallest vision of the innumerable biological applications of his doctrine concerning oxygen. Let me draw a further illustration from discoveries which are peculiarly interesting in connection with the anniversary we are celebrating. The discovery of ethyl ether by Valerius Cordius, in 1540, and the discovery of chloroform by Soubeiran, in 1831, and by Liebig, in 1832, were both made without the slightest idea of the blessings these liquids were to confer on mankind through their use as anesthetics. The aniline dyes were elaborately studied with an eye single to their industrial uses; and their invaluable uses in bacteriology have been an unexpected and unplanned beneficial application. The basic aniline dyes have a specific affinity for bacteria, and thus they render these minute organisms easily visible. Certain bacteria are differentiated from other bacteria by peculiar staining reactions to these aniline dyes, a use never thought of or imagined in the original chemical investigations. The modern science of pharmacology has been largely dependent on advances in organic chemistry. These advances permitted syntheses of related compounds, and the pharmacologist then studied the physical actions of these isolated compounds in the hope of securing better control of vital processes within the body. Thus through the application of methods developed in organic chemistry new local anesthetics, such as cocaine and eucaine, new soporifics like sulphonal, trional and tetronal, new drugs for reducing fever, antipyrin, phenacetin, acetanelid, and other substances of large medical and surgical utility have been made available; but the organic chemists who made these inventions or discoveries were in search of pure scientific truth, without any thought of, or interest in, the applications of that truth. The development of Louis Pasteur's ideas and of the applications of his ideas illustrate forcibly the way in which researches apparently in pure science, and of prime interest only to individual investigators, may yield practical results of highest value to all mankind. Starting as a chemist, Pasteur was struck by the fact that a certain mold fungus, penicillium glaucum, destroyed dextro-tartaric acid and did not affect levo-tartaric acid in the same solution. From that observation he went on through studies on lactic acid formation, disease of beer, silkworm disease, anthrax, boils, puerperal fever, chicken cholera and rabies, till he and others stimulated by his researches were led step by step to a demonstration of the microbic nature of infectious diseases, to the discovery of methods of conferring immunity to certain diseases and to the bases of aseptic surgery. Although the ingestion of foreign bodies by living cells had been suggested as a means of overcoming invading organisms, Metchnikoff, a zoölogist, first observed this phenomenon, phagocytosis, in a small crustacean, Daphnia. This observation was fundamental in comprehending the relation of phagocytosis to immunity, and in treating disease by stimulation of phagocytosis. One of the most striking conquests of disease in recent times is the practical abolition of yellow fever[6] in civilized countries, made possible by the researches of Walter Reed and his comrades in Cuba. The happy results of their work could not have been obtained if it had not been for the previous researches of entomologists who were interested in the scales and veins on the wings, and the scales and hairs on the bodies, of mosquitoes. The pure entomologists had used these phenomena as means of classifying mosquitoes, and had then studied the breeding habits of the different varieties of mosquitoes. The same remark might be made concerning the entomological researches into the habits of the tick, which is capable of infecting cattle with Texan fever.

These are only a few of the more striking examples of the way in which facts obtained in a disinterested search for truth, whether in biology, physics or chemistry, have subsequently proved to be of the highest importance in medical and surgical practice, and in sanitary science. There are innumerable instances in the history of science and art in which discoveries made without any reference whatever to applications for the benefit of mankind have turned out to be sources of immense benefits. Hence, the lack of certainty as to the results of a given biological research establishes no presumption whatever that the research should not be made, or that it is not justifiable. In this respect there is no distinction between the biological sciences and the so-called exact sciences of chemistry and physics; and within biological science itself no distinction should be made between a research into the nature of a disease or morbid condition and a direct search for a cure or a promising treatment. Hence, well-directed animal experimentation is clearly not only justifiable, but altogether expedient and desirable even when it is not sure that the results obtained will have any immediate application to medical and surgical practice.

The third doubt which I propose to examine is this, Is truth-seeking in biology commendable, even with the help of anesthesia and asepticism, when the research must be conducted at the expense of the comfort, joy or life of animals? This doubt starts the whole question about the proper relation of mankind to the other animals which live with man on the surface of the earth and in its atmosphere. The traditional idea on this subject has been that mankind has dominion "over every living thing that moveth upon the earth," and may use every living thing as he pleases for his own advantage. Accordingly, men train many sorts of animals to labor for them and serve them. The subjection of many animals to human uses is considered, indeed, one of the evidences of civilization. Both civilized and savage men kill animals in order to eat them. Millions of creatures are killed daily for human food.[7] People have no scruple whatever about destroying animal life for human uses. The habits and the natural joys of animals are interfered with on an immense scale by the most humane people without the slightest compunction. Think what it means to millions of cows every year that their calves are killed and they are kept for the most part tied up in barns. Think what indifference to the potentialities of animal life and joy the immense trade

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[6] "According to available records, 100,000 deaths from yellow fever have occurred in the United States since 1793. The cities which suffered most have been New Orleans (40,000) and Philadelphia (10,000). As late as 1878 the mortality from yellow fever in the city of Memphis, Tenn., was more than 5,000 in a single epidemic. About 25,000 are recorded for Rio de Janeiro and nearly 36,000 for the city of Havana from the same cause." James Carroll in Osler's "Modern Medicine," ii, p. 739.

YELLOW-FEVER DEATH-RATE IN HAVANA, 1870–1906, PER 100,000 POPULATION.*

Before American intervention.		After American intervention.	
1870	300.5	1898	67.8
1880	324.5	1899	42.5
1890	153.6	1900	124.0
1895	275.8	1901	6.9
1896	639.5	1902	0.0
1897	428.0	1903	0.0
		1904	0.0
		1905	8.0
		1906	4.3

* Report of the National Sanitary Department of the Republic of Cuba, 1906, p. 79.

"The mortality during the month of October between the years 1889 and 1899 ranged from 240 in 1896 to 25 in 1899 (average for ten years, 66.27). After Reed's work in 1900, Gorgas began his campaign, and in November, 1901, reported, 'During the month we have had no cases and no deaths from yellow fever. Last year [1900] we had during this month 214 cases and 54 deaths. This year the last case occurred Sept. 28, that is, we have gone over two months without a single case or death belonging to Havana.' This record has been continued, and Havana has ceased to be one of the epidemic foci of the disease." G. M. Sternberg: Buck's Handbook of the Medical Sciences, viii, p. 585.

[7] Every year there are slaughtered in the United States more than 50,000,000 beeves, sheep and hogs, and 250,000,000 chickens, turkeys, ducks and geese. Last year more than 360,000 dogs and cats were killed in a single year in twenty of the largest cities of the country merely to remove stray animals from the streets. In New York City alone during the past fourteen years more than 800,000 cats and 400,000 dogs have thus been destroyed.

in eggs implies. How absolutely insignificant is the number of animals used for animal experimentation in all the scientific laboratories compared with the daily use of animal products the world over as food and clothing for mankind! Immeasureably more good is likely to come to mankind from the few hundreds of animals used in medical and surgical research than from a hundredfold their number used as food or clothing. Is the old conception that the animal as well as the vegetable kingdom is for the use of man a wrong one, or is special regard to be paid to those few animals which are made the subjects of medical and surgical experiment? Man not only makes use of all sorts of animals for his own advantage, but he destroys without the slightest compunction multitudes of creatures that he considers noxious to him. The careful housewife kills as many flies, spiders and vermin as possible. A city threatened with bubonic plague hastily destroys all the rats within its borders. No community has the least compunction about exterminating any insect injurious to vegetation, if it can. It cannot be seriously questioned that this has been and still is a rational state of mind in the human race. If the educated public could only see clearly the immense benefits to mankind which have already come and may reasonably be expected to come in much larger amount from the experiments on animals which are necessary to the progress of medical research, if the public could only clearly realize the saving of human suffering and woe which has already resulted and is sure to result in still greater proportion from the sacrifice of a very limited amount of animal comfort and joy, the world would hear nothing more of objections to medical research. The most tender-hearted human being is ordinarily unable to fix a limit to the number of inferior animals he would sacrifice to save the life of one human baby. Now a baby is itself only a hope or a potentiality, its present power of enjoyment being extremely limited. What mother could fix a limit to the number of times a comfortable horse should be bled moderately, or to the number of guinea pigs that should be sacrificed, in order to save her baby attacked by diphtheria? The tender-hearted men and women who object to animal experimentation have no vision of the relief of human beings from agony and woe which has come out of animal experimentation. If they had any such vision, they would themselves manifest extraordinary cruelty and inhumanity in opposing medical research; in their present blindness they attribute delight in inflicting suffering to the patient, far-seeing and far-hoping seekers for biological truth. Which is the truly humane and merciful man, the director of the Rockefeller Institute for Medical Research, who, by producing cerebrospinal meningitis in a few monkeys[8] lately succeeded in providing men with a successful mode of treating that formidable disease, or the lawyer or newspaper writer who endeavored to prevent those experiments on monkeys, and is ready to let the human race remain helpless on the occasional visitations of that heretofore fatal disease? Humanity and mercy are conspicuously the attributes of medical research in the eyes of all people who can see what it has already done and what it promises to do.

The civilized world has come to believe in freedom of inquiry in all fields, as the best means of progress in knowledge, in manners and in righteous living. Now the field of inquiry from which within the last sixty years mankind has received the largest visible, tangible, concrete, demonstrable benefits is the field of medical research applied in the medical and surgical art and in sanitary science. If freedom of inquiry be in general expedient and righteous, should not inquiry be free in this most productive of all fields? To secure and maintain this freedom against the assaults of ignorance and misdirected sentimentality it is only necessary that the public should know what medical research has done and is likely to do.

The appropriateness to the day we celebrate of the subject of this address will not be doubted by any one who bears in mind the fact that anesthesia and asepticism have been indispensable to the medical research of the last forty years.

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Original Articles.

ACUTE GONORRHEAL EPIDIDYMITIS TREATED BY THE METHOD OF BIER.

BY J. DELLINGER BARNEY, M.D., BOSTON.

The methods of treating acute gonorrheal epididymitis are many, some good, some bad, some indifferent.

The treatment to be efficient must

1. Relieve pain.
2. Enable the patient to go about his business.
3. Restore the parts to their normal condition as speedily as possible.

That these requirements are admirably fulfilled by the "*Stauungs-Hyperaemie*" of Bier I have proved to my own satisfaction in a series of some twenty odd cases occurring in my own practice, and in the genito-urinary department of the Massachusetts General Hospital (in the service of Dr. Lincoln Davis, to whom I am indebted for the privilege of treating these cases by the method to be described).

Some of the more recent textbooks on genito-urinary diseases picture and describe at some length a method of strapping the diseased testicle with a piece of rubber bandage secured by a strip of adhesive plaster. The principle is not new and is a most efficient arrow in our quiver when properly applied.

The apparatus as described consists merely of a piece of thin rubber bandage about eight inches long by four inches wide. To the middle of one end of this is stuck a piece of adhesive plaster four inches long by half an inch wide. Thus

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[8] Dr. Flexner used about twenty-five monkeys and perhaps one hundred guinea pigs. He now has records of nearly one thousand human beings treated by the serum, with a continuation of the first successes, a reversal of the percentages from 70–80% mortality to 70–80% recovery, and already a saving, therefore, of approximating five hundred lives.

Dr. Flexner describes the experiences of the monkeys in the experiments; most of them became profoundly and stuporously intoxicated by the disease, and, therefore, did not suffer pain.

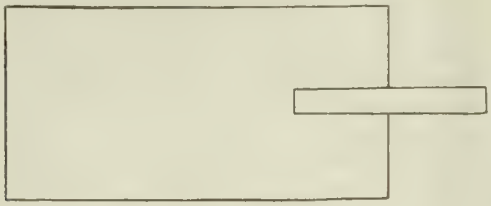

Fig. 1.

The rubber is drawn around the inflamed testicle to the proper degree of tightness and its end secured with the adhesive plaster. The latter, we are told, must be *above* the greatest diameter of the testicle, otherwise the apparatus will slip off. If directions are followed the bandage is pictured (*in a drawing*) as lying smoothly over the testicle, free from wrinkles, and fitting like the cover of a baseball. In actual practice it is impossible to attain this end with a single strip of adhesive. The loose and elastic scrotal skin allows no such nicety of application and the apparatus at once rolls itself up into a narrow strip at the base of the scrotum, or slides downward and drops off at once.

I have modified this apparatus (and this is the only claim to originality which I make) so that by using two strips of adhesive the rubber does actually lie smoothly and tightly over the whole testicle, as shown in the accompanying *photograph* (Fig. 2).

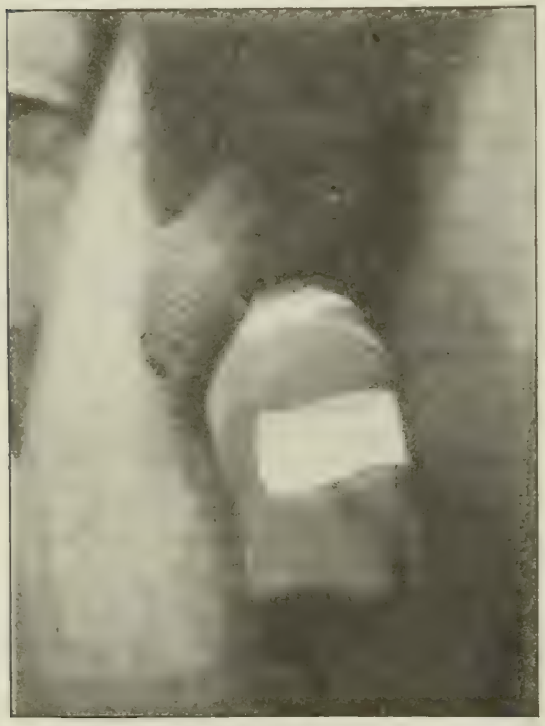

Fig. 2. The ends of the strips of adhesive plaster do not overlap. Note the skirtlike projection of the rubber bandage below the scrotum.

The piece of rubber described in the textbooks is somewhat too short and much too narrow. The dimensions should be approximately nine or ten inches long by six inches wide, being altered to suit the size of the testicle with which the patient has been endowed by nature or disease. I suggest no change except in numbers in the strip of adhesive plaster. I wish, however, to emphasize strongly the point that neither strip of adhesive should be long enough to meet completely around the testicle. This would produce a firm, unyielding band, which, when the scrotum swells, may do harm. An interval of rubber bandage should be left between the ends of each strap so that the swelling may proceed with only the yielding rubber to check it. This is very important.

My method is to apply one strip of adhesive plaster to what is to be the upper corner of the rubber bandage, thus,

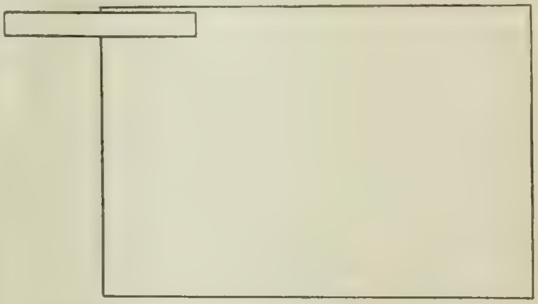

Fig. 3. Shown as ready to apply to the left testicle. The lower strip of adhesive plaster is put on afterwards.

Let us suppose it is to be applied to the left testicle (most commonly affected). With the patient standing, grasp the left side of the scrotum at its base, as close to the pubes as possible, between the thumb and forefinger of the right hand (thumb anterior), making a sort of neck to the sac by the collar of the surrounding fingers. The free end of the rubber is first laid smoothly around the base of the scrotum, between the latter and the forefinger, its upper edge well up into the inguinal fold. The other end of the rubber is then grasped in the left hand and carried completely around the sac, pushing the opposite testicle upward and outward and appearing in front, where it is secured by the bit of plaster. A few wrinkles are bound to occur at this point, as the scrotal skin is released from the fingers and slides upward. The degree of tightness with which the bandage is applied is largely a matter of experience and of experiment with the individual case. If properly applied it should cause no pain, but should, on the other hand, give almost instant relief to the acute suffering. This is often very striking. At this point, the narrowest part of the sac, the bandage is long enough to circle its neck twice or perhaps three times, but, as pointed out before, the ends of the adhesive plaster should not overlap.

The bandage is next pulled downward gently by its lower edge. This obliterates the folds at its top and makes it fit smoothly and tightly over the whole testicle. The two ends of the bandage will now flare apart like an inverted V, owing to the great difference in size between the neck of the sac and the testicle. These two edges are next approximated and overlapped more or less in order to produce a snug fit, and then fastened with a small bit of adhesive. This must be applied *below* the equator of the testicle, for otherwise the whole apparatus will slide upward toward the neck of the sac.

The bandage is cut intentionally so wide that it projects below the scrotum like a skirt (Fig. 2). This skirt serves to cover in the lower end of the testicle and does so automatically when a suspensory is put on (which I recommend), but even the pressure of the clothing is sufficient to fold it together. The whole testicle is now enveloped in a smooth, tight bag of rubber.

As the apparatus causes the most profuse sweating of the parts, the scrotal skin should be watched carefully for maceration and excoriation. This is prevented by a liberal coat of dusting powder applied daily before the bandage is readjusted.

During the first twenty-four or forty-eight hours after the bandage has been put on there is usually marked edema of the scrotum, with moderate cyanosis. The epididymis may show more induration and an increase in size, but it usually may be palpated with little or no discomfort, a great change from the extreme sensitiveness which exists when the patient is first seen.

It should be stated here that the application of the bandage even to the most tender testicle is always possible. Patience and gentleness are the prime factors, and I have yet to see the case where the operation cannot be done with no more than slight and temporary discomfort.

I have dwelt at such length on the details of this method of treatment because I have thoroughly demonstrated its value, and because it is a difficult thing to do properly without considerable practice. The exact details of the procedure are not given elsewhere, so far as I know.

In applying the bandage to the right testicle the same technic is used, but in the opposite direction.

I have seen no case of double acute epididymitis. It is very rare. Such a condition could, however, be treated by the method described by Willy Meyer and Schmieden[1] in which the base of the whole scrotum is constricted by a piece of rubber tubing. Some modification of this could be easily devised so as to cover in both testicles with the rubber bandage. The profuse sweating caused by this I consider quite as valuable as the hyperemia which it produces.

The majority of cases to which I have applied this apparatus, many of them scarcely able to walk because of the painful and tender scrotum, have experienced immediate and permanent relief, so much so that they could walk easily and without pain and in most cases could resume work at once. In some the relief was so great and and so immediate that it was most striking.

The apparatus should be worn constantly, with daily readjustment, until all acute symptoms have subsided and until the induration and edema have largely disappeared. This period may be anywhere from one day to one week, after which the suspensory alone may be worn until a complete restoration to normal is obtained.

Conservatism has been usually observed in the local treatment of the urethra, and even in the presence of a purulent discharge I have as often as not omitted irrigations. Hygiene, plain water *ad libitum*, sandal-wood oil and potassium citrate are the chief adjuncts which I have employed at this time.

Among my cases there was one of tubercular epididymitis with an acute exacerbation. This was not recognized for some days and the testicle was treated like the others. The relief of pain and tenderness occurred at once, but the swelling and induration did not abate. Epididymectomy was done later.

For the ambulatory treatment of gonorrheal epididymitis the method of Bier is the most valuable at our command. There are occasional failures, as with everything else, but its ease of application, simplicity and the excellent results which I have obtained enable me to recommend highly its wider use.

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THE OPSONIC TREATMENT OF PYORRHEA ALVEOLARIS.*

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The consideration of the treatment of pyorrhea alveolaris, as in that of any other form of disease, presupposes primarily a knowledge of the cause or causes of the malady. Unfortunately, a clear and definite source, applicable to all cases, has not as yet been discovered. The fact that so many various conditions have been suggested seems to the writer to prove that no one of them can be attributed to all cases. Among the diseases and conditions brought forward as predisposing agents may be mentioned diabetes, Bright's disease, syphilis, rheumatism, gout, heart disease, liver affections and auto-intoxication from faulty metabolism. Certain forms of nervous disorders, also, and the presence of localized collections of pus in various portions of the body, have been suggested. The question always arises also whether calcareous deposits on the teeth cause pyorrhea, or whether pyorrhea causes calcareous deposits. It will thus be seen that with so many causes at work the observer can scarcely say that any given condition is the real reason for the disease in all or even in many cases. For example, one of the writer's cases was told that the sole cause of her trouble was auto-intoxication from faulty metabolism. She immediately placed herself under the care of an intelligent dietetic expert in New York, where she remained six months. During that time her general condition was greatly improved, but, in spite of careful dental treatment, she lost three teeth and the progress of the disease was not checked.

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[1] Meyer, Willy, and Schmieden: Bier's Hyperemic Treatment, pp. 42-43. Philadelphia.

* Read before the New York Institute of Stomatology, May 4, 1909.

It will probably be admitted by all that the underlying conditions in pyorrhea, from whatever source, is an inflammation of the connective tissue of the gingiva in varying degree, associated in many cases with the presence of pus. Having had considerable experience with opsonic treatment in many other surgical forms of bacterial infection, it occurred to the writer that it might be possible to apply these principles to the opsonic treatment of pyorrhea. Here we have a definite, localized condition of inflammation where, theoretically, at least, opsonic treatment should be of avail. The question at once arose whether or not pyorrhea in every case might not be caused by a deficiency in the normal protective substances found in the blood of the patient. It may not be out of place to review here, briefly, our present knowledge of the rôle of opsonins in the blood.

As you are probably all aware, Wright and Douglas, of London, discovered several years ago that the serum from normal and immune blood contains substances which they called opsonins, from *opsono*, " I prepare the food for." These opsonins, by their action on bacteria, render them more easily digestible by the polymorphonuclear leucocytes of the blood. They showed beyond question that this process depends upon the action of serum upon the bacteria. Bacteria suspended in salt solution resist this process of phagocytosis by washed leucocytes, while bacteria previously mixed with serum and then washed, that is, freed from serum, are quickly taken up and digested by washed leucocytes. Treated in this manner, bacteria are said to be opsonified, while there is no *apparent* change in form, staining reaction or function. The opsonic index means the relative amount of an opsonin in the serum of a given patient compared with the amount in the serum of a normal standard. To find the opsonic index of a patient in regard to a given bacterium, the average number of bacteria taken up per leucocyte under the influence of the patient's serum is divided by the average number taken up per leucocyte under the influence of a standard normal serum under similar conditions. In this way the opsonic indices of all the usual pathogenic bacteria can be found and the results compared with the clinical and bacteriological findings. The opsonic index cannot be taken as a complete index of the antibacterial power of the individual under all circumstances, because opsonins are only part, though probably the most important, of the protective substances formed in the blood. It must be remembered, also, that the opsonic index alone, without clinical and bacteriological corroboration, cannot be taken as a sure diagnosis of infection, because the index may be high or low according to whether the patient is improving or not.

It is now necessary to consider how we can increase the amount of opsonins in the blood. This has been shown by innumerable tests to be possible by the injection into the blood of suitable bacteria in proper amounts after sterilization. This is true in the normal individual as well as in chronic infections due to the corresponding bacterium. Cultures of the organism causing the infection are grown, usually on agar slants or on blood serum, for about twenty-four hours. The growth is then separated from the medium and churned up in the tube with 5 to 10 ccm. of .85% NaCl solution. The growths in several tubes are emulsified in this manner and are then sterilized in sealed tubes at 60° C. for about one hour. The suspension is standardized by counting the number of bacteria per cubic millimeter of fluid. After the bacteria have been killed the tubes are unsealed and cultures are taken and incubated to make sure that the bacteria are dead. When the sterility of the emulsion is proved, it is diluted to the proper standard with .85% NaCl solution, containing .25% carbolic acid. The " vaccine " is then ready for inoculation. Autogenous vaccines, i. e., vaccines made with bacteria obtained from the patient's own lesions, are not always necessary, but are sometimes desirable, as in affections due to the streptococcus and B. coli communis.

On the inoculation of any vaccine there is at first a period of diminished resistance, called the " negative phase," normally from twenty-four to forty-eight hours. This is followed by a period of increased resistance, owing to the increase in the protective elements of the blood, called the " positive phase." After several days there is again a gradual decline in resistance, the so-called " secondary negative phase." It will, therefore, be seen that the next inoculation should be given only during the positive phase, in order that there may be an accumulation of the protective substances of the blood.

Hektoen summarizes as follows the considerations for inoculations:

First, the power of the injected bacterial substances to stimulate the formation of opsonins and other specific antibodies.

Second, the belief that increased formation of such substances may hasten healing of the corresponding infection.

Third, the apparent inability of the body under certain conditions of natural infection to produce such substances without special stimulation.

The essential prerequisites for therapeutic inoculations are:

First, correct etiologic diagnosis.

Second, sterilized, pure culture of the bacterium causing the infection in each disease or sterile products of such bacteria.

Third, the injection of proper doses at proper intervals so as not to necessarily lower the antibacterial power or cause other unfavorable disturbances.

The routine of treatment is as follows: At the first visit of the patient a sample of blood is taken in a small tube for the determination of the opsonic indices of all the pathogenic bacteria that are commonly found. A culture is then taken from the gums around the affected teeth, care being taken to press toward the surface any trace of pus which may be present in the gums around the teeth. From a comparison of the bacteriological findings and the corresponding opsonic indices, a fair indication of the patient's normal resistance to the bacteria present may be obtained. An autogenous vaccine may be made from the bacteria and used in the treatment, or, if thought best for one reason or another, a stock vaccine made from several virulent strains of the same bacteria may be used.

It is my custom to give the injections in the upper arm, having previously sterilized the skin with alcohol. After the injection the needle-puncture is sealed with collodion to prevent the possibility of infection from without. During the course of several thousand injections there has never developed an abscess at the site of the puncture. The dose varies according to the vaccine used. The standard minimum dose of staphylococci is 250,000,000, while that of pneumococci is 50,000,000. Our vaccines are standardized at staphylococci, ½ ccm. = 500,000,000; pneumococci, ½ ccm. = 100,000,000. These are mentioned as being the two most common bacteria found in inflammatory conditions in the gums. The injections are repeated every three to five days according to the opsonic index, the local and constitutional reactions and the experience of the doctor.

Bearing this necessarily brief description of opsonic principles in mind, we will now return to a consideration of their application to the disease. First, however, let me state that a complete history of every case is obtained to see what conditions there may be present which may have a bearing on the disease, such as past and present sicknesses and diatheses and the mode of life. The urine is also carefully examined for signs of renal disease and diabetes.

An analysis of the author's seventeen cases shows that in six cases the culture revealed a practically pure growth of pneumococci. In all the others the growth was principally of pneumococci with a small admixture of staphylococci. As compared with cultures taken from normal mouths, and in connection with the opsonic indices, this showing is most significant. We all know that the mouth contains many bacteria normally, but cultures never show such growths as were found in this series. We will now examine the opsonic indices in these cases. In one case the index to pneumococci was 48% of normal. Seven varied from 52 to 59%, 2 from 61 to 65%, 4 from 70 to 78%, 1 at 80%, 1 at 95% and 1 at 120%. The indices for staphylococci varied from 36 to 145%, all but four being below 87%. It will thus be seen that the presence of these bacteria in the gums was corroborated by the corresponding opsonic indices, showing that the blood of these patients was deficient in the normal protective substances. The occasional high indices are accounted for by the fact that the blood was temporarily, at least, manufacturing more protective substances than usual. In all cases of doubt a series of indices, taken at regular intervals, will show whether the high level is being maintained.

In but one case was there any sign of renal disease or diabetes. Two patients had an indefinite previous history of rheumatic tendency. Two others had constipation and indigestion to a slight degree. In four there was a precedent family history of Riggs' disease. Every case had receding of the gums. Eleven cases showed active pus which could be expressed on pressure around the teeth. The duration of the disease varied from three to forty years. The presence of the spirochetæ refringens was not demonstrated in any case. Except as noted above, the patients were all in good general physical condition. At the time of examination all the cases showed red and tender gums about the affected teeth, and all but two bled easily. Four patients had no loose teeth at the time, but two of these four had lost teeth previously from the disease. All cases were referred to me by careful and capable dentists and all were having thorough dental treatment. One patient had had, in addition, I K I treatment locally during the previous year, without apparent benefit. Whenever it was necessary, as in constipation, rheumatism or other abnormal condition, appropriate remedies were given.

The length of time of opsonic treatment varied from four weeks to nine months, with remissions from time to time. The shortest case was a lady sixty years old, March 21, 1908. Her gums were red, inflamed and bled easily. There was recession of the gums, but no loosening of the teeth, though she had previously lost one. A culture showed a pure growth of pneumococci, while her opsonic indices to pneumococci varied from 67 to 81% of the normal. Injections of an autogenous vaccine of pneumococci at intervals of three and four days, increasing steadily from 50,000,000 to 140,000,000, were given for four weeks. At the end of this time the gums were of normal appearance, there was no tenderness or bleeding, and there has been no recurrence for the past year. The longest case noted is of an entirely different character.

Feb. 26, 1908. E. G., sixty-five years old, had had pyorrhea for forty years. Had lost all her upper teeth, all the lower molars and two bicuspids. The gums around the lower teeth, which were all loose, were spongy and ulcerated, and pus could be seen around all the teeth. Pain on eating was so great that she had made no attempt to chew meat for many months. Cultures from the pus showed a growth of staphylococci and pneumococci, and the corresponding opsonic indices were 36% and 58%. There was a definite history of an acute lighting-up of the disease one year previously, following an attack of grip. It seems very probable that in this case the infection secured a foothold at that time, from which it was never dislodged. Autogenous vaccines were made, and injections, varying from 200 to 500 million staphylococci and 60 to 120 million pneumococci, were given every three or four days. There was a gradual, though slow, improvement during the first month. The ulcerations began to heal, the odor was less foul and the tenderness and bleeding were greatly diminished. During the next month the improvement was more marked, and by the end of the third month, the gums were of normal color and texture. There was no bleeding and the patient could chew with comparative comfort. During this time, however, three very loose teeth, the lower left incisors and canine, which had been held in place by silk from the beginning of treatment, were removed, cleaned and tied in place again. The right lower canine and first bicuspid, which had been slightly loose, were found to be much more firmly placed than before. The indices taken from time to time remained consistently above the normal. For the past nine months there has been no inflammation of the gums, and, consequently, no sign of pus. Owing to the fact that some of the teeth have become almost solidly placed, the patient insists on continuing the treatment from time to time in the hope that all the teeth will become firm. She has been told many times that where the alveolar process has been absorbed there is probably no chance of its regenerating so that the teeth can become very firm. In spite of this she is most hopeful and insists on having the treatment, saying that, at any rate, it makes her feel better. The teeth which were taken out and cleaned are now held in place by a gold brace behind the teeth and there appears to be a slight adherence of the gums around them.

Ranging in severity between these two examples are many types, some of which yielded readily to treatment, and others which were more resistant. In the cases where there was no loosening of the teeth the beneficial results were more quickly obtained, as may be imagined. In all cases where there was tenderness, inflammation and bleeding of the gums, relief was obtained usually inside of one week. In most cases where pus was present there was considerable resistance to treatment, lasting from a few weeks to four or five months. In a few instances loose teeth became markedly firmer. A brief résumé of cases may be of interest.

Feb. 29, 1909. T. B., fifty-nine years. Treated for past ten years for pyorrhea. Has lost two upper molars. Has several loose teeth at present. General recession of gums, which are tender and bleed easily. Hurts him to chew meat. No pus seen. Treated seven weeks with staphylococci and pneumococci vaccines. At end of that time gums were in healthy condition. Could chew beef easily and there was no bleeding from use of a brush. Teeth felt firmer, but were still slightly loose.

March 5, 1908. E. C., twenty-eight years. Treated for twelve years. Has lost three teeth. Receding of gums. Several loose teeth with pus around them. Is wearing a brace. Gums red, swollen and painful most of time. Does not attempt to chew meat. Treated three months with staphylococci and pneumococci vaccines with marked benefit. When she stopped treatment, in order to go away for the summer, there was no inflammation of the gums evident. There was occasionally a trace of pus seen. Was told to return for treatment in the autumn if she still had trouble, but did not appear. In this case there was no evident tightening of the teeth while she was under treatment.

Oct. 20, 1908. A. C., forty-seven years, three years' duration. Two loose teeth at present. Gums slightly inflamed and tender. No pus seen. Bleeds easily on using a brush. Injections of pneumococci and staphylococci vaccines for nine weeks, when she was obliged to leave town. At that time the gums were of normal color and were not tender or bleeding. Teeth felt much less insecure and she could chew without tenderness.

June 29, 1908. E. F., forty-six years. Teeth treated for past ten years, scaling, etc. Several teeth loose for three or four years. Gums red and infiltrated about loose teeth, tender and receding. Hurts him to chew. No bleeding. No pus seen. Treated five weeks with autogenous staphylococci and pneumococci vaccines with marked benefit to gums, but teeth were still loose. Went away for three months' vacation. On his return gums were in fairly good condition. Could bite off the end of a cigar with his incisor and canine teeth, which he could not do before, because of the looseness and pain. Resumed treatment for one month as a prophylaxis. At end of month gums were in healthy condition and the teeth were much firmer. Patient was seen four months later and the disease had recurred. He promised to return for treatment, but has never appeared.

Nov. 19, 1908. P. F., forty-nine years. Disease of ten years' standing. Frequent scaling of teeth and local treatment with I K I for past year without benefit. Sent to me by his dentist as being a particularly hard case to treat. Has lost several teeth. Receding of gums for many years. Gums red and boggy, with free pus around four loose teeth. Cannot eat meat because of pain on chewing. Given autogenous vaccines of staphylococci and pneumococci since first of last December, and is still under treatment. By the end of the month the gums were in nearly normal condition, with no redness or tenderness. There has been constant improvement since then. At present the only symptom noticed is a rare trace of pus around one of the lower incisors. The loose teeth have all become markedly firmer, especially the lower incisors.

March 24, 1908. W. G., sixty years. Fifteen years' duration. Has lost eight teeth. Two loose teeth at present. Gums slightly inflamed, but there is no pus present. The loose teeth are very tender and painful on chewing. Given an autogenous vaccine of pneumococci for five weeks, at the end of which time she discontinued treatment, as she lived at a distance of 75 miles. When she stopped treatment there was no inflammation of the gums, and no tenderness or pain in the teeth on chewing. When heard from recently there was no recurrence since one year ago, and the loose teeth were much firmer.

Feb. 17, 1909. A. H., sixty-four years. Pyorrhea for ten to twelve years. Has lost two teeth recently and there are four loose teeth at present. Gums bleed easily and occasionally get red and tender. Some pus around upper molars. Eats no meat because of pain on chewing. Because of looseness and projection of one of upper left molars, teeth do not come together well. Cultures show a pure growth of pneumococci. Was given autogenous vaccines of pneumococci and staphylococci. In this, as in several other cases, was given the staphylococci vaccine because of a low opsonic index and for its stimulating effect. Treatment lasted six weeks. At the end of that time there was no redness or tenderness of the gums, and the teeth were not at all painful. No discomfort on eating meat. Feels much stronger and in better general condition. The upper left molar, which was loose and projecting, has gone back into place and is firmer, so that the upper and lower teeth meet better. Treatment is discontinued because patient is going abroad.

Oct. 12, 1908. A. K., forty-five years. Duration of three years. Gums receding and occasionally are red and tender and bleeding. No loose teeth and no pus seen. Treated for past year in London by scaling, etc. After opsonic treatment for two months her dentist advised stopping for a while as, in his opinion, the condition was entirely relieved. No recurrence in past six months.

March 29, 1909. C. R., fifty-three years. Fifteen to twenty years' duration. Has had bleeding for years. Gums get red, but only slightly painful. All of lower incisors are loose and are painful on chewing. Pus present around incisors with pure culture of pneumococci. After one week teeth ceased to be painful on chewing. Has been under treatment but two weeks, and already notices considerable improvement.

Jan. 25, 1908. S. S., thirty-eight years. Five or six years' duration. Has had receding of gums since beginning and has lost three teeth during past year. Pus always present as teeth begin to loosen. At present none of the teeth are very loose, but two are just beginning. Gums are red and tender and there are small ulcerations about the loose teeth. No especial bleeding except when a stiff brush is used. After two weeks' treatment there was much less redness, and practically no tenderness. The teeth also felt firmer. At the end of one month the ulcerations were all healed and the gums were apparently normal. Two weeks later the teeth were quite firm and treatment was stopped. When seen over a year later there had been no sign of recurrence.

March 16, 1908. C. W., thirty-two years. Two years' duration. At intervals of about six months gums become irritated and tender. At present the gums around the two lower middle incisors are dark red and tender. Also same condition around right upper canine. No loosening of the teeth. Pus present around upper canine, and gives pure culture of pneumococci. Under treatment for ten weeks with steady improvement. At the end of that time the gums were normal in color, and were not tender. No pus around the tooth. Told to return if there was any further trouble, but has not been heard from.

May 9, 1908. K. W., fifty years. Under treatment for past fourteen years and has lost two teeth. Is under treatment for renal disease. Gums are red, spongy and tender. There are several loose teeth which are tender and painful. Pus present around first lower right molar. Pure culture of pneumococci. Under treatment for seven weeks with autogenous vaccines, with great improvement. When she discontinued, in order to go away for the summer, her dentist said she had not been so well for years. The gums were normal in color and were not tender. The teeth were still loose, however. When heard from seven months later the trouble had reappeared, but she never returned for treatment.

Oct. 17, 1908. R. W., fifty years. Has had trouble about four years, and has lost five teeth. Gums red, inflamed and tender, and pus is always present about five teeth, which are very loose at present. Chewing of food is very painful. Treated about ten weeks with autogenous vaccines of staphylococci and streptococci. At the end of treatment, which he stopped because of his business, which took him away from the city, he felt much better locally and generally. The gums were of good color, not tender, and the teeth felt much firmer. There was no discomfort on eating and there had been no pus for two weeks.

Two other cases, not of pyorrhea, but of infection through the gums, may also be of interest:

Nov. 28, 1908. D. B., twenty-two years. Born and brought up in Ireland, where she lived until three or four years ago. Has had hypertrophy of the gums since she was five years old. Gums are always red and tender and bleed very easily, particularly when eating. On account of the pain she does not chew her food and is suffering from poor digestion for this reason. Pus is usually present around the upper and lower incisors. Culture shows practically a pure growth of pneumococci with a few staphylococci. After a week's treatment with autogenous vaccines there was very little redness and bleeding of the gums, and the appetite was much improved. At the end of a month she stopped treatment as she felt so much better. The gums were of normal color, much shrunken from the former condition and there had been no bleeding for two weeks. She could chew meat easily, had a splendid appetite and her general condition was excellent.

H. R., twenty-nine years. Two years previously, August, 1907, had had treatment of left upper canine by a country dentist, who for some reason filled the canal with an arsenical preparation. This was removed later by her regular dentist. One year ago (April, 1908) she developed an abscess in roof of mouth near root of left upper canine. This abscess was incised and pus containing staphylococci and pneumococci was evacuated. No bare bone felt. Given autogenous vaccines for three weeks, during which time the abscess healed. One month ago another abscess in same location appeared and was opened. The tooth was removed and a communication was found between the opening in the roof of the mouth and the socket. Bare bone was felt with a probe. It seemed singular that the channel remained open and discharged pus in spite of opsonic treatment, until, one day two weeks later, a sequestrum ¼ inch square and ⅛ inch thick, was removed from the palate process. The wound then promptly healed.

CONCLUSIONS.

It seems probable that, underlying all the various conditions which contribute to the onset and progress of pyorrhea, there is a deficiency in the normal protective substances in the blood. This is shown by the almost invariably low opsonic indices to the same bacteria which are found to be active in the gums. We have found that, whatever conditions may be present, as soon as the blood is stimulated to form new protective substances there is an immediate improvement in the patient's condition, both locally and generally. It must be distinctly understood, and this point cannot be too strongly emphasized, that in order to get the best results the opsonic treatment *must be* combined with careful and thorough dental treatment. The statement is often made that the disease can be held in check and sometimes cured by dental treatment alone. This is probably true in some cases, but most of the patients seen by the writer were sent by good dentists as cases which they were unable to benefit. As a rule, the opsonic treatment is slow, and it may take several months before the gums are free from pus and in a healthy condition. Especially in these cases is it necessary to assist nature by removing calcareous deposits which act as a constant irritation, fastening loose teeth for the same reason and correcting malpositions. Wherever it is found that some constitutional condition is complicating the case, this must be relieved as far as possible, as in any other disease.

The writer is often asked whether teeth that are already loose can become firmly placed again. Patients are told that the cause of the teeth becoming loose is the absorption of the alveolar processes about the sockets, and that in all probability opsonic treatment will not cause a regeneration of the bony structure. In the face of this statement there is absolutely no doubt that in several cases the teeth have become firmer. Another question often asked is as to the length of time the improvement will continue after treatment has stopped. It is too soon to answer that question satisfactorily, owing to the shortness of time which has elapsed since this method of treatment was begun. Two cases which have had no treatment for nearly fourteen months have had no recurrence. It is my procedure to tell patients that when they are relieved once, it is easy, reasoning from results obtained in opsonic treatment of other diseases, to hold the disease in check on the first appearance of further symptoms. It is unfortunate that many of the patients have had the trouble so long and have suffered so much from it that, unless they obtain immediate results and are promised future immunity, they easily become discouraged.

Judging from the results so far obtained in all stages and degrees of pyorrhea, it is apparent that we now have at our disposal a method of treatment which, though often slow, is constant in its good results, especially when combined with thorough dental treatment.

The writer is indebted to Dr. L. S. Medalia, of Tufts College Medical School, for preparations of vaccines and determination of the opsonic indices.

EPONYMIC EXPRESSIONS IN MEDICAL LITERATURE.

BY FIELDING H. GARRISON, M.D.,

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French critics have a phrase, "*la science des noms*," to designate the fine instinct which certain poets have for the choice of proper names which give an added dignity of sound and sense to their lines, a talent of which we have remarkable and familiar examples in the blank verse of Milton and Keats, Matthew Arnold and Swinburne. The medical profession of to-day, or at least that part of it which occupies itself with literature, is sometimes confronted with a problem requiring similar *flair*, namely, in the selection or rejection of so-called eponymic terms, derived in most cases from the names of prominent contributors to medical science. That the difficulty is one that bids fair to grow to alarming proportions is sufficiently indicated by the fact that a dictionary of medical eponyms recently compiled by Drs. Wilfred M. Barton and Walter A. Wells, of Washington, D. C., contains about fifteen thousand terms of this kind.

The use of adjective expressions derived from names of persons and places is by no means confined to the medical sciences, but is probably co-existent with the history of European culture. Not only does the botanist and zoölogist, the chemist, the physicist and the geologist, employ terms like the Rafflesia, Russell's viper, duboisine, Galvanism, Wollastonite, etc., but they are to be found in all branches of human activity, as witness expressions so varied as Buddhism, the Odyssey, Homeric laughter, Pindaric odes, the "*sortes Virgilianæ*," the Medicean Venus, Occam's razor, Buridan's donkey, Franciscan friars, the Bodleian, St. Paul's, "Marlowe's mighty line," the mode Palestrina, Newton's laws, the Spenserian stanza, Vandyke beards, Gobelins, "Coke on Littleton," Kantian categories, the Waldstein sonata, Puseyites, Horner's method, "middle class Macaulayese," Allmack's, Tattersall's, Cook's, Lloyd's, Bradshaw, Bradstreet, Weisbach, Impeyan pheasants, Elgin marbles, the lex Heinze, Tesla motors,— each of which connotes something definite and particular to differently specialized minds. Medical literature has a terminology equally bizarre and complicated, e. g., to list only a few instances, the Asclepiads, the facies Hippocratica, Galenicals, St. Anthony's fire, the Eustachian tube, Mesmerism, Daltonism, Fowler's solution, Bright's, Guy's, Listerism, Banting, Cheyne-Stokes respiration, the Sims position, Bertillonage, Masochism, Pasteurization, Esmarching, the Petri dish, Mendel's law, Eddyism. All this indicates that eponyms have been constantly employed as a specialized sort of "conceptual shorthand," connoting in each case some definite thing to the mind. For instance, such an eponym as "the Stadler quintet" will be intelligible only to one interested in clarinet music, and in Mozart's music in particular. The phrase "Cavendish Laboratory" conveys a great deal to the mind of a mathematician or physicist, the Friedrich-Wilhelms Institut to an army surgeon, the Albertina to a collector of etchings, the Vesalianum, Hallerianum, to those who have studied medicine at Basle or Berne; and each university precinct or college close has its special professorships, foundations, halls, laboratories, scholarships and prizes named after private individuals, the importance or significance of whom are intelligible only to the initiated.

The use of medical eponyms in recent times seems to be most common among the Latin and Anglo-Saxon nations, and two principal reasons can be assigned for their increase — the intense local patriotism of the Latins, and the tendency of the English-speaking peoples towards laconic, serviceable modes of expression, whether in despatch of business or pleasure. The French, as Henry James has somewhere remarked, "do their duty by their great men," and an examination of the enormous number of new eponyms which they have introduced will show, I think, that they like to call a new disease or operation by the name of its discoverer or originator in the same spirit in which they have conferred the names of distinguished French physicians upon the streets of Paris: *Aux grands hommes la patrie reconnaissante.* This modern spirit of national *réclame* is by no means confined to the French, however, and in justice to this open-minded and generous people it is fair to note, as Rolleston has recently reminded us,[1] that the French were also the first to call disease of the suprarenal capsules "Addison's disease," or dilatation of the aortic arch "Hodgson's disease," or heart block "Stokes-Adams disease." This eponymic mode of honoring the great names of medicine is far from reprehensible in itself; indeed, it stands for an ever-growing recognition of the value of the physician's services to mankind and the extension of a more fraternal spirit among physicians themselves. In the past the ingratitude of the public towards the profession and its own internecine backbitings were proverbial. Medical editorials of not so long ago teem with references to " the doctor slighted," and "*Immer ist Undank Loge's Lohn* " was the constant refrain. Now we have changed all that, and, in evidence of a progressive era of good feeling, we have to-day the confraternal banquet, the postprandial speech, the filial "*Festschrift*," the medical medal, and (*longo intervallo*) purses of money raised by admiring friends and colleagues. Last but by no means least, we have the eponym, which, latterly, has become a special characteristic of an age censured for " the glorification of the average man." There are eponyms (some of them conveying all the implications of Lord Randolph Churchill's epithet " double barreled ") which remind us of the way in which the names of celebrated cooks and epicures have been immortalized in the menu card. What of the Millard-Gubler syndrome, the Erb-Goldflamm symptom-complex, the Alexander-Alquié-Adams operation? Or, to take a few eponyms from the French, what of such phrases as " *gibbosités pòttiques*," " *scléroses periglissoniennes*," "*infection pseudo-eberthienne*," " *cancer vaterien genre wirsungien*," " *d'arsonvalisation* " or (save the mark!) *Keating-Hartisation?*

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[1] Lancet, London, 1909, i, 1440.

Although the Latins, as we have said, have been the most fantastic improvisators of eponyms, the absurd growth of " *les maladies à noms propres* " has not escaped the keen intelligence of French editors, who have promptly dubbed the tendency " *la maladie des noms propres*." M. Blanchard, in particular,[2] has inveighed in humorous fashion against this " *syndrome de baptême*," as he calls it, declaring it to be a neurosis in which the victim is seized with an uncontrollable impulse to discover some new-fangled disease and bestow his name upon it. As exciting cause he assigns the immoderate desire of the patient for self-advertisement. The differential diagnosis is difficult, the prognosis gloomy, pointing toward a veritable Babel of signs and syndromes. The only effective treatment is evacuant, the expulsion of these parasitic terms from one's vocabulary and the substitution of a rational exact nomenclature. Not one of these perfervid eponymists, our author declares, has ever given his name to the syphilis. Even Job's patience, he holds, would not have been equal to that, and we read how sixteenth-century nations successively but unsuccessfully blackguarded each other with appellations like the French pockes, the Spanish ditto, the mala Napoletana and so forth. When the origin of syphilis was finally attributed to America, which was not then old enough to defend itself, Amerigo Vespucci protested, " If you wish to give my name to something I have *not* discovered, give it to the West Indies." Concluding his diatribe, M. Blanchard in supplicating accents implores the eponymist to spare not only the student in his ignorance, and the overtaxed memory of the hard-working practitioner, but the poor sick person who demands active treatment rather than " apocalyptic neologisms."

Since we have over fifteen thousand eponyms among us and cannot engage to remember them all, the question is, What criterion should guide us in their choice or their rejection? Speaking for anatomy alone, Wilhelm His, in his " *Anatomische Nomenclatur* " (1902) has summed up the advantages and disadvantages of the use of eponyms briefly as follows: Eponyms are excellent mnemonic devices for students, and, mainly for that reason, should not be entirely discarded, but in medical literature their large number and their indiscriminate use leads to great confusion, especially where we find different countries using different eponyms for the same thing. His is decidedly in favor of retaining the anatomic eponyms, if only out of a feeling of reverence for the great names of the past, and he maintains that if such terms do not always give credit where credit is due, it is the business of historical criticism to straighten out these differences. Recently, Dr. Frank Baker has shown that the iter in the forebrain known as the aqueduct of Sylvius has for a long time, and in almost every textbook, been wrongly attributed to the chemiatrist Franciscus Sylvius de le Boë, although it was known long before the time of either Jacobus or Franciscus Sylvius, and, consequently, not really discovered as such by either. It is probable that other anatomic eponyms of this kind will gradually lose their status in the light of destructive criticism, and it is also probable that they will die hard. The *Basle Anatomical Nomenclature* of 1895 preserves the eponymic adjective in each case as a bracketed genitive, e. g., Ligamentum inguinale [Pouparti], thus giving each of these terms a fair chance of survival in its struggle for literary existence. Following the argument of His we may agree that the best-known and best-established eponyms in other branches of medicine should also be preserved, for reasons similar to those he has given for anatomy. In the classroom, the hospital ward, the laboratory, the surgical amphitheater and the post-mortem room, the use of expressions like Skoda's resonance, Cheyne-Stokes respiration, Syme's amputation, Peyer's patches, is sure to awaken and stimulate a lively interest in the great names of medicine among ambitious, inquiring students whose minds are still in the plastic stage. Here, as His insists, they have a unique value as mnemonic and pedagogic devices. Again, when applied to something definite and particular, as in the finer anatomy of the nervous system and sense organs, or in terms like Hutchinson's teeth, Fehling's solution, McBurney's point, they are labor-saving devices of considerable value and deserve retention in the physician's vocabulary. But when used in such an indefinite way that they suggest nothing special to the mind, as in the all too numerous operations and syndromes, they are blind guides and ought to be rejected on account of the confusion they are liable to create. For example, "Paget's disease" may connote osteitis deformans, eczema of the nipple, or recurrent fibroma of the breast. The term "Friedreich's disease" has sometimes confused paramyoclonus with hereditary ataxia. "Dubini's disease" may be taken or mistaken for either hookworm infection or electric chorea. Four different diseases immortalize the name of Percival Pott, namely, aneurismal varix, senile gangrene, caries of the spine and pressure paralysis of the spinal cord, and there is, besides, Pott's fracture of the fibula, which is also called by the name of Dupuytren. There are four different varieties of muscular atrophy which may be eponymically ascribed to Aran and Duchenne or Cruveilhier, Charcot, Marie, Tooth, Erb, Landouzy, Dejerine and Leyden. Charcot's disease may be disseminated sclerosis, amyotrophic lateral sclerosis (poliomyelitis or muscular atrophy) or the spinal arthropathy of locomotor ataxy, and we have, moreover, Charcot's crystals in asthma. Duchenne's disease may be bulbar (glosso-labial) paralysis or pseudo-hypertrophic paralysis, and the former is also called the Aran-Duchenne type of muscular atrophy. Erb's disease may be juvenile or idiopathic muscular dystrophy (upper arm type of palsy) or syphilitic spinal paraplegia or myasthenia gravis, which is also called the Erb-Goldflamm symptom-complex. Then we have Erb's sign in tetany, Erb's sign in acromegaly, and the Erb-Westphal symptom in ataxia. Marie's disease may be hereditary cerebellar ataxy, hypertrophic pulmonary osteo-arthropathy or the rhizomelic form of spondylosis deformans which last is also known as the Weill-Strumpell disease; and Marie's name may also be applicable to acromegaly, since he did most to establish it as a clinical entity. Exophthalmic goiter may be called Parry's, Marsh's, Parson's, Stokes', disease in England; Grave's disease in Ireland; Flajani's disease in Italy; Basedow's disease in Germany. Some diseases and syndromes have, like America, been called after people who never dreamed of them in that connection. Thus the names of St. Guy, St. Vitus and St. With are eponymic for chorea, while St. Avertin, St. John and St. Valentine are sponsors for epilepsy. A certain rhythmic movement of the head synchronous with the radial pulse and pathognomonic of aortic and other disturbances of the circulation has been called by the French "Musset's sign," in honor of the poet, Alfred de Musset, who exhibited it in his own person; and congenital myotonia was called Thomsen's disease because Thomsen had it; Sir Jonathan Hutchinson calls a variety of lupus vulgaris "Mortimer's malady" after a patient named Mortimer; and the "Flexner-Harris strain" of the dysentery bacillus was isolated by Flexner from the stools of a patient named Harris.[3] In Germany, the term "Bier's method" is indifferently applied to subarachnoid injection of cocaine for anesthetic purposes and to "artificial hyperemia," although the former method was devised by Dr. J. L. Corning, of New York City, at least fifteen years before Bier proposed it,[4] while the latter is only an extension of old-fashioned dry-cupping. Eleven different structures have been called after the Italian anatomist Corti, five after Vieussens, three after Valsalva. The name of Sir Astley Cooper has been preserved in Cooper's fascia, Cooper's hernia, Cooper's irritable breast and Cooper's irritable testicle, not to mention four different surgical operations. When we come to modes of surgical procedure, we find that the possibilities of eponymic confusion are even greater. An examination of Gould's exhaustive list of surgical eponyms shows that von Langenbeck is credited with originating at least 21 different surgical operations; von Graefe and Sedillot with 15 each; Dieffenbach and De Wecker with 12 each; Dupuytren with 11; Farabeuf, Nélaton, Roux with 10 each; Arlt, Knapp, Maisonneuve, Ollier, Syme, with 9 each; and so on down the names of 26 surgeons, each of whom has 4 new surgical operations to his credit. Further, many of these surgical eponyms have been hyphenated in order to bracket together the names of earlier and later operators who had to do with their introduction. Thus we have the Albert-Frank-Kocher method of gastrotomy, also called the Ssebanejew-Frank method; the Antyllus-Kuhnt operation for aneurism; the Pirogoff-Hancock amputation; the Lisfranc-Hey amputation; the Heinecke-Mikulicz operation for pyloric obstruction; the Ogston-Reeve operation for genu valgum; the Posadas-Bobrow operation for hydatids; the Wladimiroff-Mikulicz tarsectomy; the Batty-Hegar oöphorectomy; the Schönbein-Mosetig-Moorhof staphyloplasty, the Rose-Andrews or Andrews-Andrews method of valvular gastrotomy; the Sauter-Recamier method of hysterectomy, and the Porro-Veit, Porro-Müller and Sänger-Leopold methods of Cesarean section. In clinical medicine the tendency towards hyphenated or "double-barrelled" eponyms is quite as bad, as witness the Moeller-Barlow disease, the Flindt-Koplik spots, the Braun-Fernwald sign of pregnancy, the Bell-Bernhardt phenomenon, the Brach-Romberg symptom, the Ritter-Rollet phenomenon and the Ritter-Valli law. It is evident from these examples that no beneficient goddess, but only blind chance, has presided over the devising of eponyms. As His points out, they have had little to do with the distribution of historical justice, and the attempt to repair the omission by the use of the hyphen seems a rather clumsy expedient. Then we say Scarpa's triangle, Paget's nipple, Pirogoff's amputation, Wilde's incision, but we do not say Rhazes' smallpox, Auenbrugger's method, Laënnec's pneumothorax, Helmholtz's ophthalmoscope or Fitz's appendicitis. And on what principle do we immortalize the names of so many seventeenth-century anatomists or modern surgeons and ignore the names of Vesalius and Ambroise Paré.

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[2] Rev. Méd. de la Suisse Rom., Genève, 1898, xviii, 645–648.

Another strong objection to the indiscriminate use of eponyms is found in the case of the bacteria and other parasites, animal and vegetable, which either cause disease or are what Manson calls

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[3] See H. D. Rolleston, Lancet, 1909, i, 1441.

[4] Corning: N. Y. Med. Jour., 1885, xlii, 483–485.

" vectors " in its transmission. In naming plants and animals, botanists and zoölogists follow the " law of priority," in virtue of which a name in natural history is attributed to the man who first bestowed it and not to the man who first described the organism so-called. To take a case in point cited by Stiles, we know that Theobald Smith and Kilborne first described the parasite of Texas fever as " pyrosoma " in 1893, but as this name had already been used by Péron for another species as early as 1804, medical zoölogists have adopted the name " piroplasma," proposed by Patton in 1895. We, therefore, credit Smith and Kilborne with the discovery of the parasite, the act for which they were responsible, but we do not give them credit for the name " piroplasma," since they were responsible for an error of omission in giving the parasite a name which had already been pre-empted. Or, as Stiles puts it, " the act of naming an animal is not identical with the act of describing an animal."[5] This simple rule not only localizes responsibility, but prevents further confusion in the nomenclature of organisms yet to be discovered. To illustrate the possibilities of such confusion, Stiles instances the case of the special parasite of hydatid disease (Taenia echinococcus) which was discovered by Goeze and to which some 110 different names have been given by different investigators. Linnaeus, whom Stiles calls the " father of biological nomenclature," introduced the so-called binomial nomenclature, which gives to each animal or plant a generic or family name and a specific or given name. As many of these species (estimated at 312,015 in 1886) have now either the same name or else identical species have been given different names under different conditions of space and time, it has been a fundamental aim of modern biologists to bring some uniformity into the chaos of nomenclature. In carrying forward this important work, the names of Rudolphi, Strickland, Dall, Lacepède, Raffinesque, Blanchard and Stiles are entitled to the lasting gratitude of all who have to do with natural history. As there are many cases of identical bacteria having different names and different bacteria having the same name, the nomenclature of diseases due to pathogenic organisms is beginning to assume a complicated aspect, and the rules laid down by Stiles for the animal parasites ought to apply to the bacterial diseases as well. For example, " Vincent's angina " is an ulcero-membranous inflammation of the tonsils, which was first described by Bergeron, while the pathogenic bacillus of the same was first described by Vincent and definitely ascribed to the disease by Thiry and Baratoux. It is difficult to see why the disease should have been made eponymic for Vincent any more than for Bergeron or Thiry and Baratoux. Again, if different specific infections are to be called after the discoverer of the bacteria or parasites causing them, there will be great confusion wherever different diseases have identical symptoms, as in the various septicemias and toxemias, the paratyphoid and paracolonic infections which have been confused with typhoid, and the symbioses or mixed infections. We say " Leishmaniosis," but do we yet know what the Leishman bodies really are, whether individual unchangeable parasites or transition forms, like the crescents and halfmoons of the malarial plasmodium? Physical chemistry is already beginning to throw grave doubts upon the actual pathogenicity of any micro-organism except under certain definite thermodynamic conditions, and it is a well-known laboratory fact that only a limited number (or " strain ") of any pathogenic bacillus will produce disease under the conditions of Koch's postulates. So long as these things are not clearly understood, it is obviously misleading to dub typhoid *"Eberthian infection "* as the French do, since we do not yet know whether the bacillus typhosus is indeed the *causa causans* of the disease, or whether typhoid is a transition form or sub-variety of some general family of intestinal infections. The proper nomenclature of diseases due to animal parasites will be of even greater importance for the medicine of the future. Manson has recently given a remarkable list of 27 specific infections for which no less than 60 different animal parasites are pathogenic, while 30 well-defined infections of unknown origin are probably due to such parasites;[6] and we need only refer to the work of Laveran, Koch, Walter Reed, Schaudinn, Ross, Manson, Leishman, Donovan, Bruce, Councilman, Flexner and Stiles to appreciate the recent advance of medical zoölogy. To put this work upon a firm foundation for the future, Stiles has not only prepared an exhaustive " Index Catalogue of Medical Zoölogy," but has undertaken the difficult task of revising and reclassifying the generic and specific names of all known animal parasites. It would be impossible to overestimate the importance of such work as this, not only for tropical medicine, but for the future classification of disease.

It will be gathered from the foregoing that the amazing increase of eponymic names in recent times is a passing phase of a transition period of medical history in which new forms of disease have been discovered and new modes of therapeutic procedure devised in such numbers and at such a rate as to defy rational classification. It is, in fact, a verification of the old distich,

> "Et quoniam variant morbi variabismus artes:
> Mille mille species, mille salutis erunt."

When Louis and Bretonneau established the status of typhoid fever, and Gerhard first clearly differentiated typhoid from typhus, there was apparently a great step forward in the way of simplification. Now we are confronted with the sub-varieties or related species of infection which make the status of typhoid a puzzle. That these incongruities will be resolved into further simplifications, as medical knowledge advances, who can doubt? In the mean time, it ought to be the aim of medical teachers and medical editors to prevent the growth of eponyms from becoming a nuisance or a fad. This could best be done by editorial revision of the titles of medical papers in which undesirable or unnecessary eponyms occur. Where it is necessary to use a new or valid eponym, as Mikulicz's disease or Talma's operation, it might be followed by the bracketed synonym, for the convenience of the reader. Or better still, following the nomenclature of modern dermatology, it would be an improvement to give the name of the disease first and let the bracketed eponym follow it, e. g., pitryiasis rubra [Hebra], painful obesity [Dercum], symmetrical gangrene [Raynaud]. In the class room the instructor might regard the indiscriminate use of eponyms as an evil, which, like all bad habits, could best be discontinued in its early stages, by nipping it in the bud.

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[5] C. W. Stiles: The International Code of Zoölogical Nomenclature. Bull. No. 24, Hygienic Laboratory, United States Marine-Hospital Service, Washington, 1905, p. 21.

[6] Lancet, London, 1908, ii, 993–994.

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AN EPIDEMIC OF CATARRHAL JAUNDICE.

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In a general practice amongst some two thousand people the usual number of cases of jaundice from all causes seen in twelve months is about five. It is, therefore, somewhat remarkable when one records one hundred and thirty-five cases in six months, and, at the suggestion of Dr. A. G. Young, secretary of the Maine State Board of Health, the author has endeavored to give a brief history of this peculiar epidemic.

In October, 1908, I was called fifteen miles to a neighboring town to see a man seventy years old with symptoms of typical catarrhal jaundice. As I had treated him for a similar condition one year before, and as he was an old soldier with a history of chronic liver trouble, this illness caused no surprise, but within two weeks I was called to treat this man's wife for the same condition, and within six weeks had recorded twenty cases in the same village. During the same period I saw eight cases in a logging camp twenty miles from the first group and six miles from Andover. Then followed ten widely scattered cases in Andover village and on farms within a radius of fifteen miles. Each isolated case seemed a nucleus for several others in the same family or camp, until up to Feb. 20, 1909, I have recorded one hundred and thirty-five. One series of cases will give the usual history of sequence:

Clarence A., age eighteen, came to my office

Patient.		Sex.	Age.	Occupation.	Residence.	Period of Incubation. Tem. +	Period of Acute Illness. Tem. —	Infection Traced.
No. 1	J. W. J.	M.	70 years	Retired	Farm	10 days	2 weeks	No
,, 2	Mrs. J.	F.	65 ,,	Housewife	,,	7 ,,	1½ ,,	Yes, from No. 1
,, 3	L. J.	M.	14 ,,	At school	,,	7 ,,	1 ,,	,, neighbor of No. 4
,, 4	T. W.	,,	45 ,,	Woodsman	Camp No. 1	14 ,,	1½ ,,	Yes, Camp No. 1
,, 5	E. W.	F.	15 ,,	At school	Farm	7 ,,	2 ,,	,, from No. 4
,, 6	M. W.	,,	17 ,,	Housework	,,	10 ,,	1 ,,	,, ,, ,, 4
,, 7	I. W.	,,	9 ,,	At school	,,	14 ,,	2 ,,	,, ,, ,, 4
,, 8	S. A.	,,	45 ,,	Housework	Hotel	10 ,,	1 ,,	No
,, 9	F. L.	M.	35 ,,	Contractor	Camp No. 2	21 ,,	2½ ,,	Yes, Camp No. 2
,, 10	L. P.	,,	24 ,,	Farmer	Farm	10 ,,	2 ,,	No
,, 11	A. L.	,,	25 ,,	Woodsman	Camp No. 3	14 ,,	1½ ,,	Yes, Camp No. 3
,, 12	M. L.	F.	19 ,,	Housewife	Farm	7 ,,	1 ,,	,, No. 11
,, 13	B. L.	M.	2 ,,	Infant	,,	7 ,,	1 ,,	,, ,, 12
,, 14	C. A.	,,	18 ,,	Woodsman	Camp No. 2	10 ,,	1½ ,,	,, Camp No. 2
,, 15	J. A.	,,	52 ,,	Farmer	Farm	7 ,,	2 ,,	,, No. 14
,, 16	F. A.	F.	15 ,,	At school	,,	7 ,,	1 ,,	,, ,, 14
,, 17	J. A.	M.	17 ,,	Farmer	,,	10 ,,	1 ,,	,, ,, 14
,, 18	F. A.	,,	6 ,,	At school	,,	10 ,,	1 ,,	,, ,, 14
,, 19	H. B.	F.	28 ,,	Housewife	,,	7 ,,	1½ ,,	,, ,, 20
,, 20	M. B.	,,	5 ,,	Infant	,,	7 ,,	1 ,,	,, ,, 14
,, 21	J. D.	,,	6 ,,	At home	,,	14 ,,	1 ,,	,, ,, 19
,, 22	C. D.	M.	4 ,,	Infant	,,	10 ,,	1 ,,	,, ,, 21
,, 23	J. S.	F.	52 ,,	Housewife	,,	14 ,,	2 ,,	,, ,, 15
,, 24	W. A.	,,	38 ,,	,,	,,	10 ,,	1½ ,,	,, ,, 23
,, 25	B. H.	M.	30 ,,	Farmer	,,	14 ,,	2 ,,	No
,, 26	A. S.	F.	34 ,,	Housewife	,,	7 ,,	1½ ,,	Yes, No. 50
,, 27	R. S.	M.	4 ,,	Infant	,,	7 ,,	1 ,,	,, ,, 26
,, 28	C. S.	,,	2 ,,	,,	,,	7 ,,	1 ,,	,, ,, 26
,, 29	L. M.	F.	14 ,,	At home	,,	14 ,,	1 ,,	No
,, 30	C. M.	M.	12 ,,	,, ,,	,,	7 ,,	1 ,,	Yes, No. 29
,, 31	A. M.	F.	16 ,,	Housework	,,	7 ,,	1½ ,,	,, ,, 29
,, 32	J. M.	M.	8 ,,	At home	,,	7 ,,	1 ,,	,, ,, 29
,, 33	E. M.	F.	6 ,,	,, ,,	,,	10 ,,	1 ,,	,, ,, 29
,, 34	H. T.	,,	25 ,,	Housewife	Village	14 ,,	3 ,,	No
,, 35	E. S.	,,	15 ,,	At school	,,	7 ,,	1 ,,	Yes, No. 34
,, 36	M. R.	,,	6 ,,	At home	,,	10 ,,	1 ,,	,, ,, 35
,, 37	J. R.	,,	35 ,,	Housework	,,	21 ,,	1 ,,	,, ,, 36
,, 38	M. L.	,,	25 ,,	Housewife	,,	7 ,,	1 ,,	,, ,, 35
,, 39	B. H.	M.	32 ,,	Clerk	Camp No. 4	14 ,,	1 ,,	,, Camp No. 4
,, 40	W. M.	,,	42 ,,	Mill hand	Village	10 ,,	2 ,,	No
,, 41	A. M.	F.	64 ,,	Housewife	Farm	28 ,,	2 ,,	Yes No. 42
,, 42	E. M.	M.	18 ,,	Woodsman	Camp No. 4	10 ,,	1½ ,,	,, Camp No. 4
,, 43	T. P.	F.	4 ,,	Infant	Farm	7 ,,	1 ,,	No
,, 44	L. P.	,,	2 ,,	,,	,,	7 ,,	1 ,,	Yes, No. 43
,, 45	I. C.	,,	26 ,,	Housework	,,	7 ,,	1 ,,	,, ,, 43
,, 46	A. P.	M.	31 ,,	Guide	,,	7 ,,	1 ,,	,, ,, 43
,, 47	C. P.	F.	50 ,,	Housewife	,,	14 ,,	1½ ,,	,, ,, 43
,, 48	J. G.	M.	31 ,,	Woodsman	Camp No. 2	10 ,,	1 ,,	,, Camp No. 2
,, 49	H. B.	,,	19 ,,	Clerk	,, ,, 2	7 ,,	1 ,,	,, ,, ,, 2
,, 50	J. M.	,,	34 ,,	Farmer	Farm	14 ,,	1½ ,,	No

Dec. 26 with typical symptoms. He had been working in Camp No. 2, some six miles away, where I had already treated several cases. I sent him to his own home on a farm and some ten days later was called to treat his father for the same condition. Then followed, at intervals of about ten days, two brothers and a sister. Clarence, meanwhile, was feeling better and went to work on a farm some four miles away. I was called here inside of two weeks to treat a child of five, and a few days later the child's mother was down with it. Three cases followed in one neighbor's house, and two in another.

The usual symptoms are as follows: About ten days of general ill feeling, with anorexia, occasional nausea and vomiting, dull frontal headache, heaviness in limbs and temperature of 100 to 102. In about two weeks the icterus is very marked, stools grayish, urine loaded with bile, tongue heavily coated, breath foul, temperature subnormal and pulse slow, marked mental depression, tenderness in region of gall bladder and liver, but no pain. The second period lasts about one week, followed by a gradual clearing up of symptoms, with excessive appetite and general good feeling, but with annoying itching and slight desquamation. In from four to five weeks from the beginning of the attack the patient has completely recovered. I have seen one relapse, however, and one case of general debility after all symptoms of icterus had cleared up. It is most severe in old people and brunettes. A cold or any acute illness predisposes, and it is noticeable that in each group afflicted one or two of the most rugged escape. One case, sixty-five years old, had an attack in November and the icterus has not cleared up, and cancer of the liver has been diagnosed at the Maine General Hospital. Three cases from Camp No. 2 were treated at a small hospital in a neighboring town as typhoid fever, with very quick recovery. As there has been no typhoid in this camp before or since, the diagnosis might be qustioned.

While I have always regarded catarrhal jaundice as sporadic or secondary to some other diseased condition of the hepatic or digestive systems, in view of this experience I am of the opinion that it is infectious, probably through the breath or other excretions of the body. I am not in position to make a bacteriological investigation. It has been suggested that this condition is one form of la grippe, but I do not think so. There has not been a typical case of bronchial grip in this section this winter, while last year it was very prevalent and those cases with marked hepatic disturbance in no way simulated the cases described in this article. It is my opinion that this can all be traced to four logging camps and perhaps to one (Camp No. 2), where there were fifteen cases and where the water supply was a very low brook and sanitary conditions were bad.

Since January I have been practically following the plan outlined by the State Board of Health for typhoid fever as to isolation and disinfection of stools, urine and clothing.

The preceding table of fifty cases will be of interest.

RELAXED KNEES IN CHILDREN.

BY MARK H. ROGERS, M.D.,
Assistant Orthopedic Surgeon to Out Patients at the Massachusetts General Hospital.

The diagnosis of pronated feet or flattened arches is very commonly made to account for a group of symptoms in children during the first years of walking, and the purpose of this paper is to show that there is very often a more general joint relaxation, and to call particular attention to a condition of hyperextension of the knees. When children first begin to use their feet in walking, the muscles and ligaments are not strong enough to hold the foot in a correct position when the weight of the body is put upon them. In a large number of cases examined in the out-patient department of the Children's Hospital, a good percentage show more or less pronation of the feet without symptoms. When there is sufficient relaxation and strain of the feet to cause symptoms, then there is generally a relaxation of other joints. A certain amount of pronation in young children is practically normal condition.

The most frequent complaint for which they are brought is that the child cannot walk or run as fast as most children, and becomes easily tired and wants to be carried. Sometimes the only trouble is an awkward gait. The child may be clumsy in running, or may show a tendency to fall. If the symptoms are more severe, pain or a feeling of discomfort is referred to the legs, or more especially to the knees. At night, when the child is first put to bed, there may be restlessness, and sometimes the sleep is broken and the child may cry out in its sleep, which often simulates the "night cry" of joint disease. Occasionally there is noticed a slight limp, which may be intermittent, and which comes on when the child is tired. This limp must be carefully differentiated from a beginning hip disease, and the diagnosis cannot be made at once.

This condition is most frequently in children between the ages of three and five years who are often fairly large for their age and are well developed and very well nourished, except that their muscles may not be very firm, and they may have a good deal of fat tissue. Occasionally we meet children with relaxed joints who are thin and poorly nourished and underdeveloped. Children who have deformities due to rachitis often develop a similar condition of joint strain, but the large number of these cases show no evidence of rachitis, and it is not an etiological factor. The majority of cases are from families of good circumstances rather than in the foreign element, largely, I think, because more attention is paid to symptoms which are not severe, and advice is sought because the child tires easily and is restless at night.

On physical examination we have a child who is quite well nourished and a little above the average weight, but whose musculature is not firm. The whole standing attitude is very characteristic in a well-marked case. The condition of the knees is the most prominent feature. When the child stands at rest there is a slight knock knee, and one or both knees are in a hyperextended position. One knee may be held in a normal position, but when the weight of the body is shifted, that knee-joint will spring backward. The position of the feet is more pronated than normal, and the scaphoid is prominent and low. In most of the cases, especially in a well-marked case, there is a good deal of lordosis of the lumbar spine and a prominent abdomen, and the shoulders are generally rounded and the head is held forward. The spinal muscles are prominent and sometimes held in spasm. When the child is lying down the knock knee can be corrected in cases where there are no rachitic changes of the epiphysis. There is a very appreciable laxity of the knee-joint and in all cases it is possible to obtain lateral motion. This is the most prominent feature in this condition. Sometimes we see a child presenting such a picture who also toes in, especially on walking. It is rather difficult to explain why there should be toeing-in and pronation at the same time, because one represents a certain degree of varus and the other, valgus. This condition is seen in children who have had a good deal of joint relaxation for some time, and probably means that the child is trying to correct its balance and toes-in to obtain a stronger standing position. In carrying out our treatment for relaxed joints, sometimes this toe-in is increased, but later will take care of itself.

This condition of hyperextended knees, lordosis of the lumbar spine and round shoulders is often seen in adult life. It may persist from childhood or it may develop during the fast-growing period of puberty. The fact that it may persist into adult life shows the importance of recognizing the condition and of correcting it as much as possible at a period when it is possible to influence the position.

If careful attention is paid to increasing the rest periods of the child, so that at night the whole body is not fatigued, the acute symptoms, such as pain and the restlessness during sleep, are usually alleviated. The diet should be carefully regulated and general hygienic treatment should be undertaken in order to strengthen the muscles and to put the child into better physical condition. It is not necessary to use any retentive apparatus for the knees unless the knock-knee is quite pronounced, because such apparatus tends to prevent the strengthening of the muscles. But occasionally it is necessary to apply simple knock-knee braces, to be worn part of the time. The pronation of the feet is best treated by raising the inside edge of the heel $\frac{3}{16}$ to $\frac{1}{4}$ inch, and if the foot is not thus held in a good position, a light plate or felt pad on an inner sole may be used. If possible, it is better to depend entirely on shoeing, so as not to interfere with the development of the muscles of the foot. To prevent the hyperextension of the knees is more difficult. There has been no case where the hyperextension has been so marked that it has been considered necessary to apply any form of knee apparatus with a catch-joint which would prevent full extension of the knee-joint.

Most of the children wear spring-heeled shoes, and by putting on heels one half to one inch in height, the child is tipped forward and is compelled to stand with the knees slightly flexed, and this makes it more difficult to hyperextend the knees. This also slightly changes the position of the back, for it is dependent to a great extent on the hyperextension of the knees. The knock-knee is generally due simply to relaxation of the joint, and the external ligaments are contracted. The knee should be stretched by daily manipulation, grasping just above and below the joint, and bending the knee outward, while it is extended, several times morning and night, up to the point of causing pain to the child. It is not possible to correct the knock-knee, nor to make the joint firm in a short time, but it is possible to prevent more deformity, and gradually the joints will regain their tone, especially if the general condition of the child is improved.

THE USE OF THE TERM "FLAT FOOT," WITH A NOTE ON THE DIAGNOSTIC CLASSIFICATION OF THE ORDINARY DISABILITIES OF THE ADULT FOOT.

BY HENRY O. FEISS, M.D.,
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To anybody who has examined a large number of feet, healthy or symptomatic, one thing will be very plain, namely, that feet are extremely variable in their shape, no two feet being alike. We cannot call these variations from the normal, because we cannot state definitively what the normal is. We can simply refer to them as being actual variations in the race.

But if the foot varies so much under ordinary conditions, it is certain that some of these variations are more favorable to function than others. Without attempting to start with a definite classification, we may at least be sure that, according to ordinary standards, a certain type of foot is (physically speaking) better adapted to use than others. To attempt to prove this on empirical grounds would, indeed, be very difficult. For example, let us begin with the hypothesis that the high-arched foot is better adapted to function than the low-arched foot. In order to prove this we would have to choose a number of people with high-arched feet, test them by walking, running and other methods, and compare their ability with the same number of people of equal ages and sizes who have low-arched feet. This method would probably require complicated apparatus for measurement and entail difficult computations in foot-pounds, methods which are always unsatisfactory in abstract medical questions. It is doubtful whether any convincing conclusions could be arrived at in that way. But take these two types, the high-arched foot and the low-arched foot, a rough distinction which has been recognized ever since the time of the ancients. Let us assume that these two types are representatives of the two great extremes in the variations of ordinary feet. Let us say that we are to construct a mechanical contrivance of the same anatomy as the human foot so as to provide for the greatest efficiency from a mechanical point of view. Which of the two types would ordinarily be selected for this use? It would at once be answered that the foot with the high arch was better adapted for function than the foot without an arch. The chief reason for this is that the foot with an arch suggests elasticity and, therefore, strength and recoil. A foot without an arch, thereby touching the underlying surface in a plane, has no elasticity and hence no spring or recoil. In the second place, a foot with an arch when under strain, as in weight-bearing, allows a distinct sinking of the arch, suggesting a latent power or a potential resistance to withstand further strain. The foot which is low-arched is in the same condition with weight-bearing as without and has no latent power on which to fall back, so that the striking of the foot on the ground causes a shock to the whole structure of the body. Therefore, if, on mechanical grounds, a high-arched foot seems better adapted to carry on function than the foot without an arch, we have a rough distinction to start with in expressing the power of the foot, and the concensus of authoritative opinion will bear us out when we state that the person with a low-arched foot has this part of his body less adapted to function than the one who has the high-arched foot.

Unfortunately, when we refer to a low-arched foot it is not made clear just what we are trying to express. There is no standard of definition. Some call one kind of foot low and others another. Therefore, the first point which it is necessary to establish in classification is to state definitely what we mean by a high arch and what we mean by a low arch. It is clear that we must have some simple and precise method of estimating the height of the arch.

In a monograph (" The Significance of the Scaphoid Tubercle of the Foot as a Bony Landmark ") which was recently prepared (see also *American Journal of the Medical Sciences*, August 1909), a method was described by which this estimation could be made, viz., by connecting the lower posterior corner of the internal malleolus with the lower tubercle on the head of the first metatarsal by a line and estimating the height of the arch by the distance of the scaphoid tubercle from that line. Such an estimation is always to be made with the foot in a standard position, and this is very easily obtained by removing all the weight from the foot in question, as by having the patient place his foot in a chair and letting him bear his weight on the other foot. But if this gave us the estimation of the height of the arch, it did not help directly in distinguishing between the high-arched and the low-arched feet, because, as is to be expected, the variation in the height of the scaphoid tubercle in the healthy feet (one hundred cases) which were examined was so gradual and covered such an extensive range. Therefore it was decided that it would not be wise to take it upon oneself to state just where the normal ends and the abnormal begins, but simply to assume that the higher the scaphoid tubercle is with respect to the connecting line the more closely it approximates the highest functional extreme. The reasons for this have already been suggested, the important point being that those feet with high tubercles have well-developed arches, and, in accordance with the statements given above, we may assume that a well-developed arch is mechanically better adapted for function than a low arch.

Therefore the rule with which we started was this: Other things being equal, the foot is flat (physically speaking) in accordance with the depression of the scaphoid tubercle from the line connecting the lower posterior corner of the internal malleolus with the lower tubercle on the head of the first metatarsal. All feet where the tubercle was on or close to the connecting line were referred to as " type " feet (providing no pathological signs co-existed). This was, however, only a starting point on which to base deformity and variation; it did not make diagnosis, but it did do this: it served as evidence in the physical sense, and evidence which was clear, distinct and as practical as could be obtained.

With this evidence before us, it seems wise to use the term " flat foot " just exactly as is covered by the rule given above. The term so used refers purely to a physical picture. It does not refer to a disease and suggests nothing more nor less than the aspect of the foot from the point of view of the relationship of the bones in the skeleton. Yet if we are guided by the rule above given, it becomes plain to any one who has had a reasonably large experience that almost all human feet that one sees, whether in practice or outside, are flat; the kind of foot referred to as the " type " foot, that is, one with the tubercle on the connecting line or very close to it, being necessarily rare. This is to be admitted, but the value of the rule is not lessened, because if we assume that the great majority of feet are flat, we may refer to their flattening as an anthropological variation, because we simply state that the lower the scaphoid tubercle is with respect to the connecting line, the flatter the foot. So we have a right to use such terms as " slightly flat," " moderately flat " and " extremely flat." To repeat, therefore, the term " flat foot " does not express diagnosis. It is simply an expression of the physical condition, which may be either a variation within normal limits, or, if extreme, an actual deformity.

DIAGNOSTIC CLASSIFICATION.

As the term " flat foot " thus used cannot enter into a diagnostic classification, but as such a classification is necessary, it has seemed wisest to diagnose foot disabilities chiefly according to their etiology, and they are referred to as ARTHRITIC in origin or as mechanically STRAINED. Under the ARTHRITIC class we have the osteo-arthritic, rheumatoid arthritic, infectious arthritic (such as gonorrheal), etc. Under STRAINED, we have sudden abnormal use, increase of weight, relative insufficiency (weakness) strain due to high heels and faulty shoes, etc. (Such terms as " painful heel,"

" anterior metatarsalgia," etc., are not, strictly speaking, of diagnostic significance, as they refer to symptoms only.)

With regard to the terms " flaccid " and " rigid," this distinction is important, but serves only to describe one aspect of the physical process, irrespective of origin; it does not of itself suggest the pathological basis of the trouble.

The same holds good for " flat foot." If the term is used in the manner above described, it is simply a description of a physical picture. It is, therefore, seen that the term " flat foot " may apply both to feet which are not diseased and to those that are diseased, but it is also plain that if a foot is apparently diseased as shown by the history, the swelling, the muscular spasm, the pain, the disability, etc., then the lowering of the scaphoid tubercle by indicating the mechanical relation between the bones becomes an important additional piece of evidence, in many cases suggesting the severity of the process as well as the residual strength of the foot.

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Medical Progress.

PROGRESS IN PHYSIOLOGICAL CHEMISTRY.

BY J. BERGEN OGDEN, M.D., NEW YORK.

CHEMICAL INVESTIGATION CONCERNING THE ETIOLOGY OF ECLAMPSIA.

B. J. DRYFUSS[1] has made an extensive study of this subject, and the results of his research are briefly stated below.

Fresh normal placentas were divided into two parts, one half analyzed immediately and the other half after seven days' autolysis. The total solids increased during autolysis from 0.132 to 0.266%. In the normal placenta the total nitrogen was distributed as follows: Amide nitrogen, 4.3%; diamino nitrogen, 68.3%; amino acid nitrogen, 46.2%. The comparable figures for the autolysis specimens were: Amino nitrogen, 9.2%; diamino nitrogen, 40.0%; amino acid nitrogen, 61.3%. A comparison of the normal fresh placenta with the eclamptic placenta showed a total soluble nitrogen content nearly twice as great, 0.2493%; whereas in the normal placental autolyses the non-coagulable nitrogen became doubled, the amide nitrogen was increased 4.5 times. The de-aminization was, therefore, more than twice as active as the proteolysis. In comparing the normal fresh placenta with the fresh eclamptic, the de-aminization in the latter is not so great as in the former. The formation of amino acids in autolysis has not occurred as rapidly as in the autolysis of the normal fresh placenta. The diamino acids show little change after autolysis. The injection of powdered normal or eclamptic placentas, suspended in water, into the peritoneal cavity of pregnant rabbits was without results in so far as the detection of differences was concerned. Intraperitoneal injections of eclamptic serum and extracts of eclamptic placentas were also negative. Experiments tending to prove the presence of an endotoxin in the placenta from eclampsia were somewhat doubtful. The opinion is expressed that lactic acid stands in no causal relationship to eclampsia; it must be considered rather as a result of the diminished oxidation which accompanies the seizures, etc. The exclusive placental origin of eclampsia has never been demonstrated.

THE HEMAPHEIC REACTION OF URINES.

Dufare[2] has found that a urine gives the hemapheic reaction if, when it is placed in contact with HNO_3, one obtains in the vicinity of the plane of separation a brownish-mahogany coloration, of which the intensity is more or less marked and decreases gradually toward the outer layers. The author confirms the statement of Engel and Kiemer, that it is impossible to obtain the mahogany tint with urobilin alone, as maintained by Florence. If defecation of the urine be accomplished with $Pb(OAC)_2$ or $Ba(OH)_2$, instead of with H_2SO_4, one obtains with HNO_3 a sort of dissassociation of the mahogany coloration, i. e., a red ring of variable intensity, and immediately below it a yellow ring, but this may be obtained also by simple dilution with water, less sharply, however, than if lead or barium be employed. While hemapheic urines always contain urobilin, they also always contain appreciable quantities of indoxyl, and the author believes that it is this indoxyl which, in the form of indirubin, regularly intervenes to form the red, but it is also probable that skatoleic red plays an important rôle. The hemapheism of Gubler is, therefore, not characterized by the presence in the urine of any particular pigment, and hemapheim must be withdrawn from the list of urinary pigments. The rôle of urobilin is then only to temper the red coloration produced by indoxyl.

A NEW BILE ACID REACTION AND THE DETECTION OF THE BILE ACIDS IN URINE.

A. Jolles[3] describes the following: If 2 to 3 ccm. of a 0.1% solution of taurocholate and glycocholate or pure cholic acid are boiled for a short time with 1 to 2 drops of a 5% rhamnose solution and 2 to 3 ccm. concentrated HCl, a red color is produced followed by a beautiful green fluorescence. A concentrated cholate solution gives a red-brown color by transmitted light, and a malachite-green fluorescence in reflected light. From 0.0005 to 0.0001 gm. of cholic acid can be detected. The fluorescence is caused by the methyl furfurol derived from the rhamnose. The reaction applies only to cholic acid derivatives and not to protein, urea, carbohydrates, CS_2, or the acids of the aliphatic or aromatic series. To detect the bile acids in urine, mix 50 ccm. urine with 15 ccm. of a 3% casein solution, and add 10% H_2SO_4, drop by drop, shaking until the casein is entirely precipitated. Filter, and to the precipitate add 10 ccm. absolute alcohol and leave at room temperature about one hour, stirring frequently. Filter, and to 4 to 5 ccm. filtrate add one drop of a 5% rhamnose solution and 4 to 5 ccm. concentrated HCl; heat to boiling and boil gently one minute. Cool, add 2 ccm. ether and shake. If bile acids are present, there is fluorescence. As little as 0.05%

sodium taurocholate can be detected. In concentrated urines, and especially in those rich in indican and aromatic hydroxy acids, the test is less satisfactory, for the alcoholic filtrate after boiling with HCl is so deeply colored that the detection of the fluorescence is more difficult. This difficulty may be obviated by sending a ray of light through the solution with a lens.

THE NECESSITY OF EXAMINING THE URINE AT DIVERSE PERIODS OF THE DAY, ESPECIALLY THAT OF CHILDREN AND OLD PEOPLE.

While it is ordinarily advisable to examine a sample of the mixed twenty-four-hour urine in every case, A. Richoud and A. Bidot[4] have pointed out that it is at times advisable to examine specimens of urine voided at different times of day in order to get a clear picture of the case. The authors show that if an examination of urine be made from the whole twenty-four-hour sample, as is usually the case, and necessary in most, a very serious error in diagnosis may result. The case, a child of eight years, was admitted to the hospital suffering from apparent nephritis, the diagnosis resulting from the detection of albumen in the twenty-four-hour sample of urine. The patient did not improve after six months' treatment. The urine was then examined at different periods of the day and that passed immediately after waking was found to contain no albumen. Based upon a new diagnosis, resulting from this discovery, another system of treatment was inaugurated and the patient improved.

AN INVESTIGATION OF THE FOLIN METHOD FOR THE DETERMINATION OF CREATININ AND CREATIN.

In a research by Weber[5] it was found that, in the perfused mammalian heart, the active muscle gives out more creatin and creatinin to the blood than the inactive muscle. In dogs with paralyzed muscles, as compared with those which have cinchonine spasms, one finds, in paralyzed muscle, a decrease in the content of creatin; in passive muscle after section of the nerve, a very marked decrease. The muscle with cinchonine spasms forms more creatin than does passive. Muscle convulsions in starving dogs produce a distinct absolute increase and a decrease in relation to total nitrogen. Violent muscular exercise decreases the creatinin output in fed animals. The authors do not agree that creatin and creatinin are a separate compound generally, as Folin has suggested. The increase in creatinin in the urine after the administration of meat extract is greater than the amount of creatinin in the extract.

THE ORIGIN OF ENDOGENOUS URIC ACID.

As a result of the experiments of E. B. Cathcart, E. L. Kennaway and J. B. Leathes,[6] a marked increase in the output of endogenous uric acid was found to occur in fever, exposure to cold and after severe exertions. The increased output coincides and terminates with the febrile rise of temperature, coincides with and outlasts by many hours the exposure to cold, follows the exertions and lasts for many hours after them. It is suggested that in all these conditions the uric acid has its origin in metabolic processes occurring principally in the voluntary muscles and not immediately related to voluntary contractions and work. The daily variation in uric acid excretion, high in the morning, low at night, is not due to retention of uric acid formed during the night, nor to the fact that the digestive organs are inactive at night, but it is due to the quickened activity of all functions, especially those of the voluntary muscles, which results from the rest of sleep. Generally speaking, the more lively the performance of the functions of the body as a whole, the greater will tend to be the amount of uric acid produced.

THE EXCRETION OF UROCHROME IN THE URINE OF NORMAL INDIVIDUALS AS WELL AS IN CERTAIN DISEASES.

St. Dombrovski[7] has pointed out that the copper reagent employed in the Krüger-Wulff method precipitates urochrome together with the purin compounds. This varying factor, at first unknown, rendered this general method of doubtful value. The fact of the precipitation of the urochrome with copper renders a quantitative determination of this pigment comparatively easy. It is only necessary to determine the nitrogen of the copper precipitate in the Krüger-Wulff method and then to subtract from it the nitrogen of the purin compounds as given by the Camerer-Arnstein or Huppert-Haycraft methods. The difference indicates the nitrogen of the urochrome. By this method, four samples of normal urine gave a twenty-four hours' elimination of urochrome equal to 0.458 to 0.741 gm. The copper salt of urochrome is easily soluble in ammonia and in such solution is not precipitated by silver nitrate. This affords a means of separating the pigment from the purin compounds. Employing copper acetate as a precipitant for purin compounds and urochrome, the total nitrogen of these can be determined. Employing ammoniacal silver nitrate, they may be separated and their nitrogen determined. In five cases of typhoid the urine examined by this method showed 0.779 to 1.057 gm. of urochrome, or nearly three times the normal amount.

THE RELATION OF NITRIFYING BACTERIA TO THE UROROSEIN REACTION OF NENCKI AND SIEBER.

In the study of the urine of a child seven years old, suffering from a peculiar variety of intestinal decomposition, due to an abnormal type of intestinal flora, Herter[8] noticed that the urine had the urorosein reaction with hydrochloric acid, but that the reaction developed only in such samples as had stood in the laboratory at least twelve to twenty-four hours. Fresh urine was negative. The onset of the reaction coincided with the development of a turbidity due to bacteria. Urines protected from contamination failed to develop the reaction, but if the sample was inoculated with bacteria from the urine which had already developed the reaction, the color changes were obtainable in twelve to twenty-four hours. These organisms were obtained in pure culture and, among other characteristics, formed nitrites. Sterile urines developed nitrites after inoculation with these bacteria. It was further found that fresh urine to which was added a few drops of 0.2% solution $NaNO_2$ gave the reaction immediately in a characteristic fashion. Nitrates were negative. Normal urines plus nitrites never gave the urorosein reaction either immediately or upon standing. The second factor in the reaction was the presence of some chromogen which gives the reaction with nitrous acid. Other oxidizing agents gave a color closely resembling that of urorosein, although the tendency to over-oxizidation was then present. Sometimes the color of the urorosein reaction with nitrite was a purple or violet, according to the mode of oxidation. This violet color is not removable by chloroform as is the case with indigo in the indican reaction. There is no relation between the urorosein coloring matter and skatol red, although in amyl alcohol solution their spectroscopic appearance may be indistinguishable. Skatol could not be obtained from the intestinal contents of the patients. Through the action of the intestinal bacteria from the case under observation it was possible to obtain a coloring matter having the chief characteristic of urorosein by subjecting sterile whole milk to the action of the fecal bacteria. In a note it is stated that this chromogen is indol acetic acid.

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(To be continued.)

Reports of Societies.

THE AMERICAN DERMATOLOGICAL ASSOCIATION.

Thirty-Third Annual Meeting, Held at the Bellevue-Stratford Hotel, Philadelphia, Penn., June 3, 4 and 5, 1909.

Second Day, Friday, June 4.

(Concluded from No. 17, p. 594.)

THE ETIOLOGY OF PSORIASIS. ITS PRESENT STATUS.

Dr. Sigmund Pollitzer, of New York, opened a general discussion on this subject. He reviewed at length the various hypotheses that had been advanced concerning the nature of psoriasis and said that our knowledge of the subject at the present time might be summed up in the following conclusions: 1. That rheumatism, gout, neuroses and heredity were not direct etiological factors in the production of psoriasis, but in the present state of our knowledge it could be neitber denied nor affirmed that they might have some hearing on the obscure conditions of the system which rendered it more or less susceptible to infection. 2. That psoriasis was one member of a group of parakeratoses to which seborrhea corporis and (in part) eczema seborrhoicum belonged. 3. That it was most probably due to an external microbic infectious agent.

THE QUESTION OF THE PARASITISM OF PSORIASIS.

By **Dr. Jay Frank Schamberg**, of Philadelphia.

In discussing this subject, the author said that three propositions might be formulated for consideration: 1. That psoriasis might be the result of the circulation in the fluids of the body and deposition in the skin of a micro-parasite, analogous to what was observed in syphilis and variola. 2. Psoriasis might be due to the implantation upon the skin of an exogenous parasite, as was observed in ringworm, favus and tinea versicolor. 3. The disease might be due to one of the common facultative parasitic organisms ever present upon the skin in individuals in whom a constitutional predisposition rendered the soil favorable. After discussing each of these propositions in detail, and reviewing the literature and experimental work that had been done on the subject, Dr. Schamberg said it might be argued that the failure to auto-inoculate psoriasis in the vast majority of subjects operated against the assumption that it was a local parasitic disease due to exogenous organisms. It might furthermore be argued that if the lesions of psoriasis were due to the implantation of a parasite upon the skin of a susceptible individual, inoculation with lymph, blood and scales from a diseased patch upon the healthy skin in the same patient might be reasonably expected to reproduce psoriasis lesions. Our lack of knowledge, however, concerning possible conditions of immunity in this connection made it unwarranted to deduce any positive conclusions of the character indicated. The inability to auto-inoculate psoriasis patients would not at all affect the hypothesis that psoriasis was a constitutional, infectious disease. From what had been stated, it was obvious that no definite conclusion as to the parasitism of psoriasis was warranted. The mode of growth and configuration of the patches, the occasional instances of apparent communication of the disease and the Destot inoculation were arguments in favor of parasitism which could not be decisively brushed aside. On the other hand, the general behavior of the disease, the common experience of observers as to the absence of contagion, and the almost uniform failure of inoculation experiments constituted strong evidence against parasitism. Wisdom should prompt us, in the light of our present knowledge, or, more accurately speaking, in the dimness of our inadequate knowledge, to commit ourselves neither to positive affirmation nor to uncompromising negation.

Dr. James C. White said that psoriasis might be called a family disease, or, to a certain extent, a hereditary disease. We knew that it succeeded quite a number of other cutaneous diseases, but that did not necessarily imply any etiological relationship between the two. When we mentioned these two factors as having some direct influence on the production of psoriasis, he thought we had told the whole story, so far as we had any direct knowledge of the nature of this disease.

Dr. Louis A. Duhring, of Philadelphia, said that up to the present time we had no convincing proof of the parasitic origin of psoriasis.

Dr. L. Duncan Bulkley, of New York, said that all were ready to acknowledge that there was something back of psoriasis that we did not know anything about. There was no question that there was something on the skin which produced these lesions on a favorable soil. He had some patients under his care for many years in whom recurrent attacks of psoriasis were clearly traceable to errors in diet, resulting in faulty metabolism.

Dr. James Nevins Hyde, of Chicago, said that in collecting statistics of the disease in this country, the figures from one part of the country must be dissociated from those of other parts. For example, in the Northwest, where he lived, the percentage of these cases greatly exceeded that in the South. He referred to the relative infrequency of the disease in the negro, and to the fact that it never appeared in the lower animals, which shared most of the parasitic diseases with the human family.

Dr. E. B. Bronson, of New York, spoke of the relative importance of the local causes from parasitism, and the causes which existed in the constitution of the skin. He thought there was no question that psoriasis was a dermatological disease, due to a local parasite. There was no more reason for regarding it as a constitutional disease because it was influenced by gout or rheumatism or improper diet than it would be to regard acne as a constitutional disease. The parasites that produced it were probably omnipresent, but in addition to these we had to have a receptivity of the skin.

Dr. Henry W. Stelwagon, of Philadelphia, said the consensus of opinion was that the lesions of psoriasis were due to a parasite, but that underlying that we had a peculiar susceptibility of the skin or of the general system, and that the latter could be evoked by various causes, such as shock, faulty metabolism, etc.

Dr. Douglass W. Montgomery, of San Francisco, said he was decidedly skeptical in regard to the parasitology of psoriasis or eczema. As far as the appearance of the lesions of psoriasis after scratching was concerned, we could get the same effect in urticaria and lichen.

Dr. Samuel Sherwell, of Brooklyn, said that during his forty years of practice he had seen many thousands of cases of psoriasis, and he had seen but one case, so far as his memory carried him back, that was associated with tuberculosis, and in that instance the tuberculosis was of a fibroid character and the patient lived for a long time. That spoke in favor of the general good health of the psoriatic patient. In regard to the treatment of psoriasis, he could corroborate what had been said as to the efficacy of a change of climate or the beneficial effects of a sea-voyage, and he recalled one case where a woman who was sent to London for treatment recovered before she arrived there.

Dr. Hermann G. Klotz, of New York, referred to the tendency of many cases to get well or almost well spontaneously during certain seasons of the year. In some the eruption broke out in the summer; in others, in the winter. He believed that this phase of the disease could easily be reconciled with the parasitic theory.

Dr. George Pernet, of London, England, said he had many times observed that psoriasis cases exhibited a primary patch, perhaps two, which remained for some weeks or months before there was any generalization of the disease. Such an extension of the eruption was in favor of the parasitic theory. With regard to the effects of diet in psoriasis, Dr. Pernet said he had not been able to satisfy himself that it played the slightest rôle in the evolution or development of the affection, excepting, perhaps, the use of coffee or alcohol in acute or subacute cases.

Dr. M. B. Hartzell, of Philadelphia, said he had never been able to convince himself that a meat or vegetable diet had anything whatever to do with the affection. The one theory that appealed to him was the parasitic view.

Dr. James C. Johnston, of New York, discussing the parasitic theory of psoriasis, with which the speaker was in considerable sympathy, said the control to prove it had to be numerous, in fact, almost wasteful. The experiments must be done on the individual himself and on members of his family, both on those that seemed predisposed and upon completely healthy individuals, as well as on laboratory animals.

Dr. Thomas C. Gilcrist, of Baltimore, said the work to prove or disprove the parasitic origin of psoriasis must be carried along experimental lines, and would doubtless be greatly aided by Schaudinn's introduction of the dark-field illumination, which might make it possible to find the parasite.

The discussion was then closed by Drs. Pollitzer and Schamberg.

FURTHER OBSERVATIONS UPON THE ELASTIC TISSUE IN EPIDERMOLYSIS BULLOSA.

By **Drs. Martin F. Engman** and **William H. Mook**, of St. Louis.

In 1906 the authors reported the histological study of 2 cases of epidermolysis bullosa, in which they found the elastic tissue absent in the upper part of the derma, both in the region of the bulla and in the normal skin. One case was more marked than the other. They now wished to submit the histological study of the normal skin of two additional cases of the same disease, in which they found sufficient evidence to strengthen the assumption that the disease was due to congenital deficiency or absence of the elastic tissue in the derma.

Dr. Charles J. White, of Boston, said it would be interesting to learn if there was an absence of elastic fibers in the apparently normal skin of patients who were subject to epidermolysis bullosa.

The discussion was continued by Dr. Montgomery and was closed by Dr. Engman.

THE ELASTIC TISSUE OF THE SKIN.

Dr. Charles J. White, of Boston, after a very exhaustive study of this subject, presented the following conclusions: 1. Elastin first appeared in the skin when the embryo had reached a length of 22 cm. 2. Elastin had a distinct and multiple physiological function. 3. Elastin was evident in practically every part of the normal corium, and in connection with all the adnexa of the skin, but in this series of sections it had never been noted within any part of the epidermis. 4. Acid orcein, plus some nuclear stain, seemed to be the best stain for elastic tissue, because it was very searching and differentiated well the various phases through which this tissue might pass. For the detection of elacin, the simple hematoxylin-eosin stain appeared the simplest and the best. 5. The part of the body from which the elastic tissue came and the age and occupation of the individual all influenced the condition of this structure, and these factors should be borne in mind when investigating this element of the skin. Thus, disease, senility, unprotected surfaces of the body, and long and frequent exposures to sun and wind all caused serious disturbances in the elastic element. 6. Disease seldom increased the amount of elastin, but, on the other hand, always caused a loss. 7. Elastin withstood pressure, but succumbed to chemical changes; in other words, toxic products were the principal source of danger to this element. 8. Elastin disappeared entirely from granulation tissue, but returned with the new connective tissue when the cellular invasion had subsided. 9. Elastin disappeared with the advance of carcinomatous and other new growths into or within the corium, but fragments of elastin and elacin might be surrounded and enclosed with rapidly multiplying epithelial cells. 10. X-rays, excepting in the presence of infiltration or ulceration, tended to increase the amount of elastin. 11. Obliteration of a vessel entailed diminution or loss of elastin. 12. Basophilic changes in elastin did not always occur at first in the center of the bundles, as stated by Unna. 13. Elacin was encountered mostly in men after middle age and in exposed surfaces of the skin, but could appear in youth. 14. Elacin in these 315 examples of varying dermatoses appeared in 23 instances, i. e., 7%, and occurred for the most part in inflammations and new growths.

TREATMENT OF SOME CHRONIC INFLAMMATORY DISEASES OF THE SKIN.

By Dr. Louis A. Duhring, of Philadelphia.

In this paper, the author said, it was his purpose to deal with certain underlying principles rather than with details pertaining to drugs and formulæ. Important and valuable as the latter might prove in suitable cases, yet of much greater importance was an understanding, where that was possible, of the general and specific etiological factors that occasioned the cutaneous lesions. It pertained to the manifold causes which were actually the *fons et origo* of the cutaneous lesions of many diseases of an inflammatory nature, especially those characterized by chronicity, rebelliousness to local treatment and a tendency to persist and recur. Thus, eczema and psoriasis afforded instances that illustrated the fact that the methods of therapy commonly employed for their amelioration or cure were often wholly ineffectual. It might be pertinently asked why it was that some cases of eczema, psoriasis or acne were readily amenable to treatment, local or internal, or both, while others did not respond to the same line of treatment? The reason might be found in the fact, not sufficiently recognized, that while the cutaneous manifestations might be the same or closely similar in many cases, the causes producing them were varied and different, and it was the latter that, if possible, we should detect, treat and remove. For nearly all, if not all, of the chronic persistent or recurrent cases of eczema, psoriasis and other diseases, there existed internal etiological factors, specific or general, that must be found and relieved if the patient was to be permanently cured of the cutaneous disease. Most of the authors of works on skin diseases did not lay sufficient stress upon this phase of the subject. Dr. Duhring said that each year he was more and more impressed with the importance of this principle and its practical application; more and more did he recognize the intimate relation in many cases of the diseases under discussion to the general economy; in short, of the relation of such cutaneous diseases to general medicine. It naturally followed that only by treating such internal conditions, whatever they may be, could such cases be satisfactorily and successfully and permanently relieved of the cutaneous disease.

Dr. L. Duncan Bulkley, of New York, thanked Dr. Duhring for reiterating in such a clear and definite manner the principles which he himself firmly believed lay at the bottom of successful dermatology.

Dr. James C. White, of Boston, said that no competent dermatologist would think of basing his diagnosis and treatment upon the external manifestations alone without endeavoring to discover every possible factor that would throw light upon the case.

The discussion was continued by Drs. Montgomery, Pernet and Sherwell, and was closed by Dr. Duhring.

NOTES ON CERTAIN DISEASES OF THE SKIN OBSERVED IN THE FAR EAST.

By Dr. L. Duncan Bulkley, of New York.

This paper gave the result of the writer's observations during recent extended travels in the far East, and included studies of cases of leprosy, syphilis, frambesia, epithelioma, cancer, Madura foot, tinea imbricata, tinea favosa, acne, eczema, etc. Dr. Bulkley said the first thing which struck him everywhere was what seemed to him the relative infrequency of diseases of the skin throughout the East. Although he visited very many hospitals in out-patient clinics in Japan, Korea, China the Philippine Islands, Siam, Ceylon, India and Egypt and made constant inquiry and search for them and saw hundreds of patients, there were relatively few with dermatological troubles, with certain exception, and this in spite of the fact that one was constantly told that in all Eastern countries diseases of the skin were very prevalent. He could hardly explain this contradiction except that as affections of this class were pretty troublesome and rebellious and were relatively little known or studied by the general physician, such cases as did occur made more of an impression and gave rise to the idea that diseases of the skin were especially frequent. There were, however, many cases of vegetable parasitic disease of the skin seen everywhere to which no attention seemed to be paid.

This paper was discussed by Drs. Hartzell, Pernet and Gilcrist.

CASES OF BROMIDE ERUPTION MISTAKEN FOR BLASTOMYCOSIS.

By Dr. Oliver S. Ormsby, of Chicago.

The paper embraced a clinical description of 3 cases, the patients' ages, respectively, being seven, sixteen and twenty-nine years. The lesions in each case were practically situated in the same region of cutaneous surface and closely resembled each other, the group being almost wholly indistinguishable from blastomycosis. Each of these three patients was the subject of epilepsy, and had been given bromide. Blastomycosis was ruled out, etiologically, in each case. From the foregoing it appeared to be essential in any case suspected to be one of blastomycosis in which bromides had been exhibited, to positively demonstrate the presence or absence of the causative organisms (blastomycetes) before drawing final conclusions.

Dr. James Nevins Hyde referred to the rarity of this condition, which certainly simulated blastomycosis of the skin, and which was produced, apparently, by the use of the bromides. He did not think these were purely bromide of potassium sequelæ. In epilepsy, the long administration of the bromides and other remedies in patients who had diminished resistance of tissues was the keynote to the condition.

Dr. George T. Jackson, of New York, said he had seen two or three of these cases in which the eruption was marked by great chronicity, and was apparently due to the use of bromide. The eruption persisted for a long time after the drug was withdrawn.

Dr. Martin F. Engman, of St. Louis, said there was one peculiarity between a bromide eruption and that produced by the iodides. The former was very slow in its involution and sometimes continued for a long time after the drug was stopped.

The discussion was continued by Drs. Montgomery, Klotz and Pusey.

PRELIMINARY REPORT UPON A CASE OF MULTIPLE BENIGN CYSTIC EPITHELIOMA AND MULTIPLE FIBROMA IN THE SAME PATIENT.

By Dr. E. Wood Ruggles, of Syracuse.

The case presented several variations from those previously described. In the first place, multiple epithelioma in this location was infrequent, and had never been found associated with multiple fibroma. The disease developed at the age of six or seven years, which was at a much earlier period of life than any other case excepting Jacquet's, which developed at eight years. There were no central depressions, telangiectasia nor milia upon any of the lesions, nor were any of the dark bodies described by Phillippson and Brooke present. Marked improvement in the appearance of the lesion had occurred under applications of carbonic acid snow, the effect upon the larger and also upon the smaller contiguous lesions having been most striking. In connection with this case, Dr. Ruggles demonstrated an improved applicator for the use of carbonic acid snow.

A CASE OF PEMPHIGUS VEGETANS, WITH SPECIAL REFERENCE TO THE CELLULAR ELEMENTS FOUND IN THE LESIONS.

Dr. M. B. Hartzell, of Philadelphia, presented a paper with this title, in which he briefly summed up the essential features of the case as follows: There was a bullous eruption beginning on the back of the head, gradually extending thence to the face, trunk and extremities, localized especially but not exclusively about the axillæ, the genito-crural regions and legs, showing a decided tendency in places to a ringed arrangement, attacking the mucous membrane of the pharynx and accompanied by papillomatous lesions in the groins and axillæ, the disappearance of the eruption being followed by extreme pigmentation. Microscopically, it was found that the blebs, which were seated between the epidermis and the corium, were filled with eosinophiles, that the papillæ of the corium were greatly enlarged, especially in the longitudinal direction, and that eosinophiles were present in unusual numbers in the papillæ and in the sub-papillary part of the corium.

THE INCREASE OF CERTAIN CONTAGIOUS DISEASES FOLLOWING THE GREAT FIRE IN SAN FRANCISCO.

Drs. Douglass W. Montgomery and **Howard Morrow**, of San Francisco, presented a paper on this subject.

GRANULOMA ANNULARE, WITH REPORT OF CASE.

Dr. Grover W. Wende, of Buffalo, reported this case. The patient was a man, forty-nine years old, whose skin eruption dated back about two years, and had a deep-seated node upon the nape of the neck as its initial lesion. It was in the form of a flat, red-white nodule, without itching or burning. Other similar lesions appeared, and in two or three months they had extended to the hair-line back of the ears and to the front of the neck. The inception of some of the lesions was abrupt, somewhat resembling urticaria. Some nodes would disappear without change; others assumed figure formations. The eruption gradually extended to the cervical region and the upper chest and hands. Clinically and histologically, the case bore a striking similarity to those reported by Dr. E. Graham Little as granuloma annulare (*British Journal of Dermatology*, July, 1908, p. 213). Dr. Little had examined a photograph of Dr. Wende's case and expressed the opinion that it might be one of granuloma annulare, although the multiplicity of the lesions was opposed to that diagnosis. Nevertheless, he had seen a case showing as many.

The last day's session of the Association was devoted to the exhibition of patients and the demonstration of microscopical sections.

Book Review.

Health Studies. Applied Physiology and Hygiene. By Ernest Bryant Hoag, A.M., M.D., Lecturer in Hygiene, University of California. Illustrated. Pp. 223. Boston: D. C. Heath & Co. 1909.

This small volume of "Health Studies," prepared primarily, according to the prefatory note, "to help the young people in our schools who will be men and women before very long to know the truth about common living and to act on such knowledge," departs materially from the usual type of textbook designed to cover the same subjects.

The author tells in an exceptionally interesting manner something about the structure of the body and something as to "how the work of the body is done," but more particularly "about the things that interfere with its best action and how to avoid them." The book is refreshingly simple and direct. Emphasis is laid upon preventable disease and preventable accidents from the point of view of the health of both the individual and the public.

The chapter on "Stimulants and Narcotics," a subject concerning which special instruction is required by nearly all, if not all, the states and territories, impresses one as showing the same good sense which characterizes the rest of the book.

In the chapter on "The Nervous System," a clear explanation of the basis of habit is followed by a practical statement concerning the manner and significance of acquiring habits, good and bad. It is unfortunate that reference was not made among the author's list of publications on health topics in the appendix to that most remarkable chapter on habit in William James' "Psychology," probably the best exposition of the subject ever written; and again, in connection with the chapter on "Making the Most of Life," that attention was not called for the benefit of teachers to Professor James' "Talks to Teachers on Psychology and to Students on Some Life's Ideals."

Instead of inserting in the appendix a collection of facts relative to tuberculosis from a leaflet which is of much value for the purpose for which it was intended, it is to be regretted that the author did not write a chapter on this disease and its prevention in his own sane and painstaking style.

In making so many statements in a dogmatic manner, the author has fallen into some errors, although, in the main, the information given may safely be depended upon. Some of the pioneer work done by Massachusetts and progress made in this state in recent years in matters pertaining to public health might have been mentioned. In spite of defects and omissions, however, we have no hesitation in saying that the book is by far the best textbook on physiology and hygiene for young people that has been brought to our notice. It deserves a wide circulation not only in schools, but in the home.

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PROF. CESARE LOMBROSO.

In the death of Prof. Cesare Lombroso at an advanced age the world loses a person of unique characteristics and of unique career. He was born in Italy, in 1835, and later studied in various universities in his own country and at Vienna, graduating in medicine at the age of twenty. He became a military surgeon at twenty-three, but soon turned his attention to the problems of psychiatry, reaching a professorship in that branch at Pavia at twenty-six. He also became director of an asylum, and later received the appointment of professor of psychiatry and legal medicine at Turin.

His life from his early student days was one full of activity in scientific pursuits and of much originality in various departments of research. His reputation first spread far beyond his native country through the publication, in 1876, of his quickly famous work on "The Delinquent Man." Throughout the remainder of his life, following this publication, his interest lay chiefly in the study of the somatic aspects of delinquency and the great problem of criminal anthropology. His radical ideas at once excited interest, halting acceptance in certain quarters and vigorous and bitter opposition in others. The development of the significance of degeneracy, as determined by physical stigmata, and the conception that genius and insanity are closely akin, had so large a share of truth that the absurdity to which they were carried by Lombroso led, in the first place, to a large literature on the subject, and, in the second, to a gradual overthrowing of his most radical ideas. The value of this work lay not so much in the accuracy of the deductions drawn as in the definite attention fixed upon the relation between physical and mental conditions in the determination of an individual's place in society. Like most reformers, Lombroso was an extremist, respected for his enthusiasm and general keenness of vision rather than for his actual additions to scientific knowledge in this field of inquiry. Long before his death anthropologists and psychiatrists throughout the world had placed him in the category of useful but misguided men, in certain respects an example of his own type of men of genius.

It is of particular interest to us at this time that Lombroso was the first, or at least one of the first, to draw attention to the disease pellagra, long endemic in his own country, and recently becoming a menace in our own Southern states. Of late years, apparently quite unwillingly, Lombroso became a convert to the reality of certain mediumistic phenomena through his study of Eusapio Palladino, whose extraordinary manifestations have for many years been a source of wonder to many men of many countries. In the eyes of certain persons this latest interest no doubt will weaken his standing as a man of science. However this may be, his contributions to the world's knowledge have been conspicuous, and he will unquestionably go down as one of the relatively few who have succeeded in making a definite impression upon his time and generation.

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MEDICAL SUPERVISION OF SCHOOLS IN GERMANY.

A recent bulletin of the United States Public Health and Marine-Hospital Service calls attention to an interesting report by Mr. Ifft, American consul at Nuremberg, describing the great advance that has been made in Germany in medical inspection of schools. In Nuremberg, a city of 320,000 inhabitants, with 42,000 school children, there are fifteen school physicians, each paid by the city an average salary equivalent to $190. The principal duty of these physicians is to make a careful physical examination of each child at entrance to determine his general fitness, and outline a plan for his bodily training. Another examination is made in the middle of the year to observe the effect of education on the individual pupil and alter his regimen if need be. A third examination during the summer is directed particularly to remedying ailments of the eye and ear and to making special provision for children otherwise defective. Each school physician is further required to make three stated inspections of the school-buildings in his district, with special reference to heating, lighting, ventilation, gymnasia and other hygienic, sanitary and educational facilities. In addition, each physician makes the necessary examinations in cases of contagious disease, superintends the disinfection of buildings and books and issues certificates of excuse for sickness and of return to work after recovery. A similar system is observed in other large German cities. Berlin has forty-four school physicians; in Hanover there are nineteen; in Charlottenburg, fifteen.

From this it would appear that in Germany the medical supervisors have a much more intimate connection with the schools and exercise a greater degree of control over the welfare of the pupils than prevail in this country. How extensive this control should be, and how far it may be practicable under a democratic form of government, are questions that must be decided from our own experience. It is worth while to remember, however, that the idea of medical inspection of schools originated in Germany, and that we cannot afford to be satisfied with mere imitation, but should observe and criticise the progress of methods abroad and adopt such as seem adapted to the demands of school education in our own cities.

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THE SEMEIOTIC VALUE OF DIMINUTION OF THE VESICULAR MURMUR IN THE RIGHT APEX.

ARCHONTAKIS in a recent thesis (Paris, 1909) takes up a question which was discussed at length last year at the Hospital Medical Society of Paris, namely, that of the semeiotic value of diminished vesicular murmur in the right pulmonary apex.

Bezançon, whose paper was the starting point of the discussion, considered that this diminution of the vesicular murmur indicated a cured tuberculosis. A large number of the speakers pointed out that the same symptom is met with in certain patients having lesions of the rhinopharynx, tracheo-bronchial lymph nodes, thoracic or spinal deformities, pleural adhesions, functional spasm of the bronchial tubes, chronic cardiac lesions, localized emphysema of the right apex, etc.

Archontakis conceived the idea of submitting 20 patients presenting a diminution of the vesicular murmur at the right apex to a radioscopic examination. Of these 20 patients, 4 presented no other symptom. In the 16 others a very slight dullness was found over the suspected apex. Now, in the 4 cases in which the decreased vesicular murmur was the only anomaly present, no change in the lung could be detected. In the 16 cases in which dullness was combined with a decreased vesicular murmur, a slight shadow was found over the right pulmonary apex.

Archontakis comes to the conclusion that a diminution of the vesicular murmur alone is not a symptom of tuberculosis, but that it indicates a tubercular infection when it is associated with some other suspicious symptom, such as dullness on percussion or an increase in the thoracic vibrations.

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PRIZE OFFERED BY DR. LOUIS L. SEAMAN.

AT the October meeting of the Medical Association of the Greater City of New York, Dr. Louis L. Seaman, in making his report as a delegate to the recent International Medical Congress at Budapest, where he also represented the New York Museum of Safety and Sanitation, stated that at the Congress he had offered a prize of 2,500 kroners ($500). This prize, the competition for which is open to the world, is for the best essay, in any language, on the following subject: "What should be the organization and status of the medical department of any army in order that its sanitary and hygienic conditions may be maintained at their highest efficiency, so that in the emergency of battle its units may best respond to the call of its commanders?" The award of the prize is to be made by the Executive Committee of the Seventeenth International Medical Congress, London, 1912. Major Seaman has been moved to offer this prize in view of the fact that in most of the great wars of history three fourths of the mortality has resulted from disease, most of this loss being preventable. A personal experience in six campaigns with our own and foreign armies, in various parts of the globe, he says, had demonstrated to him the utter inadequacy of the medical department of them all, with one notable exception. When it was remembered that this department, with its small numbers and limited capacity, had to combat the enemy, which killed 80 out of every 100 who died in war, and also to fight the invalidism which sometimes rendered an army ineffective before the enemy, one was forced to the conclusion that the situation demands radical reform.

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MEDICAL NOTES.

CHOLERA IN PRUSSIA. — Report from Königsberg states that, during the week ending Oct. 20, there were two deaths from Asiatic cholera in the district of Niederung. This is the easternmost province of Prussia, on the Polish frontier, in nearest proximity to St. Petersburg, where cholera has of late been moderately epidemic.

Yellow Fever and Bubonic Plague in Ecuador. — During the first two weeks in October there were thirteen new cases of yellow fever, with four deaths, in Guayaquil, Ecuador. In the same period, fifty-six new cases of bubonic plague were reported in the same city, with sixteen deaths. Guayaquil is the only port on the west coast of South America permanently infected with yellow fever.

Bust of Dr. Morton. — The bronze bust of Dr. William T. C. Morton, which was exhibited in the dome of the Massachusetts General Hospital at the time of the recent ether anniversary, is to be presented to the Smithsonian Institution by Dr. William J. Morton in memory of his father. The inscription at the base of this bust reads:

> " William T. C. Morton, M.D.
> *Discoverer of surgical anesthesia. By whom pain in surgery was averted and annulled. Before whom in all time surgery was agony. Since whom science has control of pain."*

Sodium Benzoate as a Food Preservative.— Report from Washington states that President Taft will this winter be requested to appoint under the pure food law a committee of medical experts to inspect large factories throughout the country in which sodium benzoate is used as a food preservative. This proposed action represents the dissatisfaction of certain organizations and individuals with the findings of the Remsen board, which concluded that such use in moderation is not dangerous to health. It is maintained by these persons, chief of whom is Dr. H. W. Wiley, that sodium benzoate is being employed to preserve certain articles of food that would be otherwise unfit for market.

BOSTON AND NEW ENGLAND.

Acute Infectious Diseases in Boston. — For the week ending at noon, Oct. 26, 1909, there were reported to the Board of Health of Boston the following cases of acute infectious diseases: Diphtheria 50, scarlatina 26, typhoid fever 25, measles 27, smallpox 0, tuberculosis 37.

The death-rate of the reported deaths for the week ending Oct. 26, 1909, was 15.82.

Boston Mortality Statistics. — The total number of deaths reported to the Board of Health for the week ending Saturday, noon, Oct. 23, 1909, was 202, against 187 the corresponding week of last year, showing an increase of 15 deaths and making the death-rate for the week 16.91. Of this number 103 were males and 99 were females; 197 were white and 5 colored; 132 were born in the United States, 66 in foreign countries and 4 unknown; 37 were of American parentage, 129 of foreign parentage and 36 unknown. The number of cases and deaths from infectious diseases reported this week is as follows: Diphtheria, 53 cases and 3 deaths; scarlatina, 25 cases and 1 death; typhoid fever, 23 cases and 9 deaths; measles, 48 cases and 1 death; tuberculosis, 53 cases and 27 deaths; smallpox, 0 case and 1 death. The deaths from pneumonia were 16, whooping cough 0, heart disease 21, bronchitis 0 and marasmus 1. There were 10 deaths from violent causes. The number of children who died under one year was 41; the number under five years 59. The number of persons who died over sixty years of age was 43. The deaths in public institutions were 78.

Of the above infectious diseases the following were non-residents: Consumption, 1 case and 1 death. Typhoid fever, 2 cases and 1 death.

Deducting deaths of non-residents, the total is 179. The corrected death-rate is then 14.98.

Massachusetts Society of Examining Physicians. — At the recent annual meeting of the Massachusetts Society of Examining Physicians, Dr. George G. Sears gave an address on the " Diagnosis of Obscure Heart Diseases," and Dr. James J. Putnam demonstrated various methods of determinating blood-pressure. Dr. Francis D. Donoghue was re-elected president of the society for the ensuing year.

Massachusetts General Hospital Alumni Association Dinner. — A largely attended dinner of the Massachusetts General Hospital Alumni Association was held Oct. 16, at the Hotel Vendome in Boston. This dinner is an annual event in connection with the celebration of the discovery of ether. Dr. John G. Blake presided, and, among other speakers, introduced President Charles W. Eliot, Dr. J. Ewing Mears, of Philadelphia, and Dr. F. S. Watson, of Boston. The exercises were interspersed with original songs, always a feature of this dinner.

NEW YORK.

State Hygienic Laboratory at Ithaca. — In connection with the central department at Albany, a branch of the State Hygienic Laboratory has just been established at Ithaca, to serve the needs of the surrounding counties. It is located in Lincoln Hall, the civil engineering building at Cornell University, and will be under the supervision of Dean Haskell and Prof. H. N. Ogden, hydraulic expert for the state health department.

Dedication of Palmer Physical Laboratory at Princeton. — The new Palmer Physical Laboratory at Princeton, the gift of Stephen S. Palmer, of New York, was formally dedicated on Oct. 22, the one hundred and sixty-third commemoration day of the university. President Woodrow Wilson received the laboratory from the donor, and addresses were made by Dr. Cyrus F. Brackett, of Princeton, and Prof. Elihu Thompson, of Boston. The building is one of the finest of its kind in the country, and was erected at a cost of $525,000.

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Current Literature.

Medical Record.
Sept. 18, 1909.

1. Dorland, W. A. N. *Practical Aspects of the Surgery of the Peritoneum.*
2. Jervey, J. W. *Significance of Certain Pathological Conditions in the Fossae of Rosenmüller.*
3. Nichols, J. B. *The Influence of Meteorologic and Climatic Conditions on Metabolism.*
4. Wainwright, J. W. *Anesthesia in the Control of Inflammation.*
5. Mulot, O. L. *Our Medical Educational System.*
6. Wuttke, E. E. *Clinical and Bacteriologic Study of Forty-one Consecutive Cases of Diphtheria.*
7. Worster, W. P. *Compilation of Facts Concerning High-Frequency Currents.*
8. McCreery, F. R. *Case of Hemorrhagic Renal Infarct.*

Sept. 25, 1909.

1. Simpson, W. K. *Clinical Experience with Calcium Lactate in Hemorrhage of the Upper Air Tract.*
2. *Ussher, C. D. *The Therapeutics of Calcium Sulphide in Relation to Surgery and Contagious Diseases.*
3. Jackson, T. W. *The Clinical Side of Disease in the Philippine Islands.*
4. Robinson, V. *Simpson and Chloroform.*
5. Williams, G. H. *The After-care of the Insane.*
6. Sheedy, B. D. *Tonsil Removal, Opsonic Index, and Immunity.*

2. The author reports remarkable results from the use of calcium sulphide in pustular conditions and suppurative processes generally. He shows its beneficent effect in scarlet fever, typhus and smallpox by the report of a number of characteristic cases. He believes that it will cure typhus and ameliorate measles, scarlet fever and smallpox. [W. B. R.]

New York Medical Journal.
Oct. 16, 1909.

1. *Gordon, A. *Epilepsy in Its Relation to Menstrual Periods.*
2. Carr, W. L. *The Treatment of Acute Pneumonia in Infancy and Childhood.*
3. Wolbarst, A. L. *The Prevalence of Venereal Disease among Recently Arrived Immigrants.*
4. Scarlett, R. B. *Some Conditions which Interfere with the Ventilation of the Nasal Chambers in Children.*
5. McGuire, F. A., and Parker, G. M. *Criminal Simulation.*
6. King, H. D. *The Personal Side in the Treatment of Tuberculosis.*
7. Pomeranz, H. *The Infancy of the Practice of Medicine and Surgery.*
8. Hanley, L. G. *Cases of Intestinal Obstruction.*

1. Gordon made a study of epilepsy in women and found a very definite relation to exist between seizures and the menstrual function. Fits would come on just before or during menstruation, while between periods there was absolute freedom from attacks. He obtained excellent results with thyroid extract, which he gave between periods in conjunction with bromides. Having had such success with the extract of another ductless gland, he suggests the use of ovarian extract for female epileptics. It is certain, he says, that the internal secretion of the ovaries has marked though obscure effects on the cells of the motor cortex. [L. D. C.]

The Journal of the American Medical Association.
Oct. 16, 1909.

1. *Montgomery, E. E. *Enucleation of Uterine Myomata; Why and When Performed.*
2. *Dutton, W. F. *Insect Carriers of Typhoid Fever.*
3. *Stone, W. J. *Typhoid Immunity and Antityphoid Inoculation.*
4. Lumsden, L. L. *Epidemiologic Studies of Typhoid Fever.*
5. *Bowditch, H. I. *A Convenient Method for Determining Caloric Values of Formulas Based on Percentage Feeding of Infants.*
6. Lackner, E. *Heubner's System of Infant Feeding Expressed in Calories and Energy Units.*
7. Niles, G. M. *The Influence of the Olfactories on Digestion.*
8. Albee, F. H. *A Study of the Anatomy and Clinical Importance of the Sacro-iliac Joint.*
9. Heidingsfeld, M. L. *Keloid: A Comparative Histologic Study.*
10. Dowd, C. M. *Persistent Thoracic Sinus following Empyema. A Report of Fifteen Cases Treated by Decortication of Lung and Thorocoplasty.*

1. Montgomery advises the enucleation of uterine myomata: (1) When the growths are few in number and the structure of the uterus but little involved. (2) When the growths are readily accessible through the vagina or cervical canal. (3) When the woman, whether married or unmarried, is under forty years of age, and particularly when she is childless. (4) When the tubes and ovaries are free from complicating conditions. He condemns this operation, (1) When the patient is over forty and degenerative changes are present; (2) when the uterus is so spread by the growth that reconstruction of a functionating uterus is not feasible; or (3) when the circulation is likely to be impaired. Hysterectomy is the remedy for these cases.

2. Dutton believes that typhoid bacilli are frequently carried by all of the following insects: Flies, house ants, cockroaches, house fleas, bedbugs, mosquitoes. Injuries to the skin caused by the bites of mosquitoes, bedbugs or fleas offers an avenue of infection for typhoid bacilli. The bed linen fabrics, or other material on which infected insects may be crushed, offers a ready source of infection. All insects which feed on excreta, animal or vegetable material, and which frequent, breed or hatch in or on, or come in contact with, material infected with typhoid bacilli will become carriers thereof.

3. Stone writes a very concise, readable article on typhoid immunity and antityphoid inoculation. In taking typhoid histories one rarely hears of a previous attack. Blood changes during and following an attack of typhoid are increase in agglutinins, bactericidins, opsonins and stimulins. Fatal cases, however, may show a relatively high bactericidal power. A high opsonic index of two to three persists for several months after an attack. The substance remaining in the blood serum heated to 60° C. which is still capable of inducing phagocytosis has been called stimulin. This also remains high for months after an attack. Stone describes Wright's method of preparation of this antityphoid vaccine. A

typhoid vaccine prepared from a single non-virulent strain is quite as capable of inducing a sufficient immunizing response as that prepared from two or more virulent strains. A vaccine six months old is apt to lose some of its potency. One three months old is as powerful as when freshly made. Inoculation is most effective if fifty to one hundred million be given at the initial dose and followed, after ten to fourteen days, by a second injection of one hundred million. The first injection is not so likely to cause either local or general reaction as the second. The reaction disappears after twenty-four hours. The agglutinins, bactericidins, opsonins and stimulins are thereby increased. The duration of the immunity is estimated from two to six years. The matter of the protection, by these inoculations, against paratyphoid infections is still unsettled. The Medical Board of the United States Army is convinced that the use of the antityphoid vaccination is both useful and harmless, that it offers a practicable means of diminishing the amount of typhoid fever in the army in times of both peace and war, that the experience to date justifies it in recommending the introduction of the practice in regular and volunteer armies in times of war.

5. Bowditch has worked out a table of comparative values of percentage feeding of infants and the caloric value of the food. It seems more simple of application and comprehension than anything that has been offered so far. [E. H. R.]

BULLETIN OF THE JOHNS HOPKINS HOSPITAL.

SEPTEMBER, 1909.

1. *MACCALLUM, W. G. *On the Relation of the Islands of Langerhans to Glycosuria.*
2. *WINTERNITZ, M. C. *Tuberculosis of the Parathyroid Gland and Its Relation to the Occurrence of Tetany in Tuberculous Meningitis.*
3. *BAER, W. S. *Use of Animal Membrane in Producing Mobility in Ankylosed Joints.*
4. *WHITE, W. C. *Municipal Management of Tuberculosis.*
5. *WHIPPLE, G. H., AND SPERRY, J. A. *Chloroform Poisoning. Liver Necrosis and Repair.*

1. MacCallum has made a study of the relation of the islands of Langerhans to glycosuria, based on animal experiments. When a portion of the pancreas is separated from the rest, and its duct ligated, it undergoes extensive atrophy, a tissue remaining which is apparently composed of enlarged islands of Langerhans and the remnants of pancreatic ducts. If the rest of the pancreas be removed, this remnant is capable of warding off glycosuria, even when considerable amounts of dextrose are ingested. When it itself is removed also, glycosuria appears at once spontaneously. The experiment which he has conducted, in so far as it was successful, was intended as a demonstration of the specific control of carbohydrate metabolism by the islands of Langerhans.

2. Winternitz describes two cases of tetany occurring in tuberculous meningitis in conjunction with tuberculosis of the parathyroid gland, found at autopsy. He concludes that tetany may occur in advanced tuberculosis, but that the lesions found in the parathyroid glands in the cases so far reported are not extensive enough to account for the symptoms. The disturbance in the calcium metabolism of the body, with the excessive excretion of this mineral, he believes is a more potent factor in bringing about this hyperexcitability of the nerve cells, and that, consequently, calcium salts should be used therapeutically in tetany complicating tuberculosis.

3. Baer, in an interesting paper profusely illustrated with excellent photographs and x-ray plates, describes the use of animal membrane in producing mobility in ankylosed joints. The entire success of the operation depends upon the character of the membrane used, which should be absorbable and should remain intact from thirty to forty days. It must be pliable enough to be adapted to the contour of the joint, and every raw surface should be absolutely separated by it from that with which it would normally come in contact. He believes that a more extensive study should be made of the method he describes, using chromicized pig's bladder in ankylosed joints.

4. White, in an address on the municipal management of tuberculosis, after mentioning the value of farm colonies, day and night camps and open-air schools, states as his opinion that the struggle must be for an immune race and not for the extermination of every last tubercle bacillus, which is apparently the hope of many. In the municipalities, then, the plan must be to get rid of the sources of large doses of tubercle bacilli and to establish resistant bodies by healthy lives, mainly in our children.

5. Whipple and Sperry present a careful paper on chloroform poisoning and its relation to liver necrosis and repair. The work is based on experiments on dogs. The paper is profusely illustrated with numerous excellent photomicrographs. This paper and the conclusions which they reach will be of value to those interested in this important subject. [J. B. H.]

THE LANCET.

SEPT. 18, 1909.

1. *SCHORSTEIN. *Abscess of the Brain in Association with Pulmonary Disease.*
2. *PEARSON, S. V. *The Temperature as a Guide to the Treatment and Prognosis of Phthisis.*
3. HENDERSON, T. B. *Clinical and Pathological Aspects of a Series of "Doubtful" Tumors of the Breast.*
4. LEITCH, A. *Peau d'Orange in Acute Mammary Carcinoma: Its Cause and Diagnostic Value.*

1. Schorstein discusses 19 cases of brain abscess associated with pulmonary disease which have occurred during the past twenty-two years, 2 from the London Hospital and 17 from the Brompton Hospital. During this time at the latter hospital there were 3,700 autopsies. Of these 19 cases, 14 were due to bronchiectasis, 3 to empyema, 1 to abscess of the lung and 1 to empyema and bronchitis. He has collected the other reported cases, which, with his own, make 69 in all. Of these, 55% were associated with bronchiectasis and 22% with empyema. Among the various causes of death in bronchiectasis, bronchopneumonia is first and brain abscess second, based on 63 cases at the Brompton Hospital. These various conditions and their relation to brain abscess he discusses at some length and then takes up the pathologic conditions in the brain when an abscess is present, lastly discussing the clinical side and treatment. The 19 cases are reported in detail.

2. Pearson emphasizes the need of carefully studying the temperature and its variations in each case of phthisis. Rectal temperature is most satisfactory. He gives at length his reasons for this: that it records actual temperature; that it gives the true temperature after exercise; that it indicates the onset of relapse or complication, and that it records very slight changes in temperature. He discusses the best time for taking temperature and the interpretation of temperature readings. It is interesting to note that he thinks each patient should learn to record his own pulse and temperature. He speaks briefly on the temperature curve, on what is the normal temperature, peculiarities in women, rest and exercise. The significance of a persistently raised temperature and the various causes which bring it about and how to reduce it are gone into in detail. He gives some very practical points on starting exercise and the indications of too much exercise. The paper is a practical one of great value. [J. B. H.]

SEPT. 25, 1909.

1. OLIVER, T. *Modern Moods and Movements in Medicine.*
2. MORRIS, M. *The Treatment of Lupus Erythematosus.*
3. GRAY, H. T. *A Study of Spinal Anesthesia in Children and Infants.* (To be continued.)
4. MACDONALD, I., AND MACKAY, W. A. *A Case of Acute Torsion of a Wandering Spleen; Splenectomy; Recovery.*
5. ARMOUR, D. J., AND SMITH, A. E. *A Case of Arteriovenous Anastomosis for Gangrene.*
6. FRENCH, H. C. *The Treatment of Syphilis by Intra-Muscular Injection of Insoluble Salts of Mercury as Contrasted with the Inunction Method.*
7. CLARKE, J. J. *Congenital Dislocation of the Hip-Joint; the Ultimate Results of the Manipulative*

Operation, and a Note on a New Open Operation for Relapsed Cases.

8. Thomson, D. A. *A Case of Juvenile Myxedema.*
9. Montgomery, R. E., and Kinghorn, A. *Concerning Trypanosoma Dimorphon Dutton and Todd.*
10. Hirsch, C. T. W. *Motoring Notes.*

British Medical Journal.

Sept. 18, 1909.

1. *Clarke, J. M., and Groves, E. W. H. *Remarks on Syringomyelia Occurring in a Brother and Sister.*
2. Smith, C. W. *A Case of Oral Sepsis with Peculiar General Symptoms.*
3. Davies, D. S. *A Case of Apparently Acute Simple Febrile Erythema Associated with the Occurrence of Two Subsequent Cases of Smallpox.*
4. Hollis, W. A. *Facial Wrinkles and Character Expression, with Special Reference to the Nasal-buccal Angles.*
5. Cunningham, H. H. B. *Unusual Case of Facial Paralysis.*
6. Reynolds, C. E. *A Case of Multiple Plexiform Neuroma Associated with Brown Pigmentation of the Overlying Skin.*
7. Carey, C. deL. *A Case of So-called Delayed Chloroform Poisoning.*
8. Whiteford, C. H. *Treatment of the Small Intestine in Operations for Intestinal Obstruction.*

BRITISH MEDICAL ASSOCIATION.

Section of Diseases of Children.

9. Coutts, J. A. *Discussion on Functional Neuroses of Children.*
10. *Nicoll, J. H. *The Surgery of Infancy.*
11. Edington, G. H. *Myxosarcoma of the Prostate in a Child.*
12. *Carmicheal, E. S. *Pneumococcal Peritonitis: A Study of Twenty Cases.*
13. Smith, M. *Early Radical Operation in Exomphalos.*
14. Dun, R. C. *The Association of a Patent Funicular Process with Certain Forms of Hydrocele.*
15. MacLennan, A. *Report of a Case of Madelung's Deformity.*
16. Dun, R. C. *Two Cases of Median Hare-lip.*
17. *Dingwall-Fordyce, A. *Abdominal Tuberculosis in Young Children: Its Prevalence, Prophylaxis and Prognosis, with an Analysis of One Hundred and Thirty-seven Cases.*
18. *Power, D'A. *The Value of New Tuberculin (T. R.) in Surgical Tuberculosis.*

Section of Tropical Medicine.

19. Daniels, C. W. *Introductory Remarks.*
20. Daniels, C. W. *The Persistence of Protozoal Tropical Diseases in Man.*
21. *Brown, W. C. *The Feeding and Treatment of Children in the Tropics.*
22. *Cantile, J. *The Treatment of Chronic Dysentery, with Special Reference to Surgical Treatment.*
23. Ozzard, A. T. *Life History of Ankylostoma Duodenale.*
24. Castellani, A. *Etiology and Pathology of "Endemic Funiculitis."*
25. Williamson, G. A. *Is Ponos Kala-azar?*
26. Castellani, A. *Bronchial Spirochetosis.*
27. Bassett-Smith, P. W. *The Pathology of the Blood in Verruca.*

Section on Pharmacology and Therapeutics.

28. *Chiene, G. L. *Discussion on Spinal Anesthesia.*
29 *Barker, A. E. *Elimination of Stovaine after Spinal Analgesia.*
30. May, R. *The Action of Cresotinic and Toluic Acids.*
31. McWalter, J. C. *The Quack Medicine Traffic.*

1. Clarke and Groves describe two cases of syringomyelia in a brother and sister with the curious bony changes characteristic of this condition. The article is illustrated with numerous x-rays and photographs.

10. Nicoll believes that far more surgery in young children and infants should be done in outpatient departments than is now the custom, thus saving hospital beds for more serious cases, and also saving money for the institition. His article is an argument in support of this view.

12. Carmicheal has made a study of 20 cases of pneumococcal peritonitis of three types: 1. Those in which a pulmonary complication is predominant. 2. Those in which the peritonitis is the sole clinical condition. 3. Fatal cases with a pneumococcus septicemia. Mode of infection is: (1) through the uterus and tubes; (2) by blood infection or transmission through the diaphragm; (3) by ingestion. He then discusses the pathologic changes, prognosis and treatment.

17. Dingwall-Fordyce has analyzed one hundred and thirty-seven cases of abdominal tuberculosis in children. He believes it is far commoner than generally supposed, and supports this view with various tables and statistics. He discusses the age of onset, sex, history, early symptoms, temperature and physical signs of his cases. The mortality of bottle-fed infants is 46%; that of breast-fed infants only 28%. The onset is usually prior to the fourth year. Prognosis in cases with free fluid is unfavorable.

18. Power thinks new tuberculin (T. R.) a valuable agent if given in minute doses in every case of tuberculous sinuses and glands. He does not advise using the opsonic index. He thinks it can be given by mouth with as good results as subcutaneously.

21. Brown discusses the feeding of children in the tropics. This paper should be of value to those physicians residing in these regions.

22. Cantile goes over the general subject of chronic dysentery. He first goes over the pathologic conditions in the intestine and the various parts of it most likely to be affected. To recognize these exact conditions the sigmoidoscope offers the only reliable means. He discusses the treatment of post-dysenteric lesions, — thickening of the bowel wall, stenosis, tumors, — from the general point of view by diet as well as by local applications. He goes into some detail as to the treatment by surgical interference, opening of the appendix, cecum, sigmoid, or by excision of the colon.

28 and 29. Chiene, Buxton, Burton and others discuss the general subject of spinal anesthesia and its application to surgery. [J. B. H.]

Sept. 25, 1909.

BRITISH MEDICAL ASSOCIATION.

Section of Medicine.

1. *Brooks, W. T. *Discussion on the Medical Aspects of Athleticism.*
2. *Riviere, C. *A Natural Experiment in Cardiac Strain.*
3. Moore, B. *Administration of Oxygen in High Percentage.*
4. Eve, F. C. *A Case in which Pneumaturia was Apparently the Sole Indication of Glycosuria.*
5. Gordon, W. *The Influence of Soil on Phthisis as Illustrating a Neglected Principle in Climatology.*
6. *Souttar, H. S. *The Gastroscope and Its Uses.*
7. Gullan, A. G. *Hourglass Contraction of the Stomach.*
8. Stewart, P. *Tic Douloureux: the Technic and Results of Schlosser's Method of Treatment.*
9. Williams, T. A. *The Treatment of Tabes Dorsalis.*
10. Rolleston, H. D. *Pruritus in Lymphadenoma.*
11. Maguire, W. J. *The Value of Mental Symptoms in Diagnosis.*
12. Samways, D. W. *Misconceptions Concerning the Riviera.*

Section of Pathology.

13. Symmers, W. St. C. *Introductory Remarks by the President.*
14. Chambers, H. *Observations on the Pathology of Innocent Goitre.*
15. Beckton, H. *On the Absence of Altmann's Granules from Cells of Malignant New Growths.*
16. Smith, J. L. *A Case of Cancer of the Pylorus.*
17. Rowntree, C. W. *X-Ray Carcinoma.*
18. *Ruffer, M. A. *On the Etiology of Dysentery.*
19. McWeeny, E. J. *On the Value of Colored Substrata for the Detection and Differentiation of the Typhocoli Group.*

20. Wilson, W. J. *On Heterologous Agglutinins, More Particularly those Present in the Blood Serum of Cerebrospinal Fever and Typhus Fever Cases.*
21. Cobbett, L. *Portals of Entry of Tubercle Bacilli into the Body.*
22. Robertson, W. F. *On the Protozoan Origin of Tumors.*
23. Moore, B., and Williams, R. S. *Effect on the Growth of Micro-organisms of Different Percentages of Oxygen.*

Section of Ophthalmology.

24. Browne, J. W. *Introductory Remarks by the President.*
25. Fergus, F. *Discussion on Eye Injuries in Relation to Workmen's Compensation.*
26. Horsley, V. *The Ipsolaterality of Optic Neuritis and the Lesion Causing It.*
27. Harman, N. B. *Acute Orbital Periostitis Consequent on Dental Disease.*
28. Killen, W. M. *Adenoids and Asthenopia.*
29. Damant, G. C. C., and Lockwood-Thomas, E. R. *A Case of Compressed-air Illness Cured by Recompression.*

1. Brooks is of the opinion that every boy on entering school should have a thorough medical examination; his fitness for athletics should depend on his general condition and not on his age. Careful watching of younger boys on starting in any branch of athletics should be made in every case. There should be at least a one-hour interval between the last meal and the commencement of exercise. There should be special caution during convalescence from sickness. Dukes, who for some years has had general charge of athletics at Rugby, discusses this general subject of athletics *vs.* exercise for young men and boys. These papers and their discussion are of great interest and value to practitioners.

2. Riviere studied the hearts and general condition of some boys seven to fourteen years old before and after a week's tramping trip in the hilly country districts. Over 60% of the boys showed considerable cardiac enlargement during this time. The causes for this condition and the methods to avoid it he discusses briefly.

6. Souttar and Thompson describe the gastroscope, its uses, methods of use and results obtained. The article has several excellent illustrations.

18. Ruffer describes dysentery as it occurs during the various pilgrimages to El Tor. He has found at least seven distinct varieties of this disease, each due to a different cause. This is doubtless the reason why treatment is so unsatisfactory; until a polyvalent serum is prepared, this will probably continue to be the case. [J. B. H.]

The Practitioner.

September, 1909.

1. Bowlby, A. A. *Cancer of the Breast and Its Early Diagnosis.*
2. *Shaw, H. B. *Review of Diseases of the Blood.*
3. *McDonagh, J. E. R., Müller, R., and Morawetz, G. *Serum Diagnosis of Syphilis.*
4. *MacWatters, J. C. *Vaccine Therapy in General Practice.*
5. Sheen, W. *Etiology of Hernia.*
6. Dent, E. A. *Rheumatoid Arthritis: Its Clinical Aspects, Diagnosis and Treatment.*
7. Elsworth, R. C. *Chronic Indigestion Considered as a Surgical Disease.*
8. Fletcher, W. *Case of Primary Lymphadenoma of the Small Intestine.*
9. Moorhead, T. G. *Two Cases of Acid Intoxication.*
10. Dundas, J. *Mental Deficiency in Children.*

2. Shaw, in a review of the more complicated methods of diagnosis of diseases of the blood, discusses the general subject of the Ehrlich side-chain theory by means of numerous diagrams. His article is more a brief review of the work done on this subject and a summary of the technic of the more common and important procedures than any original work of his own. He presents this difficult matter in a clearer and more readable manner than is generally the case.

3. McDonagh, Müller and Morawetz review the recent work done on the serum diagnosis of syphilis, giving in detail the technic of the different methods. To those working along this line this paper will be of value.

4. MacWatters discusses the use of vaccine therapy in general practice, particularly in the treatment of various skin diseases, furunculosis, carbuncles, impetigo, and, last, the treatment of tuberculous glands by means of tuberculin. [J. B. H.]

Edinburgh Medical Journal.

September, 1909.

1. *Brown, R. D., and Low, R. C. *Pellagra.*
2. *Wilkie, D. P. D. *Hirschsprung's Disease ("Idiopathic" Dilatation of the Colon).*
3. Marshall, P. *Clinical Investigation of Lumbar Puncture.*

1. Brown and Low describe in detail a case of pellagra, the second case to be reported as having occurred in Great Britain.

2. Wilkie discusses the condition known as Hirschsprung's disease, or much better, idiopathic dilatation of the colon. He presents the various theories brought forward to explain the etiology of this interesting condition, among which may be mentioned: (1) That it is a congenital dilatation and hypertrophy; (2) that it is due to abnormal length of the pelvic colon; (3) that it is due to an abnormally long pelvic mesocolon; (4) that there is a congenital aplasia of the muscular coat of the intestine with secondary distention; and (5) that it is due to a weak tonus of the muscular coat of the colon, the result of defective innervation. He discusses the morbid anatomy of the parts, the microscopic appearances in the course of the disease, and the physical signs of this condition. He presents five cases in detail, discussing the various methods of operation. [J. B. H.]

Deutsche Medizinische Wochenschrift. No. 37.

Sept. 16, 1909.

1. Verworn, M. *Narcosis.*
2. *Cramer, A. *The Nervous and Psychical Disturbances in Arteriosclerosis.*
3. v. Monakow, C. *General Observations on the Localization of Motor Aphasia.*
4. Jendrassik, E. *The Concept of Neurasthenia.*
5. Ribbert, H. *Malignant Adenoma of the Liver.*
6. Einhorn, M. *Duodenal Ulcer and Its Treatment.*
7. Payr, E. *Pathogenesis, Indications and Treatment of Round Ulcer of the Stomach.*
8. Xylander. *Two Cases of Serpiginous Gonorrheal Ulcer in Man.*
9. Harmel. *A Case of Mikulicz's Disease.*
10. v. Scheven, E. *Demonstration of Rare Tubercle Bacilli in the Sputum.*
11. Voigt, L. *Variola Vaccine.*

2. Cramer, in a long discourse, takes up the nervous and psychic symptoms occurring in arteriosclerosis of the brain. On the side of nervous phenomena he considers first the general symptoms. Three are most prominent, — dizziness, headache and loss of memory. Besides these three important symptoms a tendency towards crying and some change in the ability to sleep is frequently noted. Under local phenomena he mentions the pupillary reaction, which is slowed, but rarely wanting. It is also quite variable in the speed and intensity of its reaction. Marked slowness of speech is another symptom. Increase of reflexes, local paralyses, or anesthesias or paresthesias, and any of the symptoms common to softening or thrombosis are common to this class. The diagnosis must not be made without considering the condition of heart and kidney in regard to arterial change, but also it must be remembered that the peripheral vessels do not give a true indication of the condition of the cerebral ones. The diagnosis must rest on a combination of symptoms, not any one symptom. The psychic phenomena fall into three groups: (1) Progressive loss of mental strength; (2) slight or severe stages of depression; (3) stages of exaltation and rarely a paranoiac symptom-complex. The first group are confused sometimes with general progressive paralysis, the second with melancholia. All the

psychoses of arteriosclerosis are similar to those of progressive paralysis, and Cramer considers the Wassermann reaction a great aid in making the differential diagnosis. [C. F., Jr.]

No. 38. Sept. 23, 1909.

1. Escherich, T. *The Present Status of the Doctrine of Scrofula.*
2. v. Bramann. *The Treatment of Hydrocephalus by Section through the Corpus Callosum.*
3. v. Monakow, C. *General Observations on the Localization of Motor Aphasia.*
4. Vulpius. *In What Hospitals is the Treatment of Accident Cases Carried Out the Most Satisfactorily?*
5. *Schereschewsky, J. *Experiences up to the Present Time with Cultivated Spirocheta Pallida.*
6. Herzog. *The Treatment of Tabetic Ataxia.*
7. Riedel, C. *A Contribution on Intestinal Invagination.*
8. Jankowski, J. *Strangulation Ileus as a Result of Formation of Multiple Adhesions after Appendicitis.*
9. Bauer, J. *The Biology of Colostrum.*
10. Durlacher. *Congenital Bilateral Anophthalmus.*
11. Sternberg, W. *Compendious Quantitative Olfactometer for Clinical Purposes.*

5. Schereschewsky has succeeded in recovering a spirochete from syphilitic material and has succeeded in growing it on artificial media. This spirochete, not only by himself, but also by many other workers in this subject, has been pronounced morphologically the same as the spirochete pallida. However, he does not consider it to be the spirochete pallida, because he can find no relation between this spirochete and syphilitic sera in regard to agglutination, precipitation or complement binding. Attempts at producing a cutaneous reaction with this spirochete were without success. Also, animals inoculated, such as monkeys and rabbits, showed no lesions. The fact that it had grown on artificial media might be claimed to be the cause of the lack of virulence, but other spirochete grown on artificial media were found to retain their virulence. Thus the author is forced to conclude that he has not succeeded in growing the spirochete pallida and that it cannot be detected purely on its morphology. [C. F., Jr.]

Münchener Medizinische Wochenschrift. No. 39.

Sept. 28, 1909.

1. Deycke, G., and Much, H. *Bacteriolysis of Tubercle Bacilli.*
2. *Saathoff, L. *Experiences with the Wassermann Test in Internal Medicine.*
3. *Grosser, P. *The Rôle of Albumin in Infant Feeding.*
4. Heinzmann. *Permanent Results by Girard's Radical Operation for Inguinal Hernia.*
5. Schümann. *Presenile Gangrene as a Result of Arteritis Obliterans.*
6. *Walthard, M. *The Psychogenic Etiology and Psychotherapy of Vaginismus.*
7. Widmer, C. *Recent Results and Experiences in the Field of Heliotherapy.*
8. v. Baeyer, H. *The Treatment of Metatarsalgia.*
9. Knoke. *Contribution to the Conservative Treatment of Severe Injuries to the Extremities and Threatening Gangrene.*
10. Forkel, W. *A Case of Unilateral Ascending Tuberculosis of the Genito-Urinary Tract.*
11. Kondoleon, E. *Case of Suprapubic Extra-Vesical Prostatectomy.*
12. Paschen, E. *Ewing's Method Applied to the Study of the Vaccine Bodies.*
13. Dessauer, F. *The Klinoscope: a New Radiological Apparatus for Investigation.*
14. Meyer, L. *A Gonorrheal Suspensory with a Pocket.*
15. Fischer, A. *Important Facts from the Statistical Handbook of the Grand Duchy of Hesse.*
16. Hanauer, W. *Government Regulations for Safety, and Social Hygiene.*
17. *Steinert, H. *Syphilitic Polyneuritis.* (Concluded.)
18. Henkel. *Official Precautions against Infectious Diseases.* (Concluded.)

2. By trying the Wassermann test on all cases in his hospital service, the writer was led to suspect syphilis in a considerable number of cases where it would never have been thought of otherwise. Many of them, on investigation of the personal and family history, gave some corroborative evidence.

3. The writer discusses the literature on the subject of albumin in infant feeding and tells the results of some of his own experiments in feeding young animals. He believes the conclusion to be justified that the reason why cow's milk is less nutritious for infants than human milk is not to be found in the character of the contained albumin, and that, therefore, a great change must be made in our ideas of infant feeding.

6. Walthard states that vaginismus is not a physiological reflex due to local hyperesthesia, but is a psychologic reflex due to fear of pain. By innervation of the abdominal muscles those of the pelvis are relaxed so that a foreign body can be introduced easily without pain. Treatment should, therefore, be directed toward relieving the patient of her fears, and operative measures are unnecessary.

17. (Steinert's article on syphilitic polyneuritis is a thorough and convincing piece of work.) Briefly summarized, his conclusions are as follows: That a polyneuritis due to syphilis occurs; that it appears in the secondary stage of the disease, coming early, as a rule, while there are still signs on the skin or mucous membrane; and that it is not known to occur in the tertiary or metasyphilitic stages. The fear of mistaking a syphilitic polyneuritis for one due to mercury is unfounded, because mercury in general does not cause polyneuritis. Only in case of severe acute mercurial poisoning need one consider this possibility. The clinical picture usually corresponds to the ordinary symmetrical polyneuritis. It assumes a pseudo-tabetic form with comparative frequency. Recovery is complete, as a rule, but fatal cases occur rarely. The pathological-anatomical picture seems to correspond with that of other forms of polyneuritis. The treatment should be by energetic use of mercury. [G. C. S.]

Berliner Klinische Wochenschrift. No. 40.

Oct. 4, 1909.

1. *Weiss, L. *The Morphology of the Virus of Tuberculosis, with Special Consideration of a Combined Stain.*
2. *Gerhartz, H. *Diphtheria Toxin and X-Rays.*
3. Baerman, G., and Eckersdorff, O. *The Paratyphoid Bacillus "A."*
4. *Schade, H. *The Use of the "Endograph" in Examination of Stomach, Intestine and Esophagus.* (Preliminary report.)
5. *Tobias, E. *Obesity Cures.*
6. Tschernogubow, N. A. *The Question of the Use of Active Sera in the Serum Diagnosis of Syphilis.*
7. Münzer, A. *Natural Forces in Relation to the Phenomena of Disease.*
8. Hirschfeld, H. *The Action of "Gynoval" in Cardiac Neuroses.*

1. Weiss describes several methods of staining the tubercle bacillus with double stains, by which definite granules are brought out in the structure of the bacillus. His method of staining is simpler than that of Hantano, but neither method seems to have any especial advantage in differential diagnosis.

2. Gerhartz follows the injection of rabbits with lethal doses of diphtheria toxin by the application of the Röntgen rays. His conclusion is that the Röntgen ray has a definite action in attenuating the diphtheria toxin both in the body and outside, free in the circulation or fixed.

4. Schade's method of investigation in diseases of the alimentary tract rests on the principle that chemical reactions take place on the surface of a bladder artificially introduced into an organ at point of contact with the wall of that organ, so registering the topography and pathological or physiological condition of the mucous membrane.

5. Tobias enforces the importance of a not too sudden transition from accustomed habits to strict diets and the advisability of allowing short periods of wholly changed diet, so that the organism will better respond to the strict antifat régime. [H. P. G

Correspondence.

PARIS LETTER.

The North Atlantic Islands.[1]

(From Our Special Correspondent.)

Paris, Sept. 28, 1909.

Mr. Editor: Over the sea voyage from the Faroes to Iceland I will draw a veil. I know my own limitations and am fully aware that no prose at my command could portray anything so dreadful. But we finally ran into a deep fjord and were able to set foot on land again.

The first persons I saw on the dock were the local doctor and a French abbé. The French fisheries off this coast are so important an industry that the French government keeps a guardship stationed here all summer, and has a nice little hospital on land, with an almoner, to look after the sailors' spiritual needs. The good abbé, who was from Lyons, hailed us with enthusiasm, receiving us almost as compatriots.

Our ship now proceeded to steam right round the island, running up the various fjords to the trading stations. At most of the latter I had talks with the local medical men, and visited their little hospitals, and in this way was able to get an idea of what medical life is in Iceland that may prove a solace to many men who fancy their lots have fallen in hard places. To understand this, however, I must give a summary description of the island.

Iceland is a much more extensive place than is generally realized; it is larger than Ireland and not much smaller than England It is nearly all of igneous and volcanic origin, and consists, *grosso modo*, of a high, barren interior, covered with hugh glaciers, volcanoes, lava fields and stone and sand wastes, and a species of narrow, fertile, inhabited zone about the edge. The circumference of the island is deeply indented by high fjords, at the head of each of which lies a trading post, back of which again is a fertile valley, or system of valleys, down which rush swift glacier streams and which are separated from the adjacent valleys by high basalt ridges.

The population of this country nearly the size of England is only about eighty thousand. Life there is very hard, the climate severe and the people distinctly poor, with very few aggregations. A place of fifteen hundred souls is an important town. The result is that the medical interests of the country are a government affair, the physicians being all under one head physician and receiving salaries to go and practice at given posts, otherwise they could not live. There are only about forty of them in the whole country, and their life is not a bed of roses by a good deal. In fact, it is difficult to decide which has the worst time, patient or physician. Let us take the latter first.

He receives a salary of $420. In addition to this he is allowed to charge 28 cents a visit to a patient, which, in the case of paupers, is paid by the parish. But the greater part of the population lies scattered all about on distant farms. These people all have a right to the physician's services, and he has to go to them, provided the traveling will admit of a man coming to fetch him. The weather is severe, darkness, cold and snow, but go he must, sometimes as much as two, three and even five days' journey. At certain times in the year the glacier streams are unfordable and they are always dangerous; roads hardly exist, nothing but bridle paths for the hardy little ponies, which are wonderful beasts. There are very few bridges. Much traveling is done in skis.

For distant visits the physician is allowed 8½ cents per hour (14 cents at night). When he has risked his life half a dozen times and done his two or three days' traveling, he can charge his usual 28 cents for his visit. You will grasp that this hardly means wealth beyond the dreams of avarice!

Now let us see the patient's position, — possibly even worse than the doctor's. He sends his messenger. This man may be delayed by a variety of incidents — lame horse, sudden thaw, streams unfordable, etc. Again, when he reaches the town, the doctor may have gone off in an entirely different direction for an indefinite time. The return journey, of course, is subject to similar delays, so that it may be several days, a week, or even more, before medical aid is available, in extreme cases, though even in ordinary ones there is always delay. If, now, the case is one of retention of urine, strangulated hernia, appendicitis, or other similar urgency, — dystocia, for instance, — the patient's fate can be imagined. Nor is this all. When the doctor arrives, what can he do? He cannot stay: he is alone and cannot operate, and the patient cannot be transported over such a country on the back of a rough pony. So the visit amounts to general directions (typhoid or pneumonia), consolation and opiates (appendicitis). I was told that in all of these outlying farms, and whatever the disorder, the doctors hardly ever see a patient more than once.

The only advancement these practitioners have to look forward to is to be moved from one God-forsaken post to another a little less God-forsaken, with the possibility of ultimately reaching Rykjavik, the capital. Yet they are a wide-awake, energetic, well-educated body of men, young, trained in Copenhagen and resourceful, able to do almost anything with the scanty means at their disposal. I came away with a respect for these *confrères* that knows no bounds.

In their hospitals there was, as I expected, a good deal of echinococcus, which it seems is still frequent on account of the many dogs and the myriads of sheep. They do the operation in two stages. But at Rykjavik there is a (to the European) real curiosity in the leper hospital. Leprosy is a thing we practically never see in France.

This hospital, which lies a mile or two outside of the capital, is a very creditable affair from all points of view. The site is excellent and the building most satisfactory: large, well-lighted, cheery rooms, with only a few patients in each, from two to six or eight. The disease was quite new to me and interested me vastly when I was shown over by the physician in charge. This *confrère*, by the way, must have been amused at my ignorance. The tubercular form of the disease affecting the face, the so-called *facies leonina*, and a very fitting term it is, too, gives the patients a soiled appearance, as though a light application of black lead had been made; and when I asked the doctor whether they really were being treated with collargol ointment, he was good enough not to smile.

They look on leprosy in Iceland as purely and simply a filth disease, destined as such to disappear in the immediate future. Their hospital has sixty beds, but could undoubtedly contain a larger number. They estimate that there may be about two hundred cases still in the country; there are about five hundred yet in Norway, which has four leper hospitals. Of the two forms, anesthetic and tubercular, the former averages about twenty years in duration; the latter, ten; prognosis is fatal and no cases recover, although of late, with the Chaulmoogra oil, results have seemed to be slightly modified. In Iceland there has just been passed a law making the hospitalization of the tubercular or contagious form of the disease obligatory, since the leprosy tubercles, when open, swarm with bacilli. They hope in this way to soon put an end to the trouble. An argument they use in support of the filth-disease theory is that Norwegian lepers who have emigrated to the great American Northwest have been followed up and found to have caused no spread of the disease, owing to the vastly better general life-conditions prevailing in that superb region.

Another problem that is now being taken seriously in hand in Iceland is tuberculosis. The story they tell about tuberculosis seems difficult to believe. They say that not long ago, twenty-five years or so, this disease was almost unknown, but that it has come to the fore very rapidly of late and is now spreading in an alarming manner. The reason I say that this is not easy to believe is that the conditions of physiological misery, the lack of even the elements of hygiene, are so extraordinary on the up-country Icelandic farm that it is impossible to see how tuberculosis can have failed to prevail there from time immemorial. These conditions are being improved, but the old-fashioned "baer," with its turf walls, absence of light, lack of all semblance of ventilation, and crowded, promiscuous life of man and beast, provides every facility for the development of the bacillus.

So the authorities have tackled this question, and what have they done? To fully appreciate their action on that point you must first bear in mind that theirs is a very poor country, with not a cent to waste; the Astorbilts of Iceland are worth from three to four thousand dollars, and that in property and stock! Again, that in the leprosy question they have acted on sound, intelligent lines.

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[1] Concluded from p. 271.

But for tuberculosis they have just laid the foundation for a fine sanatorium, with great pomp and circumstance. With leprosy, where the problem is *identical*, they decree the segregation of the open, contagious patients, and then endeavor to stamp out the disease by improving the general conditions of life throughout the land. With tuberculosis they are going to try to patch up at great expense the incipient cases, but are willing to leave the active focus of the disease, the advanced patient with broken-down tubercles, to continue his devastating ravages in the magnificent hotbeds of the up-country turf farmhouse! Really, the workings of the human mind outstrip understanding. It is simply astounding that people should so deliberately close their eyes to the fact that the solution of the tuberculosis question lies in the suppression of the contagious element and in the improvement of life conditions in the places where this contagion finds its most favorable surroundings for development; and that all this sanatorium movement, which is, no doubt, all right *so far as it goes*, is merely trifling with the main problem.

My visit to these islands of the North Atlantic, combined with a trip I made to Norway last summer, was full of instruction in other respects besides medicine. For some years now I have been interested in the history, language and literature of the Northmen, and it is this that led me to make these rather uncomfortable journeys — for it must be admitted that the Iceland trip is not yet one to be recommended to the ordinary tourist! You have got to be actuated by the sacred fire to stand the *nineteen days* on that little Danish cargo-boat that we went through. However, it was worth it.

I was given in my youth what is known as a liberal education. After years of schools and tutors I entered one of our largest universities, and there went through the four-year academic course, ending at the age of twenty-two. During all this time the studies pursued did not go much outside of the history and literature of Greece and Rome and mathematics of all kinds and descriptions. Modern languages were hardly touched on, natural science not at all, and the literature and history of my own race, as well as of the other great modern races, French and German, were treated casually, as though mere sideshows to the really vital subjects, Greece, Rome and mathematics. As I now look back from afar on all this education that I received I can only say that a more dismal failure as a means of fitting a young man out for life I can hardly imagine. I know, of course, that radical changes have been introduced in the curriculum since I left the university, but the fact remains that up to 1880 that was the best that the human mind could devise!

But the one point that I find fault with more particularly in all this is that, in that long course of study of about twelve to fourteen years, not one word was ever said to me about the real ancestors of our race, the Northmen, to whom and to no one else we owe what is best in the English-speaking peoples — their fearlessness, truth and love of freedom.

The Northmen labor under an undeserved reputation of having been wild bands of plunderers and murderers. That this is not so I could prove if I had time. As a matter of fact, they are in many respects the most remarkable people of history. You have yourself to navigate a bit those storm-beaten, almost Arctic seas to realize what it meant to do the same a thousand years ago in open cockle-shells and without a compass. Two of these boats have been unearthed from funeral mounds and are on exhibition in Christiania. Look at them, then take steamer to Iceland, and draw your own inferences!

The old Northmen used to cruise around all that region between Norway, Iceland, Greenland, Labrador, the Faroes, Shetlands, Orkneys, Scotland, the Hebrides, Isle of Man and Ireland, even pushing on to England, France, Spain, Africa, the Mediterranean, Sicily, Constantinople and the Holy Land, in those little boats, with no more fear and with the same freedom as though it were an inland lake. It takes dauntless *men* to lead such a life as that.

You have yourself to see this region to realize what the love of freedom was in the Northman. What was the origin of all this roving over those awful seas? Simply the fact that in Norway one ambitious chief wanted to subject all the other chiefs to his rule; the others were too proud to stand it, and, unable to resist this chief, they preferred to leave, and issued forth in every direction, like a band of angry hornets.

That they should have wanted to lay hands on England is comprehensible; that beautiful and fertile country must have seemed Valhalla itself to the man from the bleak and barren North. Their traces still appear all over the northern portion of Great Britain. In York the other day I noticed, for instance, that one of the chief thoroughfares is named the Micklegate; this is pure Icelandic for "main-street," and shows very plainly who had passed along there. But what the old Northmen wanted to settle in the Faroes and Iceland for is less easy to explain,— countries almost without soil, remote, and with a terrible climate. There appear, however, to have been two reasons for this: Firstly, that Harold, the Norwegian, made things so hot for them in Scotland, the Orkneys and Shetland that they had to move on farther to be out of his reach; and, secondly, that Iceland was a *very* different place a thousand years ago from what it is now.

These people, their language and literature are well worth time and study, and it is a sorry service to render an English-speaking young man to start him in life with no knowledge of them whatever, but with an intimate acquaintance with such weak-kneed, whining creatures as the regretted Æneas and Odysseus, who always took things lying down and crying out for their mammas. The Northman was a man who knew no fear, who always said just what he meant, said it to his opponent's face, and stood ready to back it up with his weapons if necessary. He fears no comparison with the noble heroes above referred to.

That the literature of Rome and Greece is finer than that of the North is admitted. But how much of this literature did we read? How many got as far as Aristotle or Plato? Caesars, Virgils, Ciceros, etc., can be found in plenty in the North, and much better, too. Does the mythology of the Greeks exercise the growing imagination? The Northmen can give them points; their mythology is magnificent. Minerva, I believe, sprang fully armed out of the brain of Jupiter, but find me a parallel to that fine old chap Heimdabe, who was the son of nine virgins, all sisters, whose teeth were of gold (the self-indicated patron saint of the dental fraternity, in consequence), who needed less sleep than a bird, who could see a hundred leagues off as well by night as by day, and who, finally, could hear the grass growing in the fields and the wool on the sheep's back. This is imagination of a high order!

Or are we to be told that Greek is an excellent means of training the minds of the young? So it may be, but I'll venture to state that Icelandic is at least its equal in that respect, if not its superior. Certainly I, personally, never had anything like the difficulty in Greek that I met in Icelandic, in which tongue the obstacles and complications seem to have been accumulated out of pure contrariness. It affords me much pleasure to find my views in this connection corroborated by several German writers; when a Teuton puts down in print that a language is *sehr schwer*, you will do well to be on the lookout for trouble.

No, it is a very great pity that we English-speaking people do not know our ancestors from the North more fully. They are fine races, with a fine history and a fine literature; and, above all, they are *men*. "*Ekki hraedumst ek danda minn,*"[2] said Skarphjedinn, as he walked into his home at his father's bidding to be burned to death; and so magnificent was this man's will power that he was afterwards found *still standing* against the wall, though dead, among the charred ruins. Men such as these were ancestors worth having; they took their punishment with face to foe and a smile on their lips, and not squealing on the ground and wailing for their mothers. And their women were fit mates for them. Space fails me to cite any of the many instances with which the sagas abound; just turn to some translation and read about Bergthora, Hallgerdr, Helga or Andr, and you will see what Icelandic women can do.

"SPECTATOR."

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[2] I have no fear of death.

RECORD OF MORTALITY

FOR THE WEEK ENDING SATURDAY, OCT. 16, 1909.

CITIES.	Reported deaths in each.	Deaths under five years.	CITIES.	Reported deaths in each.	Deaths under five years.
New York	—	—	Waltham	13	5
Chicago	—	—	Pittsfield	3	1
Philadelphia	—	—	Brookline	—	—
St. Louis	—	—	Gloucester	9	2
Baltimore	208	70	North Adams	7	2
Cleveland	—	—	Northampton	7	1
Buffalo	—	—	Chicopee	5	1
Pittsburg	—	—	Medford	2	2
Cincinnati	—	—	Beverly	9	1
Milwaukee	—	—	Leominster	3	2
Washington	—	—	Hyde Park	9	1
Providence	—	—	Melrose	4	0
Boston	181	47	Newburyport	4	1
Worcester	29	7	Revere	2	—
Fall River	54	30	Westfield	8	4
Cambridge	27	4	Woburn	3	0
Lowell	34	13	Peabody	—	—
New Bedford	43	17	Marlboro	3	1
Lynn	26	7	Attleboro	4	1
Springfield	—	—	Adams	4	1
Lawrence	25	15	Clinton	2	—
Somerville	15	3	Gardner	2	0
Brockton	6	4	Milford	3	2
Holyoke	13	4	Watertown	1	0
Malden	7	1	Plymouth	—	—
Chelsea	7	2	Southbridge	4	2
Newton	10	3	Weymouth	1	1
Salem	11	4	Framingham	3	1
Haverhill	7	4	Wakefield	—	—
Fitchburg	10	6	Webster	—	—
Everett	6	2	Arlington	0	—
Quincy	—	—	Greenfield	3	—
Taunton	15	4			

LIST OF CHANGES OF STATIONS AND DUTIES OF COMMISSIONED AND OTHER OFFICERS OF THE PUBLIC HEALTH AND MARINE-HOSPITAL SERVICE FOR THE SEVEN DAYS ENDED OCT. 13, 1909.

TRASK, J. W., assistant surgeon-general. Detailed to represent the Service at the annual meeting of the American Public Health Association, to be held in Richmond, Va., Oct. 19–21, 1909. Oct. 9, 1909.

WHITE, J. H., surgeon. Directed to proceed to Galveston, Tex., upon special temporary duty. Oct. 9, 1909.

EAGER, J. M., surgeon. Granted one day's leave of absence, Oct. 17, 1909.

OAKLEY, J. H., surgeon. Granted one day's leave of absence, Oct. 12, 1909.

LAVINDER, C. H., passed assistant surgeon. Bureau order of Sept. 22, 1909, amended to read, upon completion of duty enjoined, directed to proceed to Jackson, La., upon special temporary duty. Oct. 9, 1909.

ANDERSON, JOHN F., passed assistant surgeon. Detailed to represent the Service at the annual meeting of the American Public Health Association, to be held in Richmond, Va., Oct. 19–21, 1909. Oct. 9, 1909.

MOORE, DUNLOP, passed assistant surgeon. Directed to report to the medical officer in command at San Francisco, Cal., for temporary duty and assignment to quarters. Oct. 7, 1909.

FRANCIS, EDWARD, passed assistant surgeon. Upon being relieved by Passed Assistant Surgeon Hugh de Valin, directed to proceed to Washington, D. C., and report to the Director of the Hygienic Laboratory for duty. Oct. 7, 1909.

BOGGESS, J. S., passed assistant surgeon. Granted three months' leave of absence from Oct. 15, 1909.

SWEET, ERNEST A., passed assistant surgeon. Relieved from duty at Ellis Island, N. Y., and directed to proceed to Stapleton, N. Y., and report to the medical officer in command for duty and assignment to quarters. Oct. 12, 1909.

ASHFORD, F. A., passed assistant surgeon. Upon arrival of Passed Assistant Surgeon Ernest A. Sweet, relieved from duty at Stapleton, N. Y., and directed to proceed to Ellis Island, N. Y., and report to the chief medical officer for duty. Oct. 12, 1909.

DE VALIN, HUGH, passed assistant surgeon. Upon being relieved by Assistant Surgeon Charles M. Fauntleroy, directed to proceed to the Mobile Quarantine Station and assume command of the Service. Oct. 7, 1909.

KRULISH, EMIL, assistant surgeon. Granted ten days' leave of absence from Oct. 15, 1909.

FAUNTLEROY, CHARLES M., assistant surgeon. Upon the arrival of Assistant Surgeon R. H. Lyon, directed to proceed to Savannah Quarantine Station, Ga., and assume command of the Service. Oct. 7, 1909.

LYON, R. H., assistant surgeon. Relieved from duty at Reedy Island Quarantine Station, and directed to proceed to New Orleans Quarantine Station, and report to the medical officer in command for duty and assignment to quarters. Oct. 7, 1909.

GUSTETTER, A. L., acting assistant surgeon. Granted five days' leave of absence from Oct. 13, 1909.

HALLETT, E. B., acting assistant surgeon. Granted seven days' leave of absence from Oct. 12, 1909.

HUME, LEA, acting assistant surgeon. Granted ten days' leave of absence from Oct. 10, 1909.

LOWTHIAN, E. L., acting assistant surgeon. Granted twenty-seven days' leave of absence from Oct. 4, 1909.

RYDER, L. W., pharmacist. Granted two days' leave of absence from Oct. 8, 1909, under paragraph 210, Service Regulations.

BOARDS CONVENED.

Board of medical officers convened to meet at Seattle, Wash., Oct. 6, 1909, for the purpose of examining an alien. Detail for the Board: Passed Assistant Surgeon M. W. Glover, chairman; Assistant Surgeon C. W. Chapin; Acting Assistant Surgeon F. R. Underwood, recorder.

Board of medical officers convened to meet at Seattle, Wash., Oct. 7, 1909, for the purpose of examining an alien. Detail for the Board: Passed Assistant Surgeon M. W. Glover, chairman; Assistant Surgeon C. W. Chapin; Acting Assistant Surgeon F. R. Underwood, recorder.

SOCIETY NOTICES.

A NATIONAL Conference on Pellagra will be held under the auspices of the South Carolina State Board of Health at the State Hospital for the Insane, Columbia, S. C., Nov. 3–4, 1909.

SUFFOLK DISTRICT MEDICAL SOCIETY. — Stated meeting, Saturday, Oct. 30, 1909, at 8.15 P.M. Paper: "Medical Expert Testimony," by Hon. William Schofield, Judge of the Superior Court of Massachusetts. Discussion by District-Attorney Arthur D. Hill and the following additional members of the bar: Messrs. Thomas W. Proctor, Ezra R. Thayer, Charles F. Choate, Jr., Henry F. Hurlburt and William G. Thompson, and George W. Gay, M.D. Business: Election of Nominating Committee. Refreshments after the meeting.

GEORGE H. MONKS, M.D., *President.* DAVID D. SCANNELL, M.D., *Secretary.*

HARVEY LECTURE.

THE first lecture of the Harvey Society for the season of 1909–10 will be delivered by Dr. Richard M. Pearce, Professor of Pathology in the University and Bellevue Hospital Medical College, New York, on Saturday evening, Oct. 30, 1909, at 8.30, at the New York Academy of Medicine, 17 West 43d St. The subject of the lecture will be: "The Problems of Experimental Nephritis."

RECENT DEATHS.

RYDER, JAMES WILLIAM, M.D., M.M.S.S., died in Boston, Oct. 21, 1909, aged forty-one years.

DR. WILLIAM JOSEPH DODD, of Jersey City, N. J., died on Oct. 20, at the age of eighty years. He was graduated from the College of Physicians and Surgeons, New York, and afterwards served as interne at Bellevue Hospital. During the Civil War Dr. Dodd was a surgeon on the United States Army Hospital Ship "Ben Deford."

BOOKS AND PAMPHLETS RECEIVED.

The Practical Medicine Series. Under the general editorial charge of Gustavus P. Head, M.D. Vol. VII, Series 1909. Chicago: The Year Book Publishers.

A Manual of Natural Therapy. By Thomas D. Luke, M.D., F.R.C.S. (Edin.). Illustrated. New York: William Wood & Co. 1908.

The Production and Handling of Clean Milk, Including Practical Milk Inspection. By Kenelm Winslow, M.D., M.D.V., B.A.S. (Harv.), and Essentials of Milk Bacteriology. By H. W. Hill, M.D. Second edition. Illustrated. New York: William R. Jenkins Co. 1909.

From the Patient's Point of View. By George M. Gould, M.D. Reprint.

Original Articles.

THE DIAGNOSIS OF RENAL TUBERCULOSIS.*

BY ARTHUR L. CHUTE, M.D., BOSTON.

This paper is an expression of my personal ideas of the points that are important in the diagnosis of renal tuberculosis. In it I have set forth the things that I have found useful in recognizing this not uncommon disease.

As a preface to a discussion of the diagnosis of renal tuberculosis, it is necessary to say that the first subjective sign of renal tuberculosis is usually that of bladder irritation, just as the first objective sign is the passage of a turbid urine. Aching or pain in the loin is not an early symptom; in fact, a considerable proportion of cases have but little lumbar pain at any time. It is important, I believe, to emphasize the fact that the first symptoms of renal tuberculosis do not usually point to the kidney, but to the bladder. Though this is a well-recognized fact, it is not always remembered. Within a year a patient suffering from the usual bladder symptoms of renal tuberculosis, and to whom I had proposed the removal of his diseased kidney, consulted one of our best internists as to the wisdom of this procedure. The internist told the patient that he could not see how the removal of a tuberculous kidney could be expected to give relief to his bladder symptoms. The kidney was removed, however, and this man now passes a crystalline urine, usually not getting up at night to urinate.

In this connection I wish also to call attention to the extreme rarity of tuberculosis of the bladder except as it is secondary to renal tuberculosis. In every patient with tuberculous cystitis in whom I have catheterized the ureters, I have found that there was a process above; that the cystitis was purely secondary to a renal tuberculosis. We hear tuberculous cystitis spoken of as though it were a distinct and unrelated pathological process; as though it were often the only tuberculous involvement of the urinary tract. I cannot deny that tuberculous cystitis may not at times exist as the sole tuberculous infection of the urinary tract, but I have never seen it and believe that it is at least very rare. In my opinion, the proportion of cases in which one finds tuberculosis primary in the bladder diminishes in direct ratio to the care with which one examines these cases.

The first signs, then, of a renal tuberculosis will be those of a cystitis. Our task is to consider what things should lead us to suspect that a given cystitis, or the signs of a cystitis, may actually depend upon a tuberculous infection of the kidney.

We will first consider certain things that are brought out in the patient's history. A strong family history of tuberculosis is, without doubt, suggestive; but, on the other hand, the absence of any tuberculous family history is of no particular weight against the probability of tuberculosis, though I have seen a good deal of importance given to it.

The history of a cystitis that made its appearance without evident cause should always be looked upon as suspicious of a possible renal tuberculosis. A cystitis of this sort is more suspicious when it occurs in men than when it occurs in women, since in women we have a certain number of "causeless" infections that ascend the urethra, while in men they are very rare. If the history is that the "causeless" cystitis has tended slowly to get worse rather than to improve under appropriate treatment, it heightens the probability of tuberculosis. A cystitis of this sort that has become very painful will, in a large proportion of cases, prove to be tuberculous. While a history of the insidious onset of a cystitis is suggestive of a tuberculous origin, one may not assume that because there was the history of a definite cause in the beginning that a cystitis of long duration may not have become tuberculous. Both gonorrhea and renal tuberculosis are diseases of young adult life; there is, therefore, no reason why they should not occasionally be coincident. It also seems perfectly reasonable to suppose that a serious gonorrhea may predispose to renal tuberculosis, either through general lowered health or by the crippling, to a greater or less degree, of a kidney by an ascending infection. However that may be, I have seen several cases in which the transition from a gonorrheal cystitis to a renal tuberculosis had been overlooked.

The history of a chronic suppurative joint or of a chronic non-suppurative joint that has ended in ankylosis has some suggestive value. I have seen at least four cases of renal tuberculosis in which there was the history of a previous joint lesion. This joint trouble may have preceded the urinary symptoms by some considerable time; in the last instance of this sort that I saw, the history of the joint trouble went back a long time,—some six or seven years before the patient's first symptom of any urinary trouble. The cases of renal tuberculosis that are secondary to old joint lesions emphasize the fact that renal tuberculosis is probably always a secondary disease, secondary to some other focus of tuberculosis in the body, though it may be impossible to tell what the primary focus was. The recognition of this secondary character of renal tuberculosis is, I believe, important. It should lead us to supervise for some time, in so far as this is possible, the manner of life of any patient from whom we have removed a tuberculous kidney, since it is probable that a primary focus of tuberculosis remains behind and that this focus is capable of doing further harm should the patient's condition be allowed to become enfeebled.

While points brought out by the history may have a good deal of suggestive value, they are never of sufficient value in themselves to warrant one in making a definite diagnosis. They will often, however, be sufficient to draw our attention to the possibility and lead to a careful investigation of the patient.

Once our suspicions have been aroused that a patient may be suffering from renal tuberculosis, our first step is to see if we can confirm or disprove this. Some things that are of slight suggestive value are to be brought out by a general examination. The finding of scars or other evidence of an old tuberculous process, such, for instance, as a tuberculosis of a testis, or the finding of any active tuberculous process, is suggestive that the urinary process is also tuberculous.

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* Read at a meeting of the New England Branch of the American Urological Association, Feb. 25, 1909.

Emaciation, if it be considerable, is in favor of this tuberculous nature of a urinary suppuration. The grade of emaciation, however, that is suggestive of tuberculosis usually occurs so late that it is of little practical use as a diagnostic sign. In the early stages of renal tuberculosis there is often no appreciable loss of weight, and this condition may persist even when the process is well developed. I have even seen two distinctly fat patients with renal tuberculosis.

Most patients present very little temperature. A good portion of a kidney may be honeycombed with tuberculous abscesses, some of which may be under tension, or at least not draining, and yet there may be no appreciable rise of temperature. Temperature is supposed to be seen most often with mixed infections, though I have recently seen a man who has at times has a considerable temperature and yet whose urine showed no mixed infection, even on cultural investigation. It may certainly be said that the absence of a temperature is not against tuberculosis.

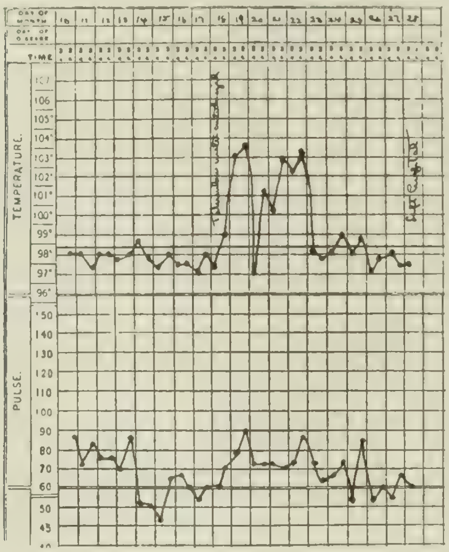

Chart I.

I have only exceptionally seen cases of renal tuberculosis present the marked "up and down" temperature that one often sees with other tuberculous infections, and this has been, I think, only in very late and advanced cases.

While the things brought out by a general examination have some value, the question as to whether a given process is tuberculous or not will usually be settled by a study of the urine. For this purpose it is necessary that the specimen of urine examined be aseptically drawn and uncontaminated. A point that is very suggestive of tuberculosis, one may almost say definitely diagnostic, is a purulent urine in whose stained sediment there are no organisms to be found. When a purulent urine is sterile on cultural examination this probability of tuberculosis is, if possible, heightened. I have had such urines inoculated many times and I do not recall any that proved to be non-tuberculous.

Another sign of less value that depends on this same thing, that is, the absence in the urine of the common bacteria, is a purulent urine that after sedimentation by gravity leaves a perfectly transparent layer of supernatant fluid. In the ordinary purulent urine the bacteria multiply so that this layer is always at least a little murky. As I have said, the urine for either of these tests must be aseptically drawn and preserved. Both of the above signs naturally fail when there is a mixed infection, as there sometimes is. It is, however, surprising to see the proportion of tuberculous cases in which, even in spite of repeated examinations and sometimes considerable local treatment, there is no mixed infection. For this reason this test of a purulent urine that shows no organisms is of use in a considerable proportion of cases.

In the cases that show a mixed infection, and, in fact, in most cases, we will be better satisfied of the tuberculous nature of the process if we find red-staining acid-fast bacilli in the urinary sediment or produce tuberculosis by the inoculation of the sediment into guinea pigs.

I feel that the finding of red-staining acid-fast bacilli in catheter specimens of urine is definite proof of the tuberculous nature of the process. I have had many guinea pig inoculations made of such urines and the result has always been positive. I remember, however, a case that I saw some years ago in which a *voided* specimen of urine showed red-staining acid-fast bacilli and in which the process was not tuberculous. These bacilli were probably smegma bacilli.

The inoculation of guinea pigs and the recovery of tubercle bacilli from their glands and other lesions is, I believe, without question the most accurate way of determining the tuberculous nature of a urinary infection. I believe, however, that the finding of sterile pus or of acid-fast bacilli in a catheter specimen of urine is pretty definite proof.

When one finds a urine that contains tubercle bacilli and inflammatory products, he is justified in assuming that he has to do with not only a tuberculosis, but with a *renal* tuberculosis. It is so rare to have a tuberculous cystitis that is not secondary to a renal tuberculosis that we need hardly consider this theoretical possibility, but may assume that a tuberculous urine means practically invariably a renal tuberculosis.

I spoke of the necessity of finding inflammatory products in connection with tubercle bacilli in order to make a diagnosis of tuberculosis. I wish particularly to insist that the finding of tubercle bacilli alone is not enough to establish a diagnosis of tuberculosis. It is, to be sure, highly improbable that we can have tuberculous bacteriurias, in the way that we have bacteriurias with some of the rapidly proliferating pyogenic organisms, but I see no reason why tubercle bacilli should not at times be eliminated by the kidneys, at least in sufficient quantity to produce positive results in guinea pigs, without there being a renal tuberculosis. For this reason I believe that the presence of inflammatory products is necessary to determine that the tubercle bacilli are attacking the tissues and, therefore, producing a definite tuberculosis. I shall have occasion to refer to the practical application of this a little later on.

After we have settled to our satisfaction that a given urinary infection is tuberculous, and drawn the inference from the rarity of primary bladder tuberculosis that the process is probably renal, we still have to establish this last fact beyond a doubt and prove definitely which side is infected. Not only this, but to apply our most satisfactory therapeutic measure (nephrectomy), we must have definite assurance that the process is limited to one side. Both these latter points are determined by the examination of the urinary tract, and incidental to establishing these we gather considerable accumulative evidence as to the nature of the process. If we have already determined definitely that the process is tuberculous, this cumulative evidence is of little importance, but in cases of mixed infection, for instance, where we are awaiting the outcome of guinea-pig inoculations, this additional evidence will be of great interest at least, and often of considerable help.

The local examination of the urinary tract is carried out by means of cystoscopy. This procedure does not differ here from the procedure as used in other sorts of disease, with the exception that it is usually more painful, and will, therefore, more often require ether. Some of the pictures are quite typical. Thus a number of small miliary tubercles *about one ureteric orifice* are, I believe, definite evidence of a renal tuberculosis. In order to have these tubercles typical they must have little inflammatory areolas about them; otherwise the cysts seen in some types of cystitis may be mistaken for them. If there are small ulcers where the superficial layer of mucous membrane has been destroyed by the breaking down of these little tubercles, they make the appearance more typical. Only the most superficial inspection can mistake the little bubbles that occasionally appear on the prism of the cystoscope for submucous tubercles. These bubbles, of course, have no areola and bear the same relative position when the cystoscope is moved. If these tubercles or ulcerations are grouped about one ureter, they not only allow us to make a diagnosis, but furnish us with the means of pretty definitely localizing the process as well.

When the ulceration of the bladder becomes generalized, there is nothing to distinguish a tuberculous ulceration from one of some other origin, unless at the advancing edge one finds tubercles. An ulcerated bladder that is hypersensitive to distention is very suggestive of tuberculosis, but one occasionally sees equally sensitive bladders that are not tuberculous. Not all cases of renal tuberculosis, however, show an ulceration of the bladder. In a few one may see only a little redness about the affected ureter — no more than would accompany a sub-acute grade of pyelitis. There is nothing characteristic of tuberculosis about this. In other of the non-ulcerated bladders the ureteric orifice is gaping and irregular in contour, due to an infiltration of the ureter or region of the bladder about its orifice. Where there is no ulceration about a gaping tuberculous ureter, it shows nothing to definitely distinguish it from the gaping ureters seen in other types of renal suppuration, though I think the tuberculous type is more apt to be irregular and jagged than round. When tubercle bacilli have been found in the urine, a gaping ureter, even if not typically tuberculous, serves to localize the seat of the process.

The thickening of the ureter that makes it possible to feel it by vagina is due to the same infiltration of its walls, and I can remember some instances in which a gaping ureter has also been felt thickened by vagina. In men, I have been quite *unable* to feel such ureters by rectum.

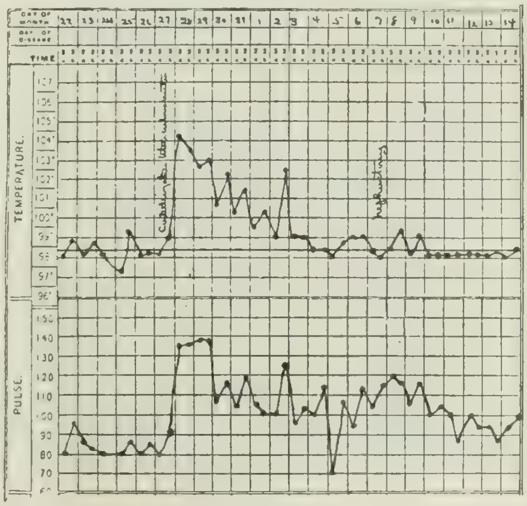

Chart II.

We have in most cases of renal tuberculosis things that offer pretty definite proof where the process is localized, without having recourse to catheterization of the ureters. Nevertheless, there will be very few of these cases in which we shall not want the knowledge that is to be gained by ureter catheterization, especially that to be gotten by the catheterization of the supposedly well side.

Within a few weeks the importance of this has been impressed anew upon me by finding that a kidney that I had supposed normal, from the appearance of its ureter, was actually infected. Had I catheterized only the ureter I suspected to be tuberculous, I might have been led to remove one of two pretty nearly equally involved kidneys. It may exceptionally be necessary to remove the more diseased kidney in cases of double renal tuberculosis, but we should do this intentionally, with our eyes open to its possible consequences to remove a kidney unintentionally in double renal tuberculosis is a great calamity. Occasionally we will find that the side on which the ureter looks normal is the side on which the patient has complained of some pain, or on which we have found the kidney enlarged or slightly more tender than on the other side. It is essential, under these conditions, that we get the urine from that side. *Great* increase in size, *great* pain or *great* tenderness in a kidney means disease, but a moderate degree of any or all of these may be the result of a compensatory hypertrophy quite as well as of disease. An examination of the urine, as it comes from the ureter, is the only way to tell, in some instances, which of these conditions we have to deal with.

This leads me to take up certain points about the catheterization of ureters that apply especially to tuberculous cases.

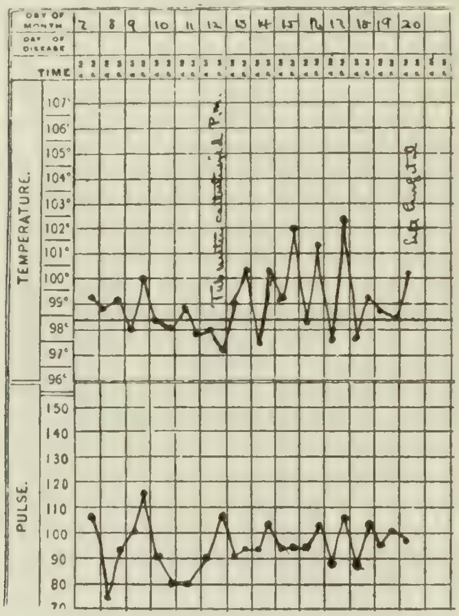

Chart III.

There has been, I think, a pretty general feeling against the catheterization of the well ureter in these cases, but I am inclined to believe that this opposition is for the most part not well founded. While I do not see how any one can deny the possibility of carrying a few bacilli from the bladder into a ureter, I do not believe that a few bacilli on a healthy mucous membrane means the implanting of a tuberculous infection.

My personal experience has led me to believe that this infection cannot occur often; I have never seen it at all. I believe that the advantages to be gained by a definite knowledge of the condition of the supposedly well kidney far outweigh the dangers of infection. While the common pyogenic bladder infections show a considerable tendency to extend upward toward the kidneys, the tuberculous infections are almost always hematogenous and the progression is from above downward.

It is claimed, especially by those who advocate the catheterization of ureters under air distention, that there is danger of drawing a false conclusion from a catheterization that has been carried out through a water-distended bladder that contains, perhaps, some bacilli. They contend that, especially if pigs are inoculated, one may get a positive test from a few bacilli that accidentally entered the catheter on its passage through the bladder medium. This is a possibility, but it can be guarded against with the greatest ease by taking the precaution to examine the sediment from the supposedly well ureter. It will contain pus if the kidney is tuberculous, a point that I referred to a short time ago. If there is no pus, there is no tuberculous process, and any tubercle bacilli that may be present are accidental.

While I do not hesitate to catheterize the well ureter, I am becoming more careful about catheterizing, as a routine measure, the ureter on the diseased side, especially if that ureter is much diseased. This is generally held to be quite safe, but I am not perfectly convinced that this is so, or at least that it is not quite upsetting at times. It is a common thing to have an elevation of temperature lasting from forty-eight to seventy-two hours after catheterization of the diseased side (see charts); there is likewise often an increase of renal tenderness. As this rise of temperature and tenderness is seldom seen after catheterization of the well side, I do not believe that infection plays any part in it, but that it is due to some stirring up of the tuberculous process. I do not see why harm might not come of this. Further, I do not feel sure that it is not easier than we have believed to push a ureter catheter through a friable, thickened tuberculous ureter. While I can give no definite proof that this has occurred, I have my suspicions that it has happened. I believe it is absolutely impossible that this should happen with a normal ureter; certainly I have seen nothing to make me believe that it has happened.

Catheterizing a much diseased, dilated tuberculous ureter is occasionally absolutely unsuccessful so far as obtaining a specimen of urine goes. With the ureter dilated and the sphincter destroyed, the catheter lies perfectly loose in the ureter; under these conditions it is easier for the urine to flow down beside the catheter than through its relatively small lumen. Any caseous masses entering the catheter increase this tendency for the urine to flow along the catheter rather than through it.

The most satisfactory procedure in the ordinary case is simply to catheterize the supposedly well ureter, collecting the urine synchronously from the diseased side by means of a catheter placed in the bladder. The diseased ureter may be catheterized should there be any reason for so doing.

A urine from the supposedly well kidney that shows no pus allows us to say at once that the kidney is not diseased. One that contains pus will presumably be tuberculous, but this cannot be assumed without finding bacilli or getting positive inoculation tests.

To recapitulate:

The subjective symptoms of renal tuberculosis are usually those of a cystitis. A causeless cystitis, or a cystitis that began so imperceptibly that the patient cannot definitely fix the time when it really started; a cystitis in a person who had the history of former tuberculous troubles; a cystitis that is rebellious to treatment, or especially painful; all these should make one suspicious that he may have to do with a tuberculous process. The development of tuberculosis in guinea pigs that have been inoculated with the sediment demonstrates absolutely the tuberculous nature of a urinary infection, as does also the finding of red-staining, acid-fast bacilli in catheter specimens of the urine. We are practically sure of the tuberculous nature of a process when we can find no organisms in a purulent urine.

The rarity of tuberculous cystitis, except as it is secondary to renal tuberculosis, warrants us in almost making a diagnosis of renal tuberculosis whenever we find a tuberculous urine.

The most accurate way of telling which kidney is involved is by cystoscopic examination. The changes in the bladder about the ureteric orifice, or the changes in the ureter itself, will usually make clear which kidney is involved. Occasionally these changes may not be decisive and catheterization of the ureters may be necessary to determine which is involved. One should usually catheterize the supposedly well ureter to demonstrate definitely that the process is unilateral and that the well kidney is functionally competent. The danger of this, I believe, is very small when it is carefully done.

RENAL TUBERCULOSIS. PATHOGENESIS AND PATHOLOGY.*

BY LINCOLN DAVIS, M.D., BOSTON.

I HAVE nothing new to contribute to this much studied and important subject, and will attempt only to review briefly its present status as determined by the acknowledged authorities of to-day.

Renal tuberculosis is caused by the bacillus of Koch, which may gain admission to the kidney in three ways: (1) by the blood stream — hematogenous infection; (2) by the urinary passages — ascending urogenous infection; (3) by extension from diseased neighboring tissues — infection by contiguity.

It is now very generally agreed that infection occurs in the first way, that is, by the blood stream, in the great majority of cases — exhaustive clinical, pathological and experimental researches have quite definitely settled this point; also that the kidney is primarily affected, as far as the urinary tract proper is concerned, in the great majority of cases, and that from the kidney the process tends to extend in the direction of the urinary current down the ureter to the bladder, which is involved secondarily. Tuberculosis is probably never actually primary in the kidney in the sense that the initial lesion of the body occurs here, since tubercle bacilli cannot enter it directly from the outside. There are probably always other and earlier foci of the disease, either in the lungs, bronchial lymph nodes or elsewhere, which may become clinically quiescent, but yet have served as the starting point of an hematogenous infection of the kidney. These primitive foci may become healed or obsolete, and are easily overlooked in a carefully conducted post-mortem examination, thereby accounting for the not rare instances in which the only focus of disease at autopsy appears to be in the kidney. The only other explanation of this anomalous fact is the less plausible supposition that tubercle bacilli may gain admission into the blood current without setting up any local lesions whatever. Whatever the solution of this somewhat academic question may be, the fact remains, as borne out by plentiful post-mortem, clinical and operative proofs, that the chief and essential lesion of tuberculosis in the body lies in one or the other of the kidneys in a very considerable number of cases. Just what the proportion of cases is will be considered later.

Very little is now heard of ascending tuberculosis, by which is meant a process beginning in the bladder and extending up the ureter to the kidney. This was the theory of renal infection ten years ago, founded on a clinical misconception, but taught with conviction by the best authorities. Careful observation has shown that this mode of infection, while theoretically possible, is practically of very rare occurrence. In the first place, genito-urinary tuberculosis almost never begins in the bladder; those cases in which the bladder does become infected without previous involvement of the kidney are usually cases of extension of the disease from the male genitalia; it seems to be impossible for the tubercle bacilli to make their way up the ureter against the urinary stream, and it is only when the ureteric orifice has become involved in the disease, resulting in incompetence of the valve, and stasis, that the ureter and kidney become secondarily infected by direct extension from below. That, under these conditions, such an infection may occur is shown by a remarkable case reported by Rovsing, in which a tuberculous process primary in one kidney descended the ureter of that side to the bladder, extended across the latter to the opposite ureter, which it ascended as far as the second kidney, but without actually infecting that organ. While the authenticity of this case is beyond question, it represents merely the rare exception which exists to every rule. Kapsammer reports a somewhat less conclusive instance of what he regards as ascending infection of the kidney, — one case out of sixty-two studied by him.

I have personally seen two cases in women which I at first regarded as primary tuberculosis of the bladder; prolonged study and, in one case, operation, finally disclosed undoubtedly pre-existing foci of the disease in the kidney.

Infection of the kidney by extension of the disease from contiguous organs, most often the spine, is an uncommon but well-recognized occurrence which presents no particular problems.

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* Read at a meeting of the New England Branch of the American Urological Association, Feb. 25, 1909.

That tubercle bacilli, in cases of pulmonary tuberculosis or tuberculosis of other organs, may pass through and be excreted by the kidneys, without setting up recognizable lesions in the latter, must be accepted apparently as true. The investigations of Walsh and Flick in this country, and of Küster, Feodorov, Oppel, Fullerton, Hilier and others in Europe, leave little doubt of it. Just why in certain cases the bacilli will cause lesions, and in others pass through harmlessly, must be ascribed to variations in that rather indefinite and hard-worked term, " power of resistance."

When the bacilli do become arrested in a kidney and begin to colonize, they set up quite characteristic lesions. The commonest form is the disseminated tubercles of acute miliary tuberculosis, an acute general disease usually rapidly fatal, with which we are not concerned.

It is the more chronic form, the renal phthisis or surgical tuberculosis of the kidney, which is of interest to surgeons. The pathological lesions of this disease are fully described in the textbooks, and well known to this audience, and will not be taken up here. In passing, mention should be made, however, of the frequency with which the ureter is secondarily affected, likewise the bladder. Ulceration of the mucous membrane, with thickening and caseation of its walls, convert the ureter, sooner or later, into a shortened, rigid tube, in places greatly dilated, in others with lumen almost occluded. These various changes produce corresponding more or less characteristic variations in the appearance of the mouth of the ureter, which may be retracted, dilated, gaping, " golf-hole," ulcerated, — all of familiar import to the cystoscopist. The neighboring portions of the bladder may show miliary tubercles or ulcerations. In many early cases, and some advanced ones, no changes are found in the ureter or the bladder. Occasionally, the ureter becomes completely occluded, giving rise to the condition known as closed tuberculous pyonephrosis, one of considerable clinical perplexity.

When one kidney only is affected with tuberculosis, changes of a non-tuberculous character in its fellow are not infrequent. In long-standing cases, amyloid degeneration may be found; more often and, in fact, quite commonly, lesions of nephritis occur. These cases of nephritis often clear up after removal of the tuberculous kidney, and are to be ascribed to the toxic effects of the latter.

How often does renal phthisis occur, and how often is it unilateral? For statistics on this and other allied questions, I will quote from that excellent book, Kapsammer's " Nierenchirurgie."

Kapsammer found, out of 20,770 autopsies at the Vienna Allgemeine Krankenhaus, in the decade from 1893–1902, 191 cases of renal tuberculosis, slightly less than 1%; acute and subacute miliary tuberculosis was not included. Küster found that 10% of all those dying of tuberculosis had tuberculous lesions of the kidney. According to Krönlein's statistics of surgical diseases of the kidney, tuberculosis takes first place, with 29.8%.

The statistics of operated cases of renal tuberculosis show a considerable preponderance of females over males. According to Israel, 66% are females. On the other hand, Kapsammer's autopsied cases showed 135 men and 56 women, a marked preponderance of men. Kapsammer explains this by saying that up to the present time more women than men with tuberculous kidneys have been operated upon, because in the former the disease is diagnosed earlier, when there is a better chance of operation. More men die of the disease for the opposite reason. He thinks the incidence of the disease is somewhat greater in men.

Kidney tuberculosis is, as a rule, unilateral, at least at first. Krönlein's figures are 92%; Israel's, 88%. Of 62 cases observed clinically by Kapsammer, 48 were unilateral and 14 bilateral. Of the 191 cases found at autopsy, 67 were unilateral. Halle and Motz found, in 131 autopsy cases, 89 unilateral. Of the bilateral cases found at autopsy, many showed an old severe process on one side, and a manifestly more recent and slighter process on the other.

Concerning the question as to which kidney, right or left, is the more often affected, small figures show some variation, but the larger collections of statistics show practically no difference.

An analysis of 2,300 post-mortem examinations at the Massachusetts General Hospital since 1896 show only 18 cases of caseous tuberculosis of the kidney. The tuberculosis was unilateral in 11 cases and bilateral in 7; of the 7 bilateral ones, it was caseous in both kidneys in 3; in the other 4 cases there was a miliary process in the second kidney.

In the 11 unilateral cases the non-tubercular kidney was microscopically normal, except for amyloid disease in 1 case. In only 1 of these cases had nephrectomy been done. In 8 cases there was active tuberculosis outside the genito-urinary tract. In 3 cases the disease was apparently confined to the genito-urinary system. In 1 of these cases the only other focus beside that in the kidney was in the vesicle; in another, a nephrectomized case, in the ureter and bladder; in the third, the sole focus found in the body was in the kidney. This was a remarkable case in many ways and deserves mention in some detail.

Autopsy No. 2089. Feb. 25, 1908.

" Anatomical diagnosis: Extensive phlegmon of left thigh and left anterior abdominal wall.

" Lobar pneumonia of the inferior lobe of the left lung. Focal pneumonia of the inferior lobe of the right lung.

" Serofibrinous pleuritis (left).

" Serofibrinous pericarditis.

" Old cholecystectomy.

" Dilatation of common and hepatic bile ducts.

" Icterus.

" Obsolete tuberculosis of right kidney (renal phthisis with compensatory hypertrophy of left kidney).

" Soft hyperplastic spleen.

" Acute degeneration of the liver and slight chronic interestitial hepatitis.

" Septicemia; streptococcus.

" Left kidney is larger than normal and weighs 286 gm.; measures 15.5 cm. in greatest dimension. Capsule strips easily. Cortex wider than normal, 7 mm.; in narrowest portion markings retained. Renal pelvis and ureter normal. The right kidney is much smaller than normal, weighing 42 gm., and measuring 7.5 cm. in length. The capsule strips with difficulty, leaving a very irregular granular reddish surface. At either pole there is an ill-defined yellowish coloration.

"On section in the situation of the pyramids there are cavities of more or less spherical form, varying in diameter up to about 2 cm. Some of these cavities are filled with a white, opaque semifluid material of about the consistence and appearance of cream cheese. They are lined with a yellowish rather opaque membrane about 1 mm. in thickness, but not sharply defined from the surrounding tissue. The remaining portion of the cortical substance of the kidney about these cavities shows little or none of the renal markings and is of a reddish color. In places the cortical substance together with the lining membrane of the cavities forms a layer less than 2 mm. in thickness. The right ureter is smaller in diameter than normal and its lumen is partly obliterated and admits a small probe with difficulty. The opening of the right ureter into the bladder is much smaller than the opening of the left ureter. The bladder is not remarkable except for some injection of the veins of the mucosa. Vagina, uterus and oviducts not remarkable, ovaries small and fibrous, right ovary contains a small cyst.

"Colonies of streptococci from heart culture. Smear preparation of the cheesy material from the right kidney fails to show tubercle bacilli.

"Microscopical examination of kidney: Extensive atrophic changes are present. The caseous material is walled off by dense connective tissue. No epithelial cells are present. No tubercles observed. The process is apparently obsolete."

A brief review of the clinical history of the case is as follows:

The patient, who was a married woman, fifty-one years of age at the time of her death, entered the Massachusetts General Hospital in January, 1894. One brother had died of phthisis. She had two healthy children. Her previous health had been good except for rheumatic fever six years ago. She had suffered from varicose veins for many years. For two years she had had an abscess of the thigh, from which bone had been discharged. This was incised and the bone curetted and she was discharged from the hospital with the wound healed. The examination of abdomen and chest was at this time negative. Urinary examination showed trace of albumen with considerable sediment, consisting of pus, squamous cells, medium sized round cells, blood and calycic oxalate crystals. No record was made of urinary symptoms.

Nov. 2, 1907, she re-entered the hospital with acute cholecystitis. There was history of gallstone attacks during the last two years. Previous to this attack she had been in good health, weighing 185 lb. At this time it is noted that the right kidney is not felt, the left is palpable but not tender. The patient was jaundiced, with tenderness in the region of the gall bladder. She had a cholecystectomy done, and a stone in the common duct crushed and pushed on. At this time the urine showed a trace of albumen with leucocytes, squamous cells and a few hyaline and epithelial casts. There were no urinary symptoms. The patient was discharged to the Convalescent Home with a small sinus, but re-entered on the Medical Service, on Jan. 2, 1908, with sore throat, hoarseness, cough and fever. She was still jaundiced and this deepened. The patient gradually failed, pneumonia developed and she died on Feb. 24.

This is evidently one of those rare cases of nature's cure of tuberculosis of the kidney by complete destruction of the organ. This is probably what takes place in those cases reported as clinically cured or arrested. I have yet to see the report of an arrest or true cure of renal tuberculosis which will withstand searching inquiry. As far as I am aware, there is no pathological evidence of a healed focus of tuberculosis in the kidney, such as is so often found in the lungs and other organs. By this is meant a local focus of obsolete tuberculosis which can be recognized as such, by caseation or calcification, without either destruction of the entire organ or an accompanying active process in some other part of the same organ. In other words, pathological evidence of spontaneous healing of renal tuberculosis is lacking. Accurate and convincing clinical evidence is likewise lacking; and until this much-to-be-desired evidence is forthcoming, I believe we must look upon renal tuberculosis as a progressively destructive process.

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REMARKS ON THE PROGNOSIS AND TREATMENT OF RENAL TUBERCULOSIS.*

BY RICHARD F. O'NEIL, M.D., BOSTON.

THE prognosis and treatment of renal tuberculosis have been more or less modified the last few years because of the now very generally conceded fact that genito-urinary tuberculosis is most often primary in the kidney and is often unilateral. The prognosis, therefore, depends considerably upon the promptness with which the diagnosis is made, as the process rarely begins simultaneously in both kidneys, except in general miliary tuberculosis, and the accuracy with which the indications for operation are worked out. This applies particularly to the condition of the opposite kidney.

The study of some of the recently reported series of nephrectomies by various operators is of interest in this connection. Rafin[1] reports 63 primary nephrectomies for tuberculosis with 7 deaths from operation, 11%. In 5 out of these 7 fatal cases, lesions were found in the opposite kidney. In 1 case there was anuria, and death in twelve days, the remaining kidney being found to have been entirely destroyed by caseation. The ureter catheter gave reliable results in 3 of these cases, misleading in 1, and was not used in 3, because of intravesical lesions making it impossible. His view is never to operate without knowing the state of the other kidney, which should be ascertained early, before bladder change makes it difficult, and to operate while the patient's condition is good. The importance of studying the other kidney is further shown by consulting a total of 316 nephrectomies, with 35 deaths, or 11%, by Isreal,[2] Nicolich, Zuckerkandl, Wildbolz, Caspar and Rafin. Many of these deaths were due to insufficiency of the other kidney, whose activity had not been tested by catheterization or any of the functional tests. It is the opinion of many men of large experience, notably Kapsammer,[3] who made an extensive report on the subject, that ureter catheterization is the most reliable method for determining the condition of the other kidney.

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* Read at a meeting of the New England Branch of the American Urological Association, Feb. 25, 1909.

At the present time the indigo-carmine test seems to have certain value in determining the functional ability of the kidney. Caspar[4] states that notable delay in the elimination of color in the supposedly normal kidney is a positive contra-indication to operation. Most observers give the time for the appearance of the color in from six to twelve minutes in the majority of cases, and sometimes as late as fifteen. Beyond that time impairment of function is suspected.

It is interesting to note in Isreal's 97 cases that he lost 9 out of the first 47 and only 2 out of the last 50. This reduction of mortality is reported as well by others, showing that with careful study and selection the operative mortality is small.

A very recently published series of nephrectomies by Kronlein,[5] with his conclusions, are of great interest, and I will give them in full, as they are very complete and agree with most of the leading opinions of the day. He gives the end results of 71 nephrectomies for tuberculosis from 1890 to 1908. All the cases have been under constant observation. Eighteen patients have died, 53 are still living. Of the 18 deaths, 14 occurred during the first year. The direct operative mortality was 5.6%; the other 4 died from four to ten years later. He concludes that the prognosis after the first year is excellent. The main cause of death was tuberculosis, generally miliary tuberculosis. He found tubercular infection of the remaining kidney very rare and then only part of a general miliary tuberculosis. The results of the nephrectomies were good. Some apparently hopeless cases were cured by operation. Striking increase in bodily weight was the rule. He found that removal of a tuberculous kidney had a decidedly beneficial effect on tuberculous foci in other parts of the body, as the lungs, joints and genital organs. Secondary tuberculosis of the bladder tends to recover except when extensive. The frequent and painful micturition disappears as the tubercular cystitis heals. He believes that some of the urinary discomforts that remain are due to a superimposed colon bacillus infection and not to the tubercle alone. Two of the nephrectomized women have successfully gone through labor, one four times and one twice, without harm to the remaining kidney.

It would seem that the prognosis in early unilateral renal tuberculosis is very good and is also good in advanced cases when confined to one side. Of course the existence of lesions in other parts of the body would have a distinct bearing, according to their extent.

The writer has been unable to find any convincing reports of the cure of renal tuberculosis by climatic and hygienic measures only. According to Oppel,[6] these methods are of value only if, after nephrectomy, cystitis persists; before operation he regards it as a waste of time. At autopsy isolated caseous nodules are found which may never have given symptoms; still these must be considered as latent and cannot be considered as cures.

In regard to the treatment with the new tuberculin, a great deal has been written and a number of symptomatic cures reported, together with marked improvement in other types of genito-urinary tuberculosis. Wildbolz,[7] however, seems to be the only advocate of using tuberculin in early unilateral cases. At present it seems to the writer that the value of the tuberculin and climatic treatment, as against well-chosen nephrectomy, must be the old Scotch verdict, "not proven."

In bilateral tuberculosis, however, tuberculin seems likely to prove a useful weapon. Belfield mentions two cases, one unilateral and one bilateral, both with marked bladder symptoms, which were much benefited. Thus in the bilateral case, a girl of twenty-two, the interval between micturitions increased from thirty minutes to two and a half hours within three weeks of the beginning of the treatment. Other similar cases are on record. The injection used was 1–1000 mgm. or less, the time between injections being three to seven days, the object being to avoid febrile reaction.

Two interesting cases are reported by Bircher where marked improvement followed exposure to the x-ray. In each, nephrectomy had been advised and refused. The loin of the affected side was exposed, the treatment lasting some months. There was a subsidence of fever, of the pus in the urine and of the bladder symptoms, improvement in general health and, finally, symptomatic cure.

To sum up, unilateral renal tuberculosis should be treated by removal of the kidney and ureter if involved, providing, of course, other foci in the body do not contra-indicate operation. Any stubborn secondary bladder involvement is to be treated with tuberculin or after Rovsing's method, and supplemented by climatic and hygienic measures.

With regard to the removal of the ureter, many writers think this is unnecessary, as it will heal as the bladder does. However, the writer has seen a case where the bladder without doubt was kept infected by the remaining diseased ureter.

The Rovsing treatment consists in the instillation of 50 ccm. of a 6% aqueous solution of carbolic acid at 95° F. after the bladder has been cleaned of all pus. This is done several times till the washings return clear. The pain is intense, morphine being required. Instillations are at first daily, but the interval is gradually lengthened to three or four days as the urine gets clearer. The treatment lasts from one to six months.

In closing, I wish to emphasize the fact that good results are obtained by early diagnosis and operation and by carefully estimating the condition of the other kidney.

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CASES ILLUSTRATING DIFFICULTIES OF DIAGNOSIS IN RENAL TUBERCULOSIS.*

BY F. B. LUND, M.D., BOSTON.

These two cases of tuberculosis of the kidney are reported as illustrating difficulty in diagnosis, — the first case on account of the very interesting problem as to which kidney should be operated upon, if either, and the second a case of tuberculosis of the kidney in which there were no bacilli, pus or blood in the urine, and no temperature, and in which the diagnosis was probably malignant tumor of the kidney.

The first case was that of a woman thirty years of age seen in consultation with Dr. R. K. Noyes, of Boston, on Nov. 15, 1907. She had suffered from painful and frequent micturition for several years, and considerable loss of weight. She was running a moderate temperature, and there were tubercle bacilli, pus and blood in the urine. She had suffered from pain in the left side and there was marked tenderness, muscular spasm and an indefinite feeling of tumor in the left renal region. Nothing abnormal could be felt over the right kidney. Everything in the case, therefore, pointed to probable disease of the left kidney. Dr. A. L. Chute kindly made a cystoscopic examination and catheterized the ureters, which was the means of clearing up the case. On examining the bladder with the cystoscope an ulcer was seen just below the left ureter, and turbid urine was issuing from the ureter. The right ureter could not be found at first, and we felt that there was little doubt that the trouble lay in the left kidney. However, after continued effort and manipulation, Dr. Chute was able to get a very small catheter into the right ureter, and projecting downward from that ureter was a sort of crack in the mucous membrane. Nothing came at first, but after waiting and pushing the catheter further there was a gush of almost pure pus from this ureter, and then with the patient under ether an irregular tumor could be felt in the region of the right kidney.

The urine from the left kidney showed mostly blood and mucus, but a considerable number of leucocytes. There was not enough fluid obtained from the right kidney for an examination, but it seemed to be almost pure pus. After a little of this had run the catheter would plug with a mass of fibrin and no amount could be collected. It having become evident that the right kidney was the much more severely diseased, and in all probability entirely out of commission, it was thought if it were removed that the patient might be able to throw off the disease of the left kidney. The right kidney was, therefore, removed on Dec. 9, through a lumbar incision. It was found to be considerably enlarged and contained numerous large tubercular foci. The ureter, which was much thickened, was removed for a distance of about five inches from the kidney. The wound healed gradually and the patient returned to her home in Vermont. I have heard from her from time to time, and up to last summer she had maintained a distinct gain in weight and general condition, though suffering more or less from frequent micturition. She was in good health and able to do her work, which was that of a caretaker. Recently I have learned that she has begun to fail somewhat, owing very likely to disease in the left kidney.

The case seems to me to illustrate very well the importance of a catheterization of the ureters in these cases. Heretofore, where the ureters have not been catheterized, I have been satisfied with an exploratory incision, or, in cases where the kidney was enlarged so that I had to employ an anterior opening, the exploration of the other kidney through the abdominal incision. This is usually satisfactory, but will not reveal, as does the ureteral catheter, a slight degree of disease in the opposite kidney. The catheter also, in the cases of lumbar operation, saves the necessity of the two incisions. In cases of congenital cystic kidney, in order to estimate the relative value of the two kidneys, for both are almost always diseased, it would be necessary to collect the urine for a considerable length of time in order to form a critical estimate. A rough estimate in these cases can be very well made by a second lumbar incision.

The second case was a woman of fifty, a servant, whose family history was that her father and one sister had died of tuberculosis of the lungs. The history otherwise was uninteresting. She had been feeling ill and run down for a considerable period and suffered from headache. For three months she had had a severe cutting pain in the right side, extending to the shoulder and back. The pain would occur sometimes every day or two, and sometimes there would be an interval of one or two weeks. For three months she had had a slight cough. She was pale and thin. The physical examination was negative except for a few signs of consolidation and a few râles at the right apex. In the right lumbar region was an irregular tumor which could be seen and felt through the abdominal wall. It was apparently not connected with the liver and did not move on respiration. The urine contained no albumen, pus or blood. For a few days in the hospital she ran a normal temperature. Owing to the normal temperature and urine, tuberculosis of the kidney was not thought of. She was thought to have either a hypernephroma or some other tumor of the kidney which, from the recent history and its large size, was thought to be probably malignant. An abdominal incision was made along the outer border of the right rectus, care being taken to avoid the nerves. A polycystic retroperitoneal tumor was found, and on incising the peritoneum and enucleating the tumor it was found to be a polycystic tubercular kidney. The cysts were dilated calyces which were filled with pus and caseous material. The ureter was normal and not thickened and must have been obliterated at the upper extremity, which would account for the absence of tuberculous material in the urine. The kidney was removed and the abdominal wound sutured in layers. A stab wound in the loin drained the large surface left by the removal of the kidney. She made an excellent recovery. The pathological diagnosis was tuberculosis of the kidney. The operation was done on Dec. 17, 1907. She came to see me about a year later. She was at her work and in very good general condition. No examination of the urine was made.

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* Read at a meeting of the New England Branch of the American Urological Association, Feb. 25, 1909.

DIRECT TRANSFUSION OF BLOOD. A COMPARISON OF METHODS.

BY J. C. HUBBARD, M.D.,
AND
A. R. KIMPTON, M.D., BOSTON.

(From the Laboratory of Surgical Research, Harvard Medical School.)

The usefulness of direct transfusion of blood as a method of treatment for certain conditions has become established beyond dispute. The technic of the operation, however, is not so definitely settled as the efficiency of the procedure. The object of the work represented by this paper was to determine which technic was the easiest to the writers and so to be recommended to others.

The direct transfusion of blood from one laboratory animal to another is a fairly simple matter whatever method is used. The difficulties of the same technic are increased many times when humans are the subjects. The writers have had enough experience in actual cases with the method suggested by Crile, in which his canula is used, to know well its difficulties. The technic of this method is to pass the vein through a canula, to cuff it back over the canula, and then tie it in place. The canula, with the vein over it, is then pushed into the lumen of the artery after its division. The artery is then held in place over the canula by a ligature, and the blood allowed to flow. The disadvantages of this method in the hands of the writers are as follows: The vein is usually of greater caliber than the largest canula that can be used. The walls of the vein, necessarily, have to be folded on themselves in order to pass through the canula, reducing, thus, the size of the opening through which the blood is to flow. This in itself is of no technical disadvantage except as the stream is necessarily so small that, when the union is completed, it is difficult at times to determine whether the blood is actually passing from the donor to the recipient. The lumen of the radial artery is surprisingly small. It has never been our good fortune to be able to use any but the smaller sizes of canulæ. To get the canula, with the vein cuffed over it, into the artery, it is usually necessary to spread the artery with a mosquito snap. This snap easily injures the intima. The injured intima favors coagulation of the blood, and a clot forms after the blood has been allowed to run for a short time. Crile himself has experienced this difficulty, for in the July, 1909, number of *Surgery, Gynecology and Obstetrics*, he recommends pulling the artery over the canula beyond the stretched area, that there may be no opportunity for clotting. The tying of the ligature to hold the artery over the canula is often very difficult. The arms of the patients are close together, leaving very little room in which to work, and the space on the canula for the ligature is small.

The writers have felt that a transfusion could be accomplished more easily by the aid of some mechanical device than by suture alone. They, therefore, have made use of the canulæ of Levin and Elsberg.

The instrument of Levin and the method of its use are described in the *Annals of Surgery*, March, 1909:

"This instrument represents an artery clamp without the grooves. At the tip of each blade there is attached a small canula with a smooth bore. At the inner edge of each canula there are attached four small pin points, and on the outer surface of the canula there are cut out four grooves. When the clamp is closed, the pins of one canula lie in the grooves of the other. The canulæ have a pyramidal form, because the pins are bent outward. At the beginning of the operation the two halves of the canula are separated. The vein is pushed through one canula and its wall is hooked on the pins. The same is done with the artery and the other half of the clamp. Then both halves of the clamp are united and clamped. I believe that when we deal with small blood vessels, it is much easier to hook the walls on the pins than to turn them back like a cuff. When the clamp is closed, both blood vessels are connected with serous surfaces."

It was evident, at once, that the disadvantage of Levin's canula in actual practice was the size of the portion of the instrument over which the artery was to be cuffed back. It seemed far too large for any radial artery we had had to deal with. Furthermore, there was no opportunity to change its size. The vessel of a new-born baby had to be stretched to correspond to that of a full-grown man. This in itself seemed to us a sufficient reason for discarding this instrument. A further difficulty experienced by us in the laboratory with this instrument was that whenever the instrument was laid down the vessels slipped off of the teeth which were to hold them everted. As long as a certain amount of traction was exerted, the teeth held the vessels turned back beautifully. When one half of the instrument, with its vessel in place, was laid down to adjust the vessel on the other half, the vessel was often found out of place when the first half was taken up again to unite the two. No attempt was made to use this instrument on man.

Elsberg described this canula in the *Journal of the American Medical Association* for March 13, 1909:

"The canula is built on the principle of a monkey wrench and can be enlarged or narrowed to any size desired by means of a screw at its end. The smallest lumen obtainable is about equal to that of the smallest Crile canula, and the largest greater than the lumen of any radial artery. The instrument is cone-shaped at its tip, a short distance from which is a ridge with four small pin-points which are directed backward. The lumen of the canula at its base is larger than at the tip."

The technic of the use of this canula, as we have used it, is as follows: The canula is unscrewed, placed about the artery, and screwed up tight. The artery is then divided. Three silk sutures are passed through its divided end, which serve as traction sutures to cuff the vessel back. As soon as the cuff is caught by the teeth the sutures are removed. A slit is made in the vein, and the canula, with the artery over it, is inserted into the slit, just as is done with a salt infusion canula, and tied in place. The adaptability of the canula to any size of vessel is a great advantage over other forms of canula.

In experimental work on dogs, the technic seemed simpler than that of Crile. There are a number of distinct advantages to be gained in the use of this instrument. The larger of the two vessels (the vein) is pulled over the smaller — the reverse of Crile's technic. The lumen of the artery is not stretched by the introduction of instruments, but rather pulled open from the outside, reducing the chances of injury to the intima. There is more space on the canula in which to place the final ligature, uniting the two vessels, and the full benefit of the largest size possible for the artery can be made use of by opening up the canula after everything is in place.

Recently, an opportunity was given to one of the writers to employ this canula in doing an actual transfusion. All the advantages expected in the use of this canula were found to exist. The pulsations in the vein beyond the canula were evident to sight and touch, whereas, with Crile's canula, the stream is so small that it has been hard for the writers, at times, to be sure of pulsations in the vein.

The technic of a blood transfusion is always a delicate piece of nice work, and at times it may be very difficult. It requires great care and patience. Any one questioning the truth of this need but refer to Hartwell's article in the *American Journal of Surgery* for March, 1909. He has collected statistics on both published, and, until then, unpublished, cases, eighty-six in all, of which thirty are characterized as unsatisfactory, only partially successful, or failures. Many of them were done by surgeons accustomed to experimental work on vessels and, therefore, competent.

Of the mechanical aids for direct blood transfusion so far suggested, the writers have found the canula devised by Elsberg to be the most satisfactory.

ADDENDUM.

Since this paper was written we have had other opportunities to make use of Elsberg's canula, and have no reason to change our opinion expressed above. We have, however, changed our technic somewhat. No clamps are necessary on the vessels. The canula, when screwed down tight, controls the circulation in the radial artery, and there is not sufficient back flow from the vein, when opened proximal to a ligature, to be of any consequence.

We have followed Elsberg's suggestion, and used his hooks for turning the cuff of the radial artery back over the canula. We have also found his hooks of use to open up the slit in the vein when introducing the canula.

The situation of the vein has much to do with the ease or difficulty of the operation. The farther down on the arm and the nearer to the ulnar side, the easier the operation.

We have found it advisable, after the canula with the radial artery has been introduced into a slit in the side of the vein and tied in place, to divide the vein distal to the canula to give more slack and to prevent the bending of the vessels at an acute angle as they come out of the incisions. The whole procedure, as carried out above, is much simplified over the one described in the article.

Clinical Department.

LEAD POISONING FROM A SODA WATER FOUNTAIN.

BY A. L. PATCH, M.D., AND E. W. TAYLOR, M.D.

(From the Neurological Clinic, Massachusetts General Hospital.)

THE following case of extensive lead paralysis is reported because of the relative rarity of the source of the lead and also because of the somewhat unusual character of the paralysis itself.

A. S., a Russian Jew, age fifty-five, married, was first admitted to the accident room of the Massachusetts General Hospital Aug. 22, 1908, in the service of Dr. James J. Minot, to whom we are indebted for the earlier part of the history.

The original history, differing somewhat from that obtained later, was essentially as follows: His wife and one daughter were ill with lead poisoning. Another daughter had suffered in a similar way, but had recovered. For the past two years the patient had not been in his former health. He had been generally weak, but not incompletely incapacitated. Two months before entrance to the hospital he had had a severe attack of cramp-like pain in the abdomen, had passed blood in the urine, and had become very constipated, with a continuance of the cramp-like pain. For a few days preceding entrance he had been forgetful, was said to be unable to complete his sentences, and had seemed, in general, mentally abnormal.

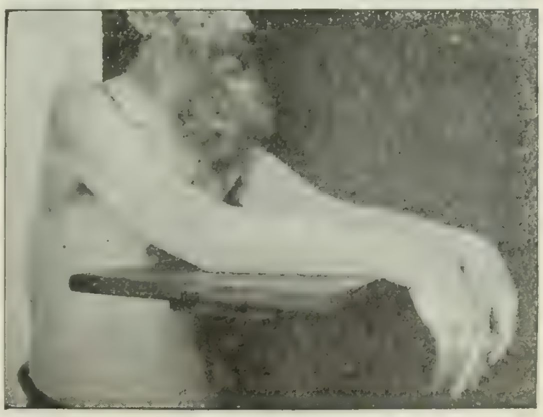

FIG. 1. Showing wrist drop and general flabbiness of the muscles.

The preliminary examination at the hospital showed him to be semiconscious, very difficult to rouse, and apparently incapable of understanding what was said to him. (This latter incapacity might, however, in a measure at least, be accounted for by his imperfect understanding of English.) There was a definite lead line on both upper and lower gums. The knee jerks were normal. There was slight edema over the legs and ankles; there was no evident paralysis. The skin was pasty, mucous membranes pale, pupils equal, small, and slow reaction. The tongue was slightly coated, many teeth were missing, the remainder poorly cared for. There was no glandular enlargement. The heart impulse and dullness corresponded in the fourth space in the nipple line, four inches from the midsternal line. There was no evidence of enlargement to the right. The action was regular, sounds very faint, with the aortic second sound very sharp and more distinct than the pulmonic second. No murmurs. The arteries were not palpable, pulses equal, synchronous, regular, poor volume, low tension. The lungs showed fine moist râles at both bases, in the axillary line and posteriorly.

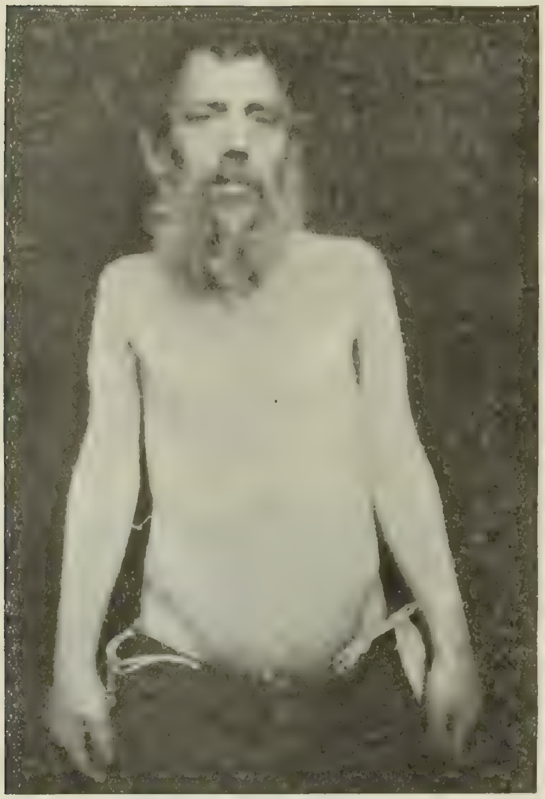

FIG. 2. Showing atrophy of the muscles about the shoulder, especially the deltoid.

The blood examination on the day of entrance showed hemoglobin, 60%; whites, 10,300; reds, 2,800,000; achromia and stippling. The differential white count gave polymorphonuclears, 71%; large mononuclears, 5%; small mononuclears, 24%; no blasts. A week later, on Aug. 29, the hemoglobin had risen to 80%, and the reds to 4,200,000; the whites were 9,100, and the differential count showed polymorphonuclears, 72%; large mononuclears, 5%; small mononuclears, 20%; eosinophiles, 3%; no blasts. The urinary examination on this date was as follows: High colored, acid, gravity 1,030, slightest possible trace of albumen; occasional hyalin and fine granular cast; calcium oxalate and ammonium urate crystals. The urine was not examined for lead.

Some wrist drop had developed, and he was unable to feed himself. There was no colic. He was discharged from the hospital Sept. 11, relieved, and has since been coming to the Out-Patient Neurological Department, where the following further examinations have been made:

In October, 1908, the family was seen at home. The wife had a marked lead line on both upper and lower gums, and for some time had been suffering from severe abdominal pain. Her arms had become weak, and she had noticed considerable tremor as she was about her work. She had also had severe cramp-like pains in her arms and legs. One daughter was at a hospital being treated for articular rheumatism; another at home showed a marked lead line on the upper gum and an irregular discoloration on the lower. She had had pain and had felt tired, but had not otherwise suffered. A son-in-law living at home had a lead line on both gums, was constipated, had abdominal cramps from time to time, but was able to work. A grandchild, one year old, showed nothing.

Further details of the patient's personal history, as obtained from the family, were that he had been in Boston five years, and that during that time he had obtained a livelihood from a small "delicatessen." He had lived at his present place of residence for two and one-half years. A year and a half ago, he bought a second-hand soda fountain and soda-water apparatus. In April, 1908, the piping in the fountain became leaky and was replaced. Lead pipe was substituted for blocked tin piping, which he regarded as too expensive. In May, the patient began to feel weak and found he could not lift as he had been able to formerly. The following month he had cramp-like pains in the abdomen and limbs. His family furthermore stated that he had periods during which he "trembled all over." This condition continued through July, becoming gradually worse. He was constipated. Medicine did not relieve him. He was obliged to give up work altogether in July. The only drinking water at the store was soda water. During August he grew worse and became drowsy, forgetful and abnormal mentally. He was unable to carry on a conversation because he could not finish his sentences. "He became very queer." There was no sign of any paralysis. On Aug. 21 he became more drowsy and difficult to rouse, and the following day was removed to the hospital.

Examination at the Out-Patient Department showed a dropped shoulder, gray, heavily-bearded Jew of ordinary intelligence. He was in general well nourished, but there was much evident atrophy of the shoulders and arms. His arms were powerless and limp. He was able to hold his hat in his hand, but could not flex his arm sufficiently to put it on the table. Abduction of the arm at the shoulder was impossible. He had a complete wrist drop; the hands were swollen with edema. There was atrophy of the supra- and infraspinati muscles of both scapulæ and atrophy of the deltoids and biceps. The extensors of the fingers were manifestly atrophied, as were no doubt the intrinsic muscles of the hand. This, however, was difficult to determine definitely, on account of the edema. The pupils were equal, slightly irregular in outline, reacted to light and distance. The tongue was coated, the breath very foul. There was an unbroken lead line along the upper incisor area. On the lower jaw the lead line was less prominent. What teeth remained were very poorly cared for. Examination of the lungs was negative, and of the heart as previously given in this history. There was some radial sclerosis. Examination of the abdomen, liver and spleen showed nothing abnormal. The knee jerks, Achilles' reflexes and plantar reflexes were normal. Slight edema over the lower end of the tibiæ. In general, the legs showed no significant abnormality, in striking contrast to the absolute paralysis of both arms. In general, sensation was not affected. The electrical examination gave complete reaction of degeneration in the extensor group of muscles of both forearms; likewise of the left biceps and deltoid and the supra- and infra-spinati of both arms. There was a partial reaction of degeneration in the right deltoid and biceps. The electrical reaction of the flexor groups of both forearms was normal. The same was true of the pectoralis major. A later electrical examination on May 4 showed general improvement. All the muscles reacted to Faradism, except the extensors of the fingers. He was able to raise his hand to his head and could with some difficulty feed himself. His grip was somewhat stronger but still very weak, due in great measure to the persisting paralysis of the extensors.

The treatment has been the conventional one of potassium iodide, 5 gr. three times a day, with intermissions. Galvanism has been applied to the muscles, and massage with movements given with much faithfulness. The results have been entirely satisfactory, the improvement has been steadily progressive, and the arms, although still weak, are rapidly becoming useful.

In the family of which the patient was a member it was evident that there must have been a common source of lead, since several other members showed signs of poisoning, although of lesser degree. A careful search of the house revealed nothing suspicious. An inspection of the soda fountain, however, showed undoubtedly the source of the lead. The soda water was tested two days after standing in the pipes. No concentration was attempted, but a marked black precipitate was obtained by the hydrogen sulphide test. Further investigation showed that the soda fountain was properly piped from a generator through the fountain, but inside, the cooling coil was of lead piping. The possibilities of harm to others in this apparatus are apparent.

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Medical Progress.

PROGRESS IN PHYSIOLOGICAL CHEMISTRY.

BY J. BERGEN OGDEN, M.D., NEW YORK.

(Concluded from No. 18, p. 628.)

ADRENALIN GLYCOSURIA AND THE INFLUENCE OF PANCREATIC EXTRACT AND JUICE UPON IT.

It was found by C. Frugoni [9] that a quantity of adrenalin sufficient to cause glycosuria is rendered entirely inactive if the animal receives an injection of enough active pancreatic extract. Pancreatic juice obtained from a fistula is equally effective in checking adrenalin glycosuria. The best results are obtained by giving an intraperitoneal injection of the pancreatic extract or juice one and one-half hours to two hours before the subcutaneous injection of adrenalin. If adrenalin is left in contact with pancreatic juice or sodium bicarbonate solution for ten to sixteen hours, its chemical reaction disappears and its physiological properties change. If, therefore, adrenalin is absorbed by an organism whose blood contains an excess of sodium bicarbonate, its chemical structure is probably modified and its biological activity certainly neutralized. Pancreatic juice which has undergone dialysis is no longer able to destroy the toxicity of the adrenalin in vitro.

THE TOTAL SUGAR OF THE BLOOD.

This subject was investigated by R. Lepine and Boulud [10] and their experiments were conducted as follows: 20 gm. of blood are precipitated with sodium sulphate and heated. The sugar in the fluid is estimated and the precipitate is heated on the water-bath for twenty hours in 500 ccm. of water to which has been added 5 gm. of 50% HF. After neutralization a sugar estimation is made; this is the "potential" sugar. In dog's blood this is about equal to the performed sugar, so that the total sugar is about 0.2%. Ingestion or intravenous injection of sugar produces, some hours later, an increase in the potential and often a decrease in the performed sugar.

CONCERNING DIABETIC LEVULOSURIA AND THE QUANTITATIVE DETECTION OF LEVULOSE IN THE URINE.

L. Borchardt [11] discusses the various qualitative tests for the detection of levulose, and the conclusion is reached that in none is it possible to exclude the presence of certain substances which give reactions similar to Seliwanoff's. As conflicting reactions there is mentioned Nencki's urorosein and that based upon the fact that ordinary amyl alcohol, which is used in one of the modifications, will give a slight red color with resorcinal and hydrochloric acid (Seliwanoff's reaction). The following test is recommended: A few cubic centimeters of urine are mixed in a test tube with an equal volume of 25% HCl and a few crystals of resorcinal. The whole is boiled for a few minutes. If a red color appears the contents of the test tube are cooled, made alkaline with soda in substance and shaken out with acetic ether. In the presence of levulose the ether becomes yellow. If nitrites and indican are simultaneously present, one or both should be removed before the test. Alone they do not affect the test only in that the acetic ether in removing the indigo becomes colored and thus the yellow color is obscured; the indigo may be first removed by chloroform according to Obermeyer, the concentration of HCl reduced to 25% and then the above test performed. Santonin and rhubarb also gave similar reactions. The urorosein may also be previously removed by amyl alcohol before the resorcinal is added. The examination was made of the urine of over one hundred patients which had been given 100 gm. of levulose. In three cases levulose was detected. Negative results were given by eight cases of diabetes. The fact is mentioned that the amounts of sugar obtained titrimetrically were always higher (2%) than by polarization. No explanation is given for this.

A NEW FUNCTION OF THE PANCREAS AND ITS RELATION TO DIABETES MELLITUS.

Loewi[12] has demonstrated that instillation of adrenalin into the conjunctival sac of normal men, dogs and cats is without effect on the pupil. Under certain conditions one obtains a mydriasis. This takes place after total extirpation of the pancreas in dogs and cats. The pancreas has, therefore, the function of inhibiting the excitability of the sympathetic nerve to adrenalin in certain organs. This also occurs in artificially produced pancreatic insufficiency. In many human diabetics this reaction takes place and is to be considered as a sign of the pancreatic origin of the diabetes. The reaction also occurs in many cases of Basedow's disease. The sensitiveness to adrenalin is probably induced by hyperthyreoidism. The positive reaction is characteristic of pancreatic lesion when not due to other easily diagnosed causes. When not present, it is not a proof of the non-pancreatic origin of the disease.

ANTITRYPSIN (PANCREATIC ANTITRYPSIN AND LEUCOCYTE ANTIFERMENT) AND ANTIPEPSIN IN HUMAN BLOOD SERUM.

G. Jochmann and A. Kantorowicz,[13] who made this subject special study, found that repeated subcutaneous injections of pancreatin raised the resistance of rabbit's serum to trypsin and to leucocyte ferment. Immunizing with the leucocyte ferment not only increases the amount of antiferment, but also immunizes against pancreatic trypsin. Therefore, the two ferments and antiferments are either the same or very similar, and in testing serum for antiferment, commercial pancreatin or trypsin is a more satisfactory test object than pus. A large injection of the ferment greatly reduces the amount of antiferment present, as the ferment combines with the antiferment to form a compound which cannot be broken up. In the first stages of leukemia there is a large amount of ferment and antiferment present; later there is diminished antiferment production so that the ferment gets into the serum. The antipepsin in serum has the same properties as that in the other organs. The boiled filtrate from coagulated edematous fluid retains its antipeptic powers unchanged. Antipepsin is not present in the coagulum. The antipeptic power of edematous fluid heated to 80° is raised toward serum protein and checked toward egg protein. There are at least two antipepsins in serum according to their critical temperatures. The pepsin-antipepsin compound can be destroyed and the pepsin regained by absorption, or by heating to 70° the pepsin is destroyed, leaving the antipepsin unchanged. Antipepsin checks the process of digestion as a negative catalyzer without forming a compound with the substance, although there is a quantitative relation between the quantities of pepsin and antipepsin which will neutralize each other.

KIDNEY SECRETION AND THE EFFECT OF ADRENALIN.

With a view to shedding light upon the function of the kidney, Schatiloff[14] compares the urines of normal rabbits with those subjected to adrenalin intoxication. The histological effects are shown also. From the rather small number of experiments the following conclusions are drawn: Rabbits on the same diet frequently show marked differences in the acidity of the urines. Dark-haired rabbits secrete a urine notably more acid than light. By increasing degree of adrenalin poisoning, the volume of the urine increases as does its solid content and nitrogen. Actual toxic doses give large volume of dilute urine, often glycosuria and albuminuria, and general wasting away of the animal's tissues. The poisoning of the animal takes place often in two periods: first a narrowing of the arterioles (stimulation) with decrease in volume of the urine; second, a widening of the vessels (condition of overstrain) accompanied by increased secretion of urine. Other things being equal, the stronger organism will react in the first way, with contraction of the vessels. A weaker organism may react with widening vessels in the kidney. These two conditions may exist in different organs of the same animal, or even side by side in the same organ, as shown by the histological preparations of the author.

SKATOL IN THE HUMAN INTESTINE.

It is interesting to note the observations of Herter,[15] who has found that, contrary to the general impression, skatol is not always found in the contents of the large intestine in man. In healthy children it is seldom detectable and in healthy adults frequently absent, and when present occurs only in traces. In some types of intestinal putrefaction skatol is markedly increased irrespective of changes in indol formation. The feces may contain skatol but no indol, although the presence of indican in the urine points to indol formation in the intestine. Since indol is not absorbed more rapidly than skatol, the presence of the latter compound with indol is probably due to the later production of the skatol. Increased skatol production is observed in many persons suffering from excessive saccharobutyric fermentation, due mainly to anerobic bacteria. Bacteria maligni edematis and bacteria putrificus may form skatol. Bacteria coli communis forms indol, but usually only traces of skatol if at all. The conditions necessary for the production of skatol are fundamentally different from those governing the formation of indol. Indol-acetic acid is perhaps a necessary stage in the production of skatol from tryptophane. The first compound is difficultly attacked by bacteria.

SPECTROSCOPIC EXAMINATION OF BILE.

As a result of an investigation by Auche[16] a method for the spectroscopic detection of bile pigments is proposed, based upon the fact that, upon oxidation with iodine in a zinc-containing alkaline medium, bilirubin gives a characteristic spectrum. The reagents required are: (1) a saturated aqueous solution of zinc acetate (or of ammonia saturated with pure zinc oxide), and (2) a 1 to 100 solution of iodine in alcohol or in potassium iodide. (The aqueous reagent is preferable for work with serums.) The liquid containing the biliary pigments in aqueous, alcoholic or chloroform alcohol solution is placed in a small tube of about 10 ccm. capacity. A few drops of ammonia are then added, then some drops of reagent (1) and finally reagent (2) is added drop by drop while looking at the fluid through the spectroscope. The appearance and development of a band in the red between B and C (650 λ to 700 λ) is characteristic of bilirubin. When the band ceases to increase in depth, addition of the reagent is stopped and more ammonia is added, making the spectrum clearer. The band is characteristic for bilirubin and is not given by blood or other pigments. More concentrated bile solutions may give another feeble band in D (590 λ). Icteric urines, ascitic fluid, blood serum, etc., may be used without previous special treatment. Concentrated urines should be diluted with alcohol. Liquids especially poor in the pigment may be advantageously extracted with chloroform. In this way the pigment may be detected in urines containing 1 part in 1,000,000 or even less.

RESEARCH UPON THE EFFECT OF CERTAIN DRUGS ON SECRETION OF THE BILE.

An extended research was conducted by A. P. Vinogradov[17] because of the prevailing uncertainty in regard to the flow of bile and the effect of various so-called cholagogues. His experiments were as follows: Three dogs were operated upon, and a permanent fistula made in each so that hepatic bile could be collected for examination. After a month to allow complete recovery from the effects of the operation the animals were put upon a fixed diet of mixed foods sufficient to keep them in normal condition. Bile was then collected and its volume, sp. gr. total solids, alcohol-soluble material and ether-soluble material determined. The normal variations for each dog were established and then the special substances under investigation added to the diet. Sodium salicylate, salicylic acid and aspirin were tried first. Their effects are identical: a marked increase in the flow of bile, amounting to 65% increase over normal, is noted at once, and accompanied by a decrease in per cent of solids. The actual amount of solids secreted in the bile is, however, above the normal by 19 to 30%. Repeated doses exhibit a cumulative action; for example, in giving 4 gm. per day the volume increased 40% on the first day, 44% on the second, 70% on the fifth, when the maximum output was reached. It takes several days for the effect on bile flow to disappear. The salicylates are, therefore, true cholagogues in every sense of the term, since they not only increase the quantity, but the actual solid output, from the liver. Olive oil, because of its reputation as an aid to the passing of concretions, was tried. Its effects are not constant. In certain experiments the volume of the bile was increased perhaps 25%, but the total solids were not increased, while in other cases not even an increase of volume followed the taking of considerable amounts of the oil. Other oils and fats behave in a similar manner, and cannot be classed as cholagogues. In fact, an addition of raw meat to the animal's diet produced more effect than the oil. The beneficial effects of the olive oil are probably to be looked for in the fact that the per cent of oil present in the bile is increased by administering oil. Eunatrol, the sodium salt of oleic acid, was found to give variable results, sometimes causing a slight increase of bile, at others a diminution and lessening of the total solid output. Feeding dried bile produced a marked increase of bile without change in the percentage of the constituents; that is to say, all the bile components are increased and in normal amounts. Ovogal, a preparation of egg albumin, tauro- and glyco-cholic acids, has the same general effect as bile itself. Karlsbad water was found to exert some appreciable influence upon bile secretion, diminishing not only the volume, but also the solid output, and the per cent of solids, in the bile. The bile is thus less, and more dilute.

CHANGES IN THE BILE OCCURRING IN SOME INFECTIOUS DISEASES.

As an aid to the study of gallstone formation, H. Baldwin[18] analyzed 225 samples of human bile obtained at autopsies. The physical properties of calcium and cholesterol were determined. In 72 specimens definite morbid changes were shown, although no symptoms of cholecystitis or cholelithiasis were present. In 17 there were evidences of an early stage of cholecystitis, 14 contained calcium bilirubin calculi, 44 showed free cholesterol either in (1) amorphous granular masses mixed with epithelium, (2) cholesterol crystals, (3) cholesterol or mixed calculi, (4) deposits of cholesterol crystals in the mucous membrane of the wall of the bladder. Of the patients, 51 died of infectious diseases and in 17 there were characteristic changes in the bile not noted in patients dying from chronic ailments. Bile pigment, alone or associated with but little cholesterol, was found in 15 of the specimens examined. The pigment is in the form of calcium bilirubin in numerous needle-shaped spicules. This occurred usually in patients over fifty years of age. The reaction was found to be acid, and it is suggested that the change in reaction noticed here when typhoid or colon bacilli are grown in bile may be the initial causative factor in biliary calculi. Cholecystitis is much more common than is ordinarily supposed.

ON THE BEHAVIOR OF LECITHIN WITH BILE SALTS AND THE OCCURRENCE OF LECITHIN BILE.

Long and Gephart[19] have found that bile salts, as ordinarily obtained, carry down a phosphorus complex which is regarded as lecithin by Hammarsten and others. No method has been found to separate this complex as a whole from the bile salts, as the latter have a tenacious affinity for the phosphorous compound. Bile salts are capable of dissolving and holding in stable solution about 80% of their weight of egg lecithin, but a considerable portion of this may be separated by precipitation; the amount remaining with the bile salts and not separated by acetone is much in excess of that probably contained in any bile. It appears likely, therefore, that any method of separation of the two substances must involve the use of reagents much more active than we now have. In the solution of lecithin by bile salts, the addition of inorganic salts hastens the action, but does not increase the amount dissolved. A few inorganic salts precipitate the mixture. The solution of lecithin in bile salts shows a greatly increased optical rotation, from which it may be calculated that the rotation of the lecithin is about $[a]_D = 7.75^\circ$.

A NEW REACTION FOR PROTEIN.

Bardoch[20] has introduced the following: To 5 ccm. of a not too concentrated protein solution are added 2 to 3 drops of 0.5% acetone solution and an equal amount of Lugol's solution sufficient to have an excess of iodine as evidenced by the red-brown color. Ammonia is then added in excess and the mixture thoroughly shaken. If the iodine is not present in too great an excess the mixture soon clears up and yellow crystals remain. Too much or too little iodine is to be avoided. The crystals are fine needles or sheaths. In the urine the protein must be precipitated with heat, and the filtered coagulum redissolved with alkali. The sensitiveness of the reaction varies for the different proteins, and the author hopes to employ the test to differentiate the different proteins.

ROUTINE EXAMINATION OF PUS WITH MILLON'S REAGENT.

Dreyer[21] has observed that it is possible to distinguish between ordinary and tuberculous pus by the use of Millon's reagent. When a few drops of ordinary pus are dropped into a watch crystal containing Millon's reagent a delicate film is formed which is easily broken up. When tuberculous pus is brought into contact with the reagent in the same way, a tough film is produced which may be removed without breaking apart. Furthermore, in the watch crystal containing the common pus the liquid acquires a deep red color which eventually turns to yellow. In the tuberculous pus test, the liquid remains colorless. The floating drops of pus become red in both cases. The difference in the reaction of the two kinds of pus is due to a difference in their chemical composition. Tuberculous pus contains much more coagulable protein than ordinary pus, while the latter contains a relatively large amount of protein decomposition products which are soluble in Millon's reagent. The author employed this method in a large number of cases and found it to be of much value for chirurgical purposes.

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Reports of Societies.

AMERICAN UROLOGICAL ASSOCIATION.

WINTER MEETING OF THE NEW ENGLAND BRANCH.

BOSTON, FEB. 25, 1909.

PRESIDENT, DR. F. S. WATSON, BOSTON.
SECRETARY, DR. R. F. O'NEIL, BOSTON.

DEMONSTRATION OF SPECIMENS AND THE RELATION OF CASES.

A FIBROID BODY IN THE BLADDER.

F. S. WATSON, M.D., of Boston, showed a body of oval form and flattened laterally, about an inch long by three quarters of an inch wide, and of a dirty-white color and putty-like consistence, which he had removed from the bladder of a patient not long before through an external perineal urethrotomy incision.

The specimen was of interest because of the rarity of the condition — he knew of but four or five cases reported in the literature, one of which was the case published by Dr. J. W. Eliot here — and because of the difficulties that it may present for diagnosis. With regard to the latter point, this case is a good example. The patient's only symptom was the sensation of having a foreign body become engaged from time to time, during urination. This was attended by more or less discomfort or pain; hematuria was absent. Examination with the stone searcher failed to detect the foreign body because of its being soft and having a smooth surface. The cystoscope did not reveal its presence, owing to its being so light that it was pushed away from the field of vision. A view of one border of the foreign body, however, was obtained once, but it was mistaken for an elevated ridge of the mucous membrane. A more careful search than was made with the instrument would doubtless have shown the foreign body.

The patient had had a stone of considerable size removed some time before by a suprapubic lithotomy. The patient was absolutely convinced that he had another calculus in the bladder, and the present operation was undertaken largely for his being so positive of its existence.

The body is made up in concentric layers of fibrin, and phosphatic salts are present in them.

Various theories have been advanced to explain the formation of these fibrin bodies in the bladder; none of them appear to be satisfactory.

SOME PATHOLOGICAL KIDNEY SPECIMENS.

F. C. KIDNER, M.D., Boston: In looking over the pathological material in the surgical laboratory at the Massachusetts General Hospital, one is greatly impressed with the number of kidneys removed at operation, especially during the last year or two. The pathological conditions exemplified are so numerous and varied that it seemed worth while to show a few of the specimens at this meeting. Therefore, with the kind permission of the various surgeons who have removed them, I present to you the following five specimens:

CASE I. From a male, fifty-three years old, removed on Jan. 7, 1909. A short history is as follows: In

November, 1908, the patient had a large carbuncle. This was operated upon. In December, because of pain in the right lower quadrant, he was operated on for appendicitis. The appendix was not found, but a mass of inflamed, adherent omentum occupied the right iliac fossa. The operation did not relieve the patient's pain, temperature or other symptoms. He was, therefore, cystoscoped and an x-ray taken, and a probable diagnosis of right pyelitis made. The right kidney was removed.

The special interest of this specimen consists in the numerous abscesses of varying size, most of them lying in the cortex and scattered all through the kidney mass. As you will see, one of these abscesses has "broken" into the fat capsule and closely resembles a carbuncle. Streptococcus pyogenes aureus was found in all of the abscesses. The patient has since done well.

Case II. From a male, twenty-seven years old. This patient had for years suffered with pain in the region of the bladder and loin. He had for years a dirty urine and had become extremely emaciated. Cystoscopy showed a cystitis, probably of tubercular origin. No urine, but some pus was excreted from the ureter on the affected side. On that side was a large, palpable and tender kidney, which was removed at operation.

The interesting point of this specimen is its enormous size (see Plate 1) and the fact that no tuberculosis was to be found on microscopical examination. In other words, the process seems to have run out, leaving a great pus sac formed by the fibrous capsule and calix walls of the original kidney. Since operation, the patient has improved enormously and is now practically well, although he still has some symptoms of a contracted bladder.

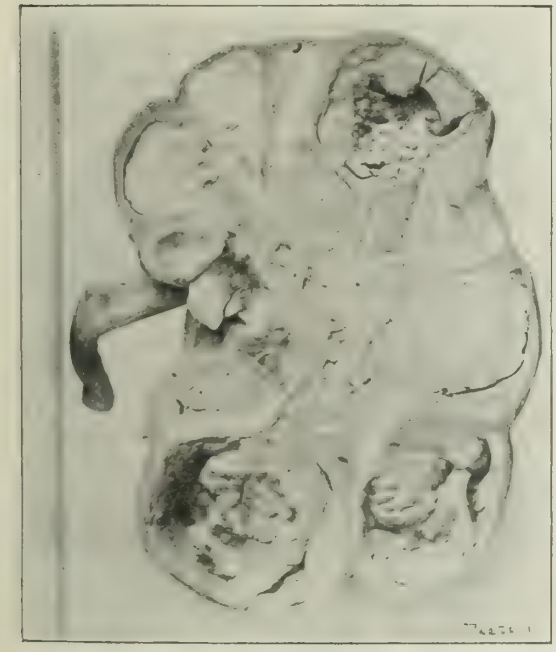

Plate 1.

Case III. From a male, fourteen years old. The patient had always been well up to three months ago, when he began to have pain in the left loin, incontinence, and frequency. Cystoscopy showed a tubercular cystitis with cloudy urine coming from the left ureter. A nephrectomy was performed and was followed by recovery.

The specimen is interesting as a contrast to the preceding one. Instead of complete destruction, we find only small areas of caseation occurring, mostly at the tips of the papillæ, otherwise the kidney is normal. (Plate 2.)

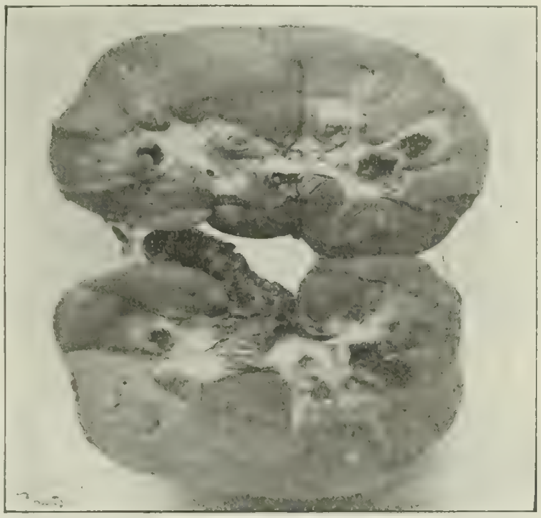

Plate 2.

Case IV. From a male, twenty-six years old, who had had bladder symptoms for four years. Cystoscopy showed a reddened bladder with pouting left ureteral opening discharging pus. The indigo-carmin test gave results after twenty minutes from the right side, twenty-six from the left. The left kidney was removed. This specimen is interesting in that it shows almost absolute destruction of the kidney tissue, and yet the indigo-carmin test was delayed only one third as compared with the right side.

Case V. From a woman, fifty-two years of age. She had suffered from cystitis for years, and fifteen months ago was operated upon for cancer of the cervix. Recently she has had a large, tender right kidney. Cystoscopy showed pus from the right ureter. A nephrectomy was done and the patient promptly recovered.

This specimen is especially interesting in that it is apparently a diffuse tuberculosis. Each lobule of the kidney has its own mass of soft, grayish-yellow tissue, evidently spreading eccentrically. The appearance is not in the least that of a new growth, yet on microscopical examination it appeared that these necrotic masses consisted of large, rounded, irregularly-arranged and often vacuolated cells, occurring in masses and supported by a small amount of fibrous tissue. The diagnosis is still in doubt between hypernephroma and one of the lymphoid tumors.

SPECIMENS OF TUBERCULOSIS OF THE KIDNEY.

A. L. Chute, M.D., Boston: I have here some specimens that I should like to show. The first is a tuberculous left kidney that I removed from a young woman a little more than a month ago. This turbid urine is a catheter specimen taken from her bladder at the time I cystoscoped her, while this pale specimen is the urine taken from the right ureter at the same time. This third bottle contains a catheter specimen taken from her bladder to-day; it is in marked contrast to the bladder specimen taken before operation.

Here is another tuberculous kidney removed in March, 1908; also, a pre-operative specimen of this patient's bladder urine; while this is a specimen of his urine some months later.

Two of these three remaining tuberculous kidneys show nothing of particular interest. The third is an autopsy specimen from a woman with renal tuberculosis on her left side. I saw her over a period of six months and, on account of her general condition, did not feel at any time that I could remove her kidney with reasonable hope of success. At autopsy there was found, beside the tuberculous kidney, a collection of pus along the ureter that extended down to the pelvic brim. This was due to the process breaking through the ureter. A small perforation into the peritoneal cavity had taken place shortly before her death.

The instructive point to me is that this woman died of a *one-sided* renal tuberculosis. I think we are inclined to believe that in the fatal cases both kidneys must be involved. It was a case that I should have operated upon when I first saw her, in spite of the apparent risk. As her other kidney was sound, it is possible she might have recovered.

A CASE OF RENAL TUBERCULOSIS.

B. Tenney, M.D.: A recent case of mine illustrates the difficulty sometimes present in making a preoperative diagnosis of tubercular disease of the kidney. The patient was a woman of thirty-five, single, and rather thin. In 1900 she had a slow-healing sore on her lip which was supposed to be specific, and for which she had taken treatment for five years. In 1903 she began to have frequent and imperative urination, with pain, and went to one of our large hospitals, where a cystoscopic examination was made and recorded as showing redness about the orifice of the right ureter. Later both tubes and her left ovary were removed. She received little relief from this operation.

I first saw her in February, 1908, at which time she was urinating eight or ten times every night, and was wearing a urinal all day so as to be able to hold her position as bookkeeper. Her urine contained pus and blood. Her bladder would hold only three ounces of boric solution and that amount caused great discomfort. There was some tenderness over the right kidney and along the right ureter, even at its insertion into the bladder. There was no tenderness over the left kidney or ureter, except at its bladder insertion. She was sent to one of our best radiographers, who sent me a plate showing a distinct shadow apparently in the pelvis of her left kidney.

This was a surprise, but after talking the matter over with her, she agreed to have the left kidney explored and the supposed stone removed. Previous to this I looked into her bladder and catheterized her left ureter, but was unable to get a catheter into her right ureter.

At the operation Dr. Chase and I found a normal-appearing left kidney and no stone in either kidney or pelvis. Behind the kidney was a chain of calcified nodules, some of which we removed and show here to-night. Some days later we found and removed this useless right kidney, which is simply a pus sac, and the ureter through another incision near the bladder. While studying the case, she kept a record of her temperature, which I also show. You will notice that this is a tubercular-looking chart, except that the variations are all below the normal line. It never rises above 99°, but it varies as much as 4° in twelve hours.

Another thing noticed during the many examinations was the presence of a tense transverse band in front of her cervix, corresponding to the interureteral band of the bladder.

As difficulties in the way of diagnosis, she had a history of a previous specific infection, a shadow of a concretion in the region of her left kidney and a long history of menstrual pain on the left side not relieved by the ovariotomy, tenderness over both ureteral insertions, a temperature never above 99°, and no tumor or great tenderness over either kidney. I should add also that two guinea pigs were inoculated at each of two separate times with negative results.

Now, seven months after the nephrectomy, she urinates six or seven times at night, and her urine still contains some pus. She has gained almost 20 lb. from her lowest weight, is free of pain, and has gone as long as three hours without being compelled to empty her bladder. Her bladder will now hold 6 oz. of solution without discomfort.

SYMPOSIUM ON RENAL TUBERCULOSIS.

a. Pathogenesis and Pathology.[1] Lincoln Davis, M.D.

b. Diagnosis and Clinical Appearances.[2] A. L. Chute, M.D.

c. Prognosis and Treatment.[3] R. F. O'Neil, M.D.

d. Cases Illustrating Difficulties of Diagnosis.[4] F. B. Lund, M.D.

DISCUSSION.

Dr. O. C. Smith: Mr. President, Mr. Secretary, and Gentlemen: These papers have certainly been most interesting and practical, and I do not know of any ubject before us more important than this one of urinary tuberculosis.

It seems to me that in spite of Dr. Davis' conclusions, it is fair to believe that we may have primary tuberculosis of the kidney, as Vigneron showed pretty conclusively in 1892. And what reason have we to suppose that it should not be so? We do not believe we get it by ascending infection, and we have these insidious cases of tuberculosis of the kidney without temperature or symptoms, while if there existed a primary pulmonary lesion, we should have had constitutional symptoms. But whether primary or not, it certainly becomes the principal lesion in a large number of cases, and we are learning to appreciate its prevalence and importance.

In the matter of diagnosis, there are other earlier symptoms than cystitis. We have early hematuria, urinary changes and symptoms referable to the kidney, such as tumor, pain, tenderness, etc.

In regard to treatment, during the extreme surgical wave of the last five years, it has been largely surgical, and the results have been most gratifying. Whether this is to be replaced during the physiologic era that is coming in by such measures as vaccination, guided by the opsonic index, is to be decided in the near future. Wright and his followers believe that it will be. In this country we have not arrived as yet at very definite conclusions. The workers in tuberculosis in the North, Trudeau and Baldwin, I believe, have not been very much impressed so far with its efficacy.

There are a good many questions to be decided in a case of renal tuberculosis. The first is whether or not the infection *is* surely tubercular. Dr. Richard C. Cabot says that it is not possible to be absolutely sure that there are tubercle bacilli in the urine by any method of staining. And certain it is that we have overlooked tubercle bacilli after careful search for them, and then have inoculated a guinea pig and proved that they were present. I think too little importance is attached by the general practitioner to the matter of collecting the urine. It must be an aseptic twenty-four-hour specimen. If it is aseptically obtained and then shows acid-fast bacilli, it certainly is very suggestive.

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[1] See p. 647.
[2] See p. 643.
[3] See p. 649.
[4] See p. 651.

An important question is whether or not the tuberculosis of the kidney is secondary. Is there some other tubercular lesion in the body, perhaps more serious, so that we should not be too fast to consider nephrectomy? Is it unilateral or bilateral? Fortunately we are led to believe from statistics that about 50% of the cases of renal tuberculosis are unilateral when presenting themselves for treatment, which is one saving feature of the condition.

Then what is the secreting function of the other kidney? It may be secreting urine, but still not a sufficient amount to maintain the organism after removal of the diseased kidney. A diseased kidney may possess considerable functioning capacity, and if that diseased kidney is removed before the other is sufficiently hypertrophied to do the extra work, we may have unfortunate anuria. That is why Dr. Murphy and some others advise never doing primary nephrectomy, but first doing nephrostomy and drainage, and thus giving the other kidney time to become accustomed to its extra burden. Also, before operating, we must carefully ask whether there are other contra-indications and whether the patient will tolerate the operation. And if operative interference is out of the question, what other treatment have we to offer? Shall we try the vaccine treatment with tuberculin, or resort to the ordinary out-of-door and hygienic treatment of tuberculosis? Many of the cases sent to us are not good surgical risks. The general practitioner is apt to see serious cases of renal tuberculosis and to conclude that such should be operated upon. In general miliary tuberculosis there is no use in operating, and in the subacute diffuse tubercular nephritis operation is likewise contra-indicated, because these patients will die quicker with the operation than without it. We must be on our guard and select cases that we believe have some chance of recovery.

As to technic, in regard to opening the pleura, referred to by Dr. Lund; this is mentioned as one of the calamities of the operation, but I do not think it is so serious. In doing lumbar nephrectomy I have opened the pleura without bad results. Dr. William Mayo tells me that he has opened the pleura about forty times in performing nephrectomy and has had no serious results from it. I believe it is not improper, if found necessary, to go through a rib to get more room.

In our own work we have been inclined in extreme cases, or when a considerable portion of the kidney was functionating, to follow the advice of Dr. Murphy and some others who have treated tubercular kidneys in a conservative manner by first doing nephrostomy, for drainage, and later nephrectomy. This method may require a longer time for convalescence, and is not so brilliant, clean and satisfactory to the patient, but we believe, in the class of cases above mentioned, it is safer and will lower the immediate operative mortality.

Dr. F. S. Watson: I will take the liberty at this point in the discussion of bringing forward some questions that have occurred to me while listening to the remarks of some of the gentlemen.

First: Why should we assume, as Küster and some others have done, and as has been again stated here to-night, that tuberculous disease is never primary in the genito-urinary tract, and that, when we fail to find any other primary focus elsewhere in the body, it is owing to such a focus being so small or so well concealed that we overlook it?

Second: With regard to a gonorrheal infection of the kidney preparing the way for the invasion of the organ by a tuberculous process, we have but very slender evidence that such a sequel takes place, for the number of authentic cases in which gonococci have been found in the kidneys is very small indeed, and it seems to me that proof is lacking thus far that this micro-organism plays this rôle that has been suggested for it in the remarks of one of the speakers this evening.

Third: What is actually known as to the time occupied in the production of compensatory hypertrophy of a kidney? Why should we wait, as has been suggested here this evening, to allow of the compensatory hypertrophy to take place, and do a preliminary nephrostomy on the diseased organ for the purpose of securing the time for the hypertrophy of its fellow organ to be produced?

Fourth: What reason is there to think that the compensatory hypertrophy of a kidney is a painful process, as has been intimated by Dr. Davis?

With regard to the securing of a larger space in the operation of nephrectomy by resecting the lowest rib, I personally am opposed to it, for we can attain the same end by supplementary incisions through the soft parts, or by employing the so-called paraperitoneal method of doing the operation, which I have used a good deal and found most satisfactory when a large space is required.

Dr. Hugh Cabot: I think these are a particularly good set of papers and cover the ground very thoroughly. In the pathology, the question of an ascending infection is perennial. It seems to me worth while to consider whether an infection may not ascend by the lymphatic channels rather than by the ureter. A small amount of experimental work has recently been done which lends color to the belief that infection may extend downward along one ureter, then up the other side by the lymphatic circulation, without involvement of the ureters. I think that not enough stress has been laid upon the possibility of the infection in renal tuberculosis occurring through the lymph channels. There are certain distinct objections in the pathology to the belief that they all originate by the blood. A typical hematogenous infection begins in the cortex with the miliary tubercle. A considerable number of cases are found at an early stage with ulceration beginning in the pelvis and along the portion of the papilla which projects into the pelvis. It is rather difficult to understand how this can be hematogenous, and it is the particular part of the kidney most likely to be involved in lymphatic infection. This was the very pretty argument used by Brongersma, one of the delegates from Amsterdam at the International Congress in Paris. He showed that in several cases which came to autopsy there was evidence of tuberculosis of the apex of the right lung, and tuberculous glands extending down along the aorta through the diaphragm to the neighborhood of the kidney on that side — these were cases of unilateral tuberculosis. The lymph glands about the kidney were infected. Of course, the tuberculosis of those glands might be said to be secondary to that of the kidney, but these glands also contained pigment of the same type as that in the bronchial lymph glands, which seemed to prove that the process had extended downward. It seems to me this is an attractive supposition. His paper was rather roughly handled by Albarran, but I think in the future we shall hear more of infection of the kidney by way of the lymphatics.

In discussing the symptoms, I did not hear Dr. Chute mention the early polyuria and bladder reflexes which occur in these cases, sometimes years before the occurrence of any pus or tubercle bacilli in the urine, i. e., while it is a closed tuberculosis, long before there is any ulceration. At that time it is sometimes possible to make the diagnosis, and often possible, I think, to suspect it. In the early cases which show a little pus and blood without tubercle bacilli, polyuria is sometimes very marked, and I remember one case in which the polyuria was what brought the patient to his physician. The only symptom was very marked polyuria, which came on suddenly and was very persistent. The reno-vesical reflex, which Albarran has referred to, which is a spasm at the "cut off," may persist for years, and, in the absence of other cause, tuberculosis of the kidney should be suspected.

It seems to me that altogether too much stress has been placed on red-staining bacilli in the urine. It is a very tedious task to find them; its value is open to some difference of opinion, and the question can be decided with great certainty by pig inoculation. It seems to me that I have seen more faulty than correct conclusions result from attempts to stain the bacilli, and since it is very tedious and time-destroying, I think it will eventually fall into disuse.

There are a certain number of cases in which the diagnosis cannot be made by cystoscopy and catheterization of the ureters for the simple reason that the ureters cannot be catheterized. I have seen cases in which the bladder was so contracted that the openings of the ureters could not be seen, even though under the indigo-carmine test their general location could be made out. In these cases the diagnosis must be made upon other ground than the exact knowledge obtained from the catheter. I think that one is justified in operating in these cases where the indigo-carmine test shows prompt and full excretion from one kidney with very little, none or much delayed excretion from the other. Within a year I have operated upon two such cases and found one kidney largely destroyed and felt the other to be a normal kidney. In both cases I was driven to operate on account of the intensity of the symptoms in the bladder and the belief that they could be relieved by operation, but without any positive knowledge of the absence of tuberculosis on the other side.

In regard to the treatment, even the favorable statistics of Dr. O'Neil are improved by Albarran, who reported one hundred and eight cases with 2.7% mortality. The case is very different with secondary nephrectomy, which always has a high mortality. This, it seems to me, is an objection to the operation of nephrotomy, except in carefully-selected cases, for the mortality for secondary nephrectomy is at least double that of primary nephrectomy. In the cases I have seen, it is a very serious operation, and in one case subdiaphragmatic abscess occurred from inability to remove the upper pole of the kidney. I doubt the wisdom of doing nephrotomy except where there is probable bilateral disease, or the condition of the patient is very bad, because if you are going to double the mortality of your operative cases, you must have a good reason for doing so.

In regard to the total removal of the ureter with nephrectomy, my views have changed so many times that I have come to think that they are not worth much. The central portion of the ureter is rarely much involved. Most of the disease is at the two ends. Now it is difficult to remove the bladder end of the ureter and it is practically always diseased if the ureter is much involved. If that cannot be removed, it is hardly worth while to waste time to remove four or five inches above which is not so much involved. It seems about as well to remove it down to the brim of the pelvis.

Dr. E. Garceau: It is doubtful if the kidney is ever the primary organ diseased. Most observers are now agreed as to this. Some years ago I went over the autopsy records of the two large hospitals in Boston, and in 3,424 cases I found twenty-four instances of caseous renal tuberculosis. In all of these there was some other organ in the body affected with tuberculosis. The lungs came first and the intestines second. This finding is in accord with Morris, who got a like result. It is an important point, for it shows that a patient who has had nephrectomy for tuberculosis cannot consider himself free from the disease. His case is simply arrested, and the future for him will depend on his mode of life and his attention to hygienic rules. With all this, long survivals have been reported after nephrectomy for tuberculosis. I have one case in which I did nephrectomy twelve years ago, and another in which the operation was done nine years ago. Both are well today and have exhibited no sign of the disease.

In regard to treatment by change of climate: I do not see why these patients should not get well by this means. Tuberculosis in nearly every other part of the body yields to appropriate hygiene and change of residence. The reason we do not get better results in tuberculosis of the kidney is, I think, because we do not recognize the disease early enough. The disease gets a long start before the diagnosis is made, and then it is too late. We should be on the lookout for early cases. An unexplained polyuria should lead at once to cystoscopic examination. If a ureteral orifice is found congested, the corresponding kidney should be under suspicion.

I am quite convinced that all bladders do not get well of themselves after nephrectomy. Many of them do, some are improved, but there remain a few which are not at all improved by the operation. In the last class of cases we have to deal with deep-seated lesions. In one of my cases a tubercular bladder yielded to treatment only after five years, a cystotomy having been required; in another, it was two years before the bladder was well. My usual method of treating bladders after nephrectomy is to wait two months and then examine the bladder. If it does not show marked improvement, I etherize the patient and cauterize the bladder with nitrate of silver stick. It is surprising to note the improvement which follows this treatment. This cauterization is kept up from time to time until the patient is well.

Dr. C. G. Cumston: The question of hematuria in the diagnosis of tuberculous disease of the kidney has, I believe, not been touched upon this evening. I merely refer to it because, in my experience, it is rather common. It may be in the form of a microscopic loss of blood, but in many instances one will be dealing with a true hemorrhage from the kidney. It may make its appearance frequently during the development of the disease, or, on the other hand, may occur only once or twice. The following case, which occurred in my practice a couple of years ago, very well illustrates how important hemorrhage is as an early diagnostic sign in renal tuberculosis. The patient, a heavy built man of thirty years of age, consulted me because a few days previously he had passed about a teaspoonful of pure blood at the end of micturition. He had never had gonorrhea. The urine voided in my presence was light yellow, cloudy and contained a few white flakes. Cystoscopy showed a normal bladder with some reddening around the left ureteral orifice. Renal catheterism obtained a cloudy urine from the left kidney, a perfectly limpid from the right. Dr. Perry inoculated guinea pigs with a positive result, and microscopically he also found the urine from the left kidney loaded with tubercle bacilli. The urine from the right kidney was absolutely normal.

Another interesting point in the radical cure of unilateral renal tuberculosis is that of the resection of the kidney. I believe that, at the present time, it is generally conceded that the early removal of the diseased kidney is the proper course to pursue, but I have had one case where I attempted partial resection of the diseased gland with a fairly satisfactory outcome. This occurred a number of years ago and I, therefore, can only speak from memory. It was before the days of perfected intravesical technic. The patient, a woman about twenty-six years of age, had suffered for several years intensely from her bladder, and, at the time she came under observation, she was voiding her urine about every fifteen minutes, night and day. Cystoscopy showed a greatly diseased bladder containing several tubercular ulcerations. The left ureteral orifice was greatly congested. By palpation the right kidney could not be felt, but the lower pole of the left was easily detected. I cut down on the left kidney and found the organ considerably enlarged. It was then split open from end to end, and to the eye the upper two thirds of the renal parenchyma appeared normal. In the lower pole was a tuberculoma the size of a walnut. The lower third of the kidney containing the tuberculous mass was resected with ease. As far as the operation was concerned, the patient made an uneventful recovery. Her bladder symptoms improved after the interference, and for the two years that I followed her after the operation she was greatly bettered. The ultimate outcome of the case I am unable to state, as the patient was lost sight of.

Referring now to the cure of renal tuberculosis by climate, I would say that I have had one case where I fully believe the cure was entirely due to the latter. This case I published in 1897. The patient was a little girl eight years of age, who was brought to me for frequency in micturition, the act being accompanied with rather intense pain. The cystoscope showed an ulcer in the bladder, and the urine inoculated in guinea pigs proved that it contained tubercle bacilli. For a time I treated the ulcer locally with lactic acid and after some little improvement the patient was sent to Bermuda. She remained there a number of months, and, when she returned, the urine was found absolutely free from tubercle bacilli as proven by guinea-pig inoculation. She has remained well ever since. I see no reason why the treatment by climate should not have the same beneficial effect as in cases of pulmonary tuberculosis and tuberculosis of the testicle, several instances of which I have seen.

I would like to ask one question of Dr. Chute. In the charts that he has shown, was the temperature taken previously to ascertain if it was normal?

Dr. Chute: Yes, that was done in very case, and I would like to show it here by the original charts. (See charts accompanying Dr. Chute's paper.)

Dr. F. B. Lund: In regard to climatic or hygienic treatment of tuberculosis of the kidney, I would like to speak of the case of a young man about twenty-five years old who came to me sixteen years ago with blood, pus and tubercle bacilli in his urine. The only epithelial cells found were thought to be prostatic, but they were probably renal. He was sent into the country, where he lived for two years, hunting and fishing. He then went into business in the country and recovered perfect health. He is in perfect condition to-day. He has married and has two children. This is certainly a case of tuberculosis, probably renal, which recovered under climatic treatment.

In a case of early renal tuberculosis without destruction of the kidney, I think that such treatment where practical ought to be applied.

Dr. J. W. Keefe: I am very glad to hear the stress that Dr. Chute laid upon the catheterization of both ureters for diagnosis. I have felt for some time that, if catheterization was carefully done there was very little injury from the passage of the catheter alone; and he has certainly demonstrated very conclusively how important it is. Some time ago I reported a case in which the bladder had a tubercular appearance, and where inoculation of a guinea pig showed tubercle bacilli in the urine. The patient to-day appears perfectly well after treatment by application of the nitrate of silver in solution.

I was much interested in what Dr. Cabot said about infection through the lymphatics. I see no reason why this should not be so. We have gall-bladder infection originating in that way; also disease of the pancreas. We certainly have the lymphatics involved to a great degree in tuberculosis of other parts of the body, and this view, to my mind, will be developed much more in the future than it has been in the past.

Dr. Lincoln Davis: Just a word in regard to the climatic cure. I do not think any one doubts that cases are frequently improved by influences of this sort, but I do think that we lack definite proof that the focus in the kidney has been healed in these cases, and that good urine is coming from that kidney. We do not know but that those kidneys are entirely destroyed by the disease and that no urine is coming from them. I think what is wanted is a pathological specimen showing a tubercular process walled off and the healthy kidney tissue around it. Or we should find after climatic treatment normal urine coming from the formerly diseased kidney. And until we get such proofs it seems to me we are bound to be somewhat skeptical, for, so far as I know, in autopsies no definite healed processes have been found in the kidneys.

Dr. A. L. Chute: I agree with Dr. Davis in what he says about there being nothing proven about the cure of renal tuberculosis by climatic or hygienic treatment. By this I mean no cases in which it can be demonstrated that the process has been arrested before such time as the kidney has been reduced to a mass of fibrous tissue.

An acquaintance has told me of a most striking apparent cure of a case of renal tuberculosis. In this instance tubercle bacilli were found in considerable numbers in the urine. After some years of hygienic treatment no tubercle bacilli could be gotten, either in stained specimens or by pig tests. In the absence of more definite knowledge, which could only be gotten by catheterizing the ureters, we are in doubt as to whether the focus has been healed and the kidney is still functioning, or whether the whole secreting tissue has been destroyed and replaced by scar tissue. If the latter is the case, then the physician accomplished in three or four years only what we could have done by operation in as many weeks. This subject of the curability of renal tuberculosis by hygienic treatment is one of which we have relatively little definite knowledge, and concerning which there is a most urgent need for accurate observations.

I want to agree with Dr. Cabot about the dangers of nephrostomy. About two years ago I lost a patient with renal tuberculosis after a preliminary nephrostomy. I believe it is, as a rule, more dangerous than nephrectomy is in carefully-studied cases.

Dr. Watson asks why we should think that renal tuberculosis is secondary to a focus elsewhere in the body. The synchronous or almost synchronous appearance of tuberculosis in both kidneys, which we see not very infrequently, seems to me to favor this view. The appearance of renal tuberculosis in patients who have had previous tuberculous joint lesions also points to this probability. Our knowledge of the methods of infection with tuberculosis makes it seem probable that it practically always enters the body either through the respiratory or alimentary tract.

Gonorrheal pyelitis may have been demonstrated in only two cases, but that does not prove that it may not occur fairly often. We certainly see a pyelitis, or at least find a tender and painful kidney not infrequently, in patients who present a gonorrheal cystitis, and in these cases it seems probable that the gonococcus is the cause of this pyelitis.

Dr. Cabot speaks of the time it takes to find tubercle bacilli in the urine. I think if one examines the specimens frequently and is careful to get uncontaminated bladder specimens, and to wash the sediment, that one will be successful in his search for bacilli in a large proportion of cases of renal tuberculosis. In the cases where the examination is positive, it saves much time. In the others, we must await the outcome of pig inoculation.

I do not agree at all with Dr. Garceau about the importance of treating the bladder locally after the removal of the tuberculous kidney. I have seen nine or ten cases where bladders have been involved and yet have gotten well absolutely without any local treatment. Only one case that I know of has had trouble lasting for any considerable time after nephrectomy. He complains of frequent and urgent urination, though he has a perfectly clear urine and his bladder is said to show nothing abnormal. In light of the condition of his bladder and urine, I believe his bladder irritability is largely neurotic. It seems to me that the bladders that need local treatment after the removal of a tuberculous kidney are relatively few.

Dr. R. F. O'Neil: I have nothing to add to the discussion except to agree with Dr. Davis and Dr. Chute in regard to the climatic cure of renal tuberculosis.

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Book Reviews.

Dietetics for Nurses. By Julius Friedenwald, M.D., Professor of Gastro-Enterology in the College of Physicians and Surgeons, Baltimore, and John Ruhräh, M.D., Professor of Diseases of Children in the College of Physicians and Surgeons, Baltimore. Second edition, revised and enlarged. Philadelphia and London: W. B. Saunders Company. 1909.

We have previously commented favorably upon this book. The present volume is not unlike its predecessor. The article on milk has been rewritten and simple methods of detecting certain food adulterations and preservatives have been added in a separate chapter. The book is of value not only to nurses, but to physicians, who too commonly neglect the all-important question of diet.

Sanitation and Sanitary Engineering. By William Paul Gerhard, C. E., Consulting Engineer for Hydraulic and Sanitary Works. Second edition. Pp. 175. New York: Published by the author. 1909.

Recognizing sanitary engineering as a specialty which must often be correlated with other engineering branches, as, e. g., hydraulic engineering in providing for pure water supplies for cities and towns, and mechanical engineering in dealing with heating and ventilating provisions, the author proceeds to outline the course of study required to enable one to become a competent, practical engineer. In this course of study he includes a certain amount of knowledge concerning public and personal health, referring especially to the causes and methods of preventing the spread of communicable diseases. He acknowledges, however, that while, in case of an outbreak of communicable disease, some of the work to be performed belongs to the sanitary engineer, because of his education in technical details of sanitation, other duties, being of a medical nature, fall within the physician's province; and he warns even the well-qualified sanitary engineer, when testifying in the courts, not to offer opinions "as to what may or may not be injurious to health."

In short, the author points out the fact that the public health is best protected when the sanitary engineer and the physician "work hand in hand, and assist and supplement each other," the sanitary engineer confining himself to the "constructive side of such works as health officers require for the prevention of illness," leaving for the medical men the discussion of the "problems belonging to sanitary science or the germ theory of disease."

An interesting review is given of the progress in sanitation during the second half of the nineteenth century, and the author, after dealing with sanitation in Greater New York, shows, by contrast, the lack of sanitation still existing in some countries of the Far East.

The book is adapted primarily to the needs of students in sanitary engineering, but it may be read with profit by medical officers of health, sanitary inspectors and others interested in the solution of public health problems.

Minor Maladies and Their Treatment. By Leonard Williams, M.D., M.R.C.P., Physician to the French Hospital; Assistant Physician to the Metropolitan Hospital; Late Assistant Physician to the German Hospital; and Honorary Medical Officer to the Sidmouth Cottage Hospital. Second edition, revised and enlarged. New York: William Wood & Co. 1908.

That minor maladies are not forgotten in our absorbing interest in major affections is shown by the fact that this excellent little book has reached a second edition. The discussion of coughs, colds, indigestion, headaches and similar topics is of perennial interest, and this Dr. Williams has emphasized admirably in the little book before us. The chapter on insanity is introduced not, as the author says, because it can be properly included in the category of minor maladies, but because it is a subject curiously neglected in the ordinary textbook on medicine. The suggestions offered in the chapter are, therefore, of special value. The chapter on goutiness, of considerable length, will probably be of more value to the English than to the American reader.

Catholic Churchmen in Science. (Second series.) Sketches of the lives of Catholic ecclesiastics who were among the great founders in science. By James J. Walsh, M.D., Ph.D., LL.D., Dean and Professor of the History of Medicine at Fordham University School of Medicine; Professor of Physiological Psychology at Cathedral College, New York; Fellow of the New York Academy of Medicine; Life Member of the

New York Historical Society; Member of the National Geographic Society, etc. Philadelphia: American Ecclesiastical Review. 1909.

In this second series of biographical sketches Dr. Walsh carries further his arguments that science and faith are not incompatible and that the history of Catholic ecclesiastics goes far to disprove the superficial view somewhat widely prevalent. The essays are written in scholarly fashion and are of much interest as biographies, and particularly from the wider significance which the author claims for them. A third volume is projected to complete this interesting series.

Marriage and Disease. Being an abridged edition of "Health and Disease in Relation to Marriage and the Married State." Edited by Prof. H. SENATOR and Dr. S. KAMINER. Translated from the German by J. DULBERG, M.D. New York: Paul B. Hoeber. 1909.

This volume is a translation from the German of a much more complete manual discussing the general subject of marriage and disease. Owing to its practical character and the fact that the subject-matter is of general interest to the public this abbreviated edition was prepared. The book is certainly of value from the practical as well as theoretical standpoint. It is made up of separate articles varying in length by men eminent in the profession, numbered among whom may be named Senator, Orth, Fürbringer, V. Leyden, Ewald, Neisser, Hoffa, Moll and others hardly less distinguished. The design of the book is comprehensive and discusses various conditions and diseases not ordinarily considered which might have an influence upon marriage and offspring. We commend the volume as a serious, straightforward discussion of matters of the utmost importance to the race.

A Textbook of Materia Medica, Pharmacology and Therapeutics. By GEORGE F. BUTLER, M.D., Professor and Head of the Department of Therapeutics and Professor of Preventive and Clinical Medicine, Chicago College of Medicine and Surgery, Medical Department, Valparaiso University. Sixth edition, revised and enlarged. Octavo of 708 pages. Philadelphia and London: W. B. Saunders Company. 1908.

Butler's "Materia Medica" has been a well-known work, and, as in its previous editions, a great deal of attention has been given to the pharmaceutical portion of the subject.

In this new, the sixth, edition, the author has to a considerable extent abandoned the ancient classification and, on the other hand, he has reclassified a good deal of the work according to modern views of the pharmacological actions. The author has also added many of the newer drugs.

Symptoms and Their Interpretation. By JAMES McKENZIE, M.D., M.R.C.P., Physician to the West End Hospital for Nervous Diseases, London; Consulting Physician to the Victoria Hospital, Burnley. Illustrated. London: Shaw & Sons. 1909.

McKenzie in this volume approaches the question of diagnosis in a somewhat original way. Working from the standpoint of a general practitioner, the author has evolved a theory of the reflex phenomena of disease on which he has based a rational principle of diagnosis. In pursuance of his general plan he first classifies the symptoms of disease, then discusses pain in its various forms, together with the reflexes. Following these preliminary chapters, he takes up in some detail the affections of the various organs, and applies his theory in each instance. The result is an extremely suggestive and scholarly consideration of the general diagnostic problem which certainly should find many sympathetic readers.

The Practical Medicine Series. Comprising ten volumes on the "Year's Progress in Medicine and Surgery." Under the general editorial charge of GUSTAVUS P. HEAD, M.D., Professor of Laryngology and Rhinology, Chicago Post-Graduate School. Volume IV. Gynecology. Edited by EMILIUS C. DUDLEY, A.M., M.D., Professor of Gynecology, Northwestern University Medical School; Gynecologist to St. Luke's and Wesley Hospitals, Chicago, and C. VON BACHELLÉ, M.S., M.D., Assistant Professor of Obstetrics, Chicago Polyclinic and College of Physicians and Surgeons; Gynecologist to the German Hospital, Chicago. Series 1909. Chicago: The Year Book Publishers.

In the case of the present volume we can reiterate the favorable comments that have appeared in these columns of the predecessors of this report of progress in gynecology. The typographical errors are unduly numerous, however, and show lack of care on the part of the printers.

A Textbook of Medical Chemistry and Toxicology. By JAMES W. HOLLAND, M.D., Professor of Medical Chemistry and Toxicology, Jefferson Medical College, Philadelphia. Second revised edition. Octavo of 655 pages, fully illustrated. Philadelphia and London: W. B. Saunders Company. 1908.

This volume, like other "Medical Chemistries" of the same class, contains *multum in parvo*, and if students were to have but one textbook including elementary physics, inorganic and organic chemistry, physiological chemistry, clinical chemical analyses and toxicology, this work might supply their wants if modest.

This considerable collection of heterogeneous facts might be of value to a busy practitioner as an unpretentious reference book. The work might also be of service in those medical schools where all chemical subjects are still grouped together under the title of medical chemistry and where but an elementary knowledge of these subjects is required.

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OXYGEN AND HIGH ALTITUDES.

CHIEF among the many difficulties attendant upon mountain climbing is the mountain sickness experienced as the air becomes progressively rarified. This sickness is marked at 15,000 feet, though tourists suffer from it, in less distressing forms, even in a railway ascent of the Rigi. In these latter circumstances, however, the ailment is very temporary, and is usually dissipated by remaining quite still and breathing deeply. But at great heights and after much labor the symptoms are aggravated, may continue for several days, and may have even grave sequelæ. The heart palpitates most painfully, the apex beat between the ribs being easily seen; there is epistaxis; the respiration is rapid, and the sufferer gasps for breath; the rapid pulse and the dyspnea are emphasized by muscular action; there is also muscular pain. Whymper, who ascended Chimborazo, 16,000 feet, describes also severe headache, parched throat, intense thirst, loss of appetite, intense malaise; his temperature was 100.4° F.

The Duke of Abruzzi recently failed in an attempt on Mt. Godwin-Austen, which is next in height to Everest among the Himalayas, and this principally by reason of the altitude of 28,265 feet. The Duke's party had to stop at 24,600 feet; they encountered rock face sometimes 2,000 feet high; and so rarified was the air, even at the base, that long before the climber could reach the summit "his lungs refused their office. In difficult situations the breath could not be held long enough to make the exertion required to overcome an obstruction." Other difficulties were that the rocks in the higher Himalayas are often in a dangerously rotten state from the action of the meridian sun and the intense cold; besides, the explorer could do nothing but climb to save his respiration, being thus unable for camp work or to help carry instruments and supplies. Coolies had thus to be drafted — who broke contracts immediately they tired of their service or when they began to experience mountain sickness; they then speedily concluded the enthusiasm of their employers to be in reality dementia, and decamped, leaving their loads at the side of a trail.

It would now seem, however, that by reason of experiments with oxygen[1] made by Prof. Wm. S. Anderson, director of the Yale gymnasium, in an expedition financed by Mr. Joel E. Fisher, a Yale undergraduate, of New York City, the main difficulty experienced in climbing the highest terrestrial altitudes should be obviated. A collateral observation (of especial interest to us as physicians) was that oxygen would relieve a distressed heart or lung after exertion, as in athletics; another subsidiary observation was that he and his fellow adventurers found chocolate most valuable as a food and as a preventive of the malaise symptomatic of the mountain sickness.

Starting from the city of Mexico, the party of eleven ascended Orizaba, 17,879 feet high; Popocatepetl, 17,784; and Iztaccihuatl, 17,476; none of the accompanying Mexican guides had ever before ascended the "Izti," the latter of these. The climb up "Popo" was, for a comparative test, made without oxygen; that up "Izti" with oxygen. The "Popo" climb was not so difficult as that up "Izti," yet the party were in distress from the very start. Professor Anderson overcame his nausea by eating chocolate. "The weather conditions are said to produce mountain sickness, but the trip up 'Popo' was made in beautiful weather; that up 'Izti' in very stormy and gloomy weather." The air was so rarefied that but two steps could be taken at a time, "and we were too exhausted to watch the clouds and inspect for any length of time the most wonderful panorama I have ever seen. Every ten steps we rested in the snow."

"Izti" is called by the natives the "White Woman," suggesting as it does the form of a sleeping woman. The "breasts," it is believed, have never before been ascended by guides; nor by any one else to Professor Anderson's knowledge. This made the ascent, over numerous and dangerous crevasses, concealed oftentimes by thin and treacherous snow-bridges, all the more difficult.

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[1] Anderson, W. S.: The Use of Oxygen in Mountain Climbing Am Phys. Educat. Rev., May, 1909.

At the snow line, the horses (who were suffering) were left behind in the charge of not unwilling guides. The Mexicans, indeed, had no heart whatever for the business; they feared not only the deadly "barrancas," but even more the spirits or goblins of the mountain, and were, in consequence, constantly crossing themselves and calling upon the saints. Professor Anderson writes: "I carried the generator about my neck and breathed the gas almost constantly for three hours; it was like water to a thirsty man. I was able to make the climb with much less suffering than on 'Popo'; there was not a qualm of sickness. My hands were too cold to take readings of the pulse, but I knew, both by heart action and by respiration, that the gas was helpful; I really suffered not at all." The climb had been made easy by several factors: Oxygen practice; living more than a week in an altitude of 8,000, — the city of Mexico is 7,347 feet above sea level; physical training — Professor Anderson had accustomed himself to daily feats of strength and endurance — and adjustment to the environment.

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MR. ROCKEFELLER AND THE HOOKWORM DISEASE.

The gift of a million dollars by Mr. Rockefeller for the purpose of fighting the hookworm disease in our southern states bids fair to prove one of the most notable examples in history of the application of great economic wealth to permanent amelioration of the physical conditions of life in a community. The manner in which this far-seeing charitable enterprise was planned and is to be carried out is characteristic. After many months of careful investigation by experts of the nature and extent of prevalence of uncinariasis in this country, and of the feasibility of its cure and future prevention, Mr. Rockefeller invited to conference a dozen leading physicians, educators and publicists. These gentlemen met in New York, Oct. 26. After discussion of the problem presented, they organized and incorporated themselves into a board entitled, "The Rockefeller Commission for the Eradication of Hookworm Disease," and as such undertook the practical direction of the work and the administration of the fund which Mr. Rockefeller offered for its accomplishment.

The members of the commission listened to a letter in which Mr. Rockefeller expressed his interest in the suppression of the disease and stated that the commission might call upon him from time to time for such sums as may be needed during the next five years for carrying on an aggressive campaign, up to a total of one million dollars. A fitting reply was made by the commission, the concluding portion of which is as follows: "Widespread and serious as the infection is, there is a most encouraging outlook. The disease can be easily recognized, readily and effectively treated, and by simple and proper sanitary precautions successfully prevented. The undertaking proposed by you is, therefore, not only full of promise and of great benefit, but is eminently definite and practical. We desire individually as well as collectively to thank you for this opportunity to be of service to our fellowmen, and we enter upon our task with a deep sense of the responsibility laid upon us." Surgeon-General Wyman, of the Marine-Hospital Service, has expressed his great gratification at this effort to eradicate hookworm disease. "It is evident," he says, "from the correspondence which has passed between Mr. Rockefeller and the commission that they contemplate a campaign of education and I think it would be of great value if they were to work in co-operation with the state and local authorities." He explained that the Marine-Hospital Service had been devoting much study to the prevalence of the disease in the South, and had endeavored in various ways to direct the attention of state boards of health to the matter.

The exact methods of procedure have not yet been developed, but the general purpose is not only to reach, treat and cure all cases of the disease now existent, but by education in hygiene and sanitary reform to prevent its future recurrence and spread. The far-reaching benefits of such a measure successfully carried out are almost incalculable. Not only will it relieve the personal suffering of over two million people, restore their capacity for efficient labor, and secure for them and their children opportunity for future physical and mental progress and consequent happiness now impossible, but it will rid national civilization of the burden of a large class of incompetents, demonstrate how this scourge may hereafter be prevented, and thus constitute another great achievement of medical science. In a recent editorial we referred to the prevalence of uncinariasis in the South, and the extent of the evils which it produces. To Mr. Rockefeller and the members of his commission will belong the credit of conceiving, organizing and accomplishing the remedy of these evils, one of the most enlightened humanitarian undertakings of the age.

PROGRESS IN PELLAGRA.

Progress in the study of pellagra is steadily being made. Dr. C. H. Lavinder, passed assistant surgeon of the United States Public Health and Marine-Hospital Service, who has been making an investigation of the disease throughout the southern states, with headquarters at Columbia, S. C., is inclined, according to a statement recently issued by his department, to attach special importance to the predisposing factors of causation: poverty, insufficient food, poor housing, bad hygiene, mental depression, alcoholism. In conjunction with Dr. J. W. Babcock, of the South Carolina State Hospital for the Insane, he has selected for translation into English Marie's treatise on pellagra, considered the most comprehensive single work on the subject. The publication of this translation is awaited with interest, and it may be expected to prove a valuable manual of information to the profession in this country.

Meantime a national conference on pellagra has been in session at Columbia during the current week and some report of its proceedings may be hoped for soon. The problem has already attracted popular interest. In the November number of *McClure's Magazine* is an admirable article describing the history of the disease in Italy and the legislative, charitable and educational measures adopted there for its relief and suppression, and giving some account of the experimental researches of Lombroso and others into its etiology. It has been suggested that " blind staggers " in the horse is really pellagra, and a special investigation of this aspect of the question has been undertaken by the South Carolina Board of Health. If this identity be determined, important possibilities are opened, not only for study of the disease, but for its treatment with the serum of recovered or immunized horses.

Pellagra exists in France and in the British colonies as well as in Italy, and the solution of its etiology and determination of its best treatment offer prospects of general benefit that add to the importance of its study in the United States.

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DECLINING EUROPEAN BIRTH-RATES.

Official statistics from Paris show that during the first six months of 1909 the decline in the population of France, which has been noted for a number of years, has steadily continued. In these months there have been 6,201 fewer marriages, 543 more divorces, 25,019 more deaths and 12,692 fewer births than in the corresponding period of 1908. Simultaneously from Germany comes report that the German birth-rate, hitherto on the increase, has also begun to flag. Measures of various sorts to check this decline have already been adopted without success in France, and now the German Emperor has offered to all parents a sum of money payable on the birth of their eighth child. It is to be questioned how desirable or efficacious such artificial means may be. The causes of fluctuation in national populations seem social rather than physical, and represent phases of racial evolution that have been often repeated in history, though not observed at the time of their occurrence until modern vital statistics brought them to contemporaneous attention.

It seems at present inevitable, though perhaps not necessary, that the high specialization produced by a progressive civilization should involve diminished reproduction and ultimate extinction of the most specialized individuals. When such diminution, however, affects all classes of society, other causes must also be at work, and such a people becomes for the time being retrogressive. Subsequent removal of these causes may be followed by numerical regeneration, which is not intrinsically inconsistent with civilized progress; or the temporarily declining race may be permanently suppressed by the political or migratory invasion of a more vigorously vitalized prolific people. Whatever the causes in a particular case, such as that of France, the process is part of a larger cycle, the course of which is not yet controllable by human foresight.

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MEDICAL NOTES.

New Method of Photographing Bacteria. — It is reported from Paris that Jean Comandon has recently demonstrated to the Academy of Sciences a new method of photographing living bacteria by means of the ultramicroscope and the cinematograph. This discovery seems more of popular than of scientific interest, but may afford valuable means for the biologic study of micro-organisms.

Cholera in Belgium. — Asiatic cholera is evidently not yet eradicated from the low countries. Report states that six deaths from this disease occurred during the past week at Boom, a town ten miles south of Antwerp, and the authorities at Brussels are taking energetic provisions to prevent its further invasion of Belgian territory.

American Hospital at Paris. — On Oct. 28 occurred the official opening of the new American Hospital at Neuilly, near Paris. The United States was represented by Ambassador White, and France by her Minister of Education. The hospital, which contains twenty-five beds, was founded for the benefit of the American colony in Paris, built and equipped by subscriptions raised among its members and endowed by the generosity of wealthy philanthropists in this country, among whom are J. Pierpont Morgan, William K. Vanderbilt and Miss Helen Gould.

Fifty Supposed Lepers Reported Non-Leprous. — It is reported from Honolulu that at the general examination of lepers, now being made in Molokai under a resolution passed by the latest national legislature, fifty of the first hundred cases examined were declared non-leprous, no lepra bacilli being found in specimens of their skin. In none of these had the later stages of the disease developed clinically. As in the case of Early, it is of interest and importance to know whether these patients represent errors in original diagnosis, examples of genuine cure, or errors of observation on the part of the present examiners.

Enforcement of Pure Food Law. — Energetic enforcement of the pure food and drugs act continues unabated. All suspected violations of the law are investigated by the Chemistry Bureau of the Department of Agriculture and reports made to the Secretary of Agriculture. The findings are transmitted by him to the Attorney-General, who at his discretion refers individual cases to the proper district attorneys for prosecution. Since the passage of the act over six hundred such prosecutions have been made and conviction obtained in nearly every case. In the past months of July, August and September alone, three hundred cases of alleged violation of the law have been reported by the Bureau of Chemistry. Recently one hundred and twenty cans of olive oil were seized at Atlanta for adulteration with cottonseed oil, no mention of the latter being made on the labels.

Members of the Hookworm Commission. — The members of the Rockefeller Commission for the Eradication of Hookworm Disease, of which editorial mention is made in another column of this issue, are as follows: Dr. William H. Welch, professor of pathology in Johns Hopkins University, and president of the American Medical Association; Dr. Simon Flexner, director of the Rockefeller Institute for Medical Research; Dr. Charles W. Stiles, chief of the division of zoology, United States Public Health and Marine-Hospital Service, and discoverer of the American species of hookworm; Dr. Edwin A. Alderman, president of the University of Virginia; Dr. David F. Houston, chancellor of Washington University, St. Louis; Dr. H. B. Frissell, principal of Hampton Institute; Mr. P. P. Claxton, professor of education in the University of Tennessee; Mr. J. Y. Joyner, state superintendent of education in North Carolina, and president of the National Educational Association; Mr. Walter H. Page, editor of the *World's Work;* Mr. Frederick T. Gates, one of Mr. Rockefeller's business managers; Mr. Starr J. Murphy, Mr. Rockefeller's counsel in charitable, benevolent and philanthropic affairs; Mr. John D. Rockefeller, Jr.

BOSTON AND NEW ENGLAND.

Acute Infectious Diseases in Boston. — For the week ending at noon, Oct. 26, 1909, there were reported to the Board of Health of Boston the following cases of acute infectious diseases: Diphtheria 50, scarlatina 26, typhoid fever 25, measles 27, smallpox 0, tuberculosis 37.

The death-rate of the reported deaths for the week ending Oct. 26, 1909, was 15.82.

Boston Mortality Statistics. — The total number of deaths reported to the Board of Health for the week ending Saturday, noon, Oct. 30, 1909, was 197, against 232 the corresponding week of last year, showing a decrease of 35 deaths and making the death-rate for the week 16.49. Of this number 104 were males and 93 were females; 187 were white and 10 colored; 116 were born in the United States, 79 in foreign countries and 2 unknown; 34 were of American parentage, 137 of foreign parentage and 26 unknown. The number of cases and deaths from infectious diseases reported this week is as follows: Diphtheria, 56 cases and 3 deaths; scarlatina, 36 cases and 2 deaths; typhoid fever, 20 cases and 4 deaths; measles, 34 cases and 0 deaths; tuberculosis, 40 cases and 17 deaths; smallpox, 0 cases and 0 deaths. The deaths from pneumonia were 16, whooping cough 1, heart disease 31, bronchitis 3 and marasmus 0. There were 14 deaths from violent causes. The number of children who died under one year was 29; the number under five years 39. The number of persons who died over sixty years of age was 60. The deaths in public institutions were 74.

Consumption: Of the above 1 case and 1 death were non-residents.

Deducting deaths of non-residents, the total is 174. The corrected death-rate is then 14.56.

Free Hospital for Women. — The trustees of the Free Hospital for Women, in Brookline, Mass., to-day opened the hospital building for the general inspection of those interested in its work. Tea was served during the afternoon.

New Medical Society and Journal. — At a recent meeting in the Medical Library Building, in Boston, a new medical society was formed under the presidency of Dr. Charles H. Bangs, of Lynn. This organization is to be known as the American Association of Clinical Research, and announces as its purposes: "First, to establish clinical research on a scientific basis in hospitals; second, to issue a journal of clinical research in which the work of the members shall be published."

Massachusetts Medical Benevolent Society. — The annual meeting of this society was held at the Boston Medical Library at 5 p.m., Oct. 28, 1909.

The treasurer presented his annual report and stated that there were now eighteen beneficiaries receiving aid from the society.

Dr. J. C. White declined a re-election as president, and the following officers were then elected for the ensuing year:

President, Dr. George B. Shattuck; Vice-President, Dr. George W. Gay; Treasurer, Dr. William L. Richardson; Secretary, Dr. William H. Prescott; Trustees, Drs. Elbridge G. Cutler, Francis B. Harrington, M. Vassar Pierce.

NEW YORK.

Sanitarium for Consumptives. — It is announced that Bishop McFaul, of the Roman Catholic diocese of Trenton, N. J., has purchased a farm of one hundred and thirty-one acres, in the vicinity of Trenton, which is to be opened next spring as a sanitarium for the consumptive poor, irrespective of creed.

Fecundity. — Mrs. Charles Ryerson, of Ithaca, N. Y., gave birth, on Oct. 28, to her sixteenth child. She is stated to be forty-eight years old, while her husband, who is a glazier by trade, is fifty-four, and the couple have been married twenty-nine years. Eight of the children have been males and eight females, and all but two of the number are still living.

New Hat for Street Cleaners. — Commissioner Edwards, of the department of street cleaning, has introduced a new hat for his employees, to which is attached a mask provided with a gauze cover for the mouth and nostrils. It is said to be light and not annoying, and it is believed that it will afford an efficient protection from the dangers to which the men have hitherto been exposed in breathing the germ-laden dust of the streets.

Bequests. — By the will of the late Caroline Phelps Stokes, of New York, nearly $300,000 is left to charitable and educational objects. Among the bequests are $10,000 to the Peabody Home for Aged and Indigent Women at West Farms, in the Bronx, and $5,000 each to the New York Post-Graduate Hospital and the New York Infirmary for Women and Children. The gifts to the two last-named institutions are for the endowment of free beds, to be known as the "Dorothy Beds."

Annual Budget. — The municipal budget for next year was finally adopted on Oct. 29, and it includes an additional allowance of $263,500 for tuberculosis work in the Health Department, Bellevue and Allied Hospitals, and the Department of Education; $6,500 is appropriated for the construction of open-air classrooms in the public schools for anemic pupils, and $27,000 for the establishment of additional tuberculosis clinics, while the Tenement House Department receives an increase of more than $120,000 over this year's allowance.

Appointment of Miss Nancy P. Elliott. — On the special recommendation of Drs. William H. Welch and William Osler, Miss Nancy P. Elliott, of Baltimore, has been appointed to the responsible position of superintendent of the new hospital which is just being opened in connection with the Rockefeller Institute for Medical Research. Miss Elliott was graduated from the Johns Hopkins Hospital Training School for Nurses in 1903, and for two years was superintendent of nurses at the Church Home and Infirmary, Baltimore.

Bequests. — By the will of the late Mitchell Valentine, of New York, the greater part of his estate, valued at $2,000,000, is left to charitable objects. The Peabody Home for Aged and Indigent Women, in the Bronx, receives a bequest of $100,000, to be known as "The Alexander Valentine Memorial Fund," and one half the residue of the estate goes to the Presbyterian Hospital, as "The Isaac E. Valentine Memorial Fund."

The will of the Rev. John C. Henry, pastor of the Roman Catholic Church of the Guardian Angels, New York, who died on Oct. 5, disposes of an estate of about $35,000, all of which is left to religious and charitable objects. Among the bequests is one of $5,000 to the Rosary Hill Home and Hospital for Incurable Cancer at Hawthorne, N. Y.

The Graduation of Nurses, City Hospital, Blackwell's Island. — The annual commencement exercises of the training school for nurses at the City Hospital, on Blackwell's Island, were held on Oct. 21, when diplomas were awarded to forty-three graduates. Dr. Edward Sprague Peck, of the medical board, presided, and among those who made addresses were Dr. Joseph Collins and Commissioner of Charities Hebberd. Mr. Hebberd has fulfilled the responsible duties of his position with such general satisfaction that Dr. Peck made the request that all those present should send letters to the next mayor asking for his reappointment. The course of tuition at this school has now been reduced from three years to two years and three months.

Appropriation for Tuberculosis Work. — On Oct. 18 a number of prominent physicians and representatives of charitable bodies appeared before the Board of Estimate and Apportionment to urge an additional appropriation of $487,250 to be used in combating tuberculosis. Of this amount it was proposed that the Health Department should receive $372,650; the Department of Public Charities, $75,000; the Board of Education, $22,140, and Bellevue and Allied Hospitals, $17,460. Among those who spoke were Robert W. De Forest, President of the Charity Organization Society, who placed the annual economic loss to the city by tuberculosis as $15,000,000; Dr. Woods Hutchinson; Dr. A. Jacobi; Dr. James A. Miller, President of the Association of Tuberculosis Clinics; Dr. Antonio Stella, who appeared in behalf of the Italians in New York, and Dr. Simon Flexner, of the Rockefeller Institute, who referred particularly to the needs of the diagnosis laboratory of the Health Department. Later, Dr. Herman M. Biggs and Walter Bensel, of the Health Department, made a personal appeal to Controller Metz for the appropriation mentioned, and on Oct. 21 the Controller informed them that he thought an additional grant of $200,000 for tuberculosis work could be arranged. More than this he could not promise, for, while he was heartily in favor of the work, he was determined, if possible, to keep the budget for the coming year down to its normal increase.

Anniversary of Founding of Montefiore Home. — The twenty-fifth anniversary of the founding of the Montefiore Home and Hospital for Chronic Invalids, now the largest institution of its kind in the country, was celebrated in the new ballroom of the Hotel Astor on Oct. 26, and the occasion was signalized by the subscription of $101,500 in gifts to the hospital. The largest of these was $50,000 by Jacob N. Schiff, its president. Murray Guggenheim subscribed $25,000, and there were two donations of $10,000. Mr. Schiff gave a brief history of the institution, and stated that its country sanitarium for tuberculosis patients, which was started at Bedford, Westchester County, in 1904, now had a capacity of one hundred and fifty beds. Altogether, about five hundred patients are being cared for, and an enlargement of the country branch in the near future is contemplated. One of the speakers at the anniversary was ex-Mayor Seth Low, who, in the course of his remarks, stated that the last report of the Bedford Sanitarium showed that about 80% of the patients received there were improvable. "Unhappily," he said, "many of these, when they leave, are obliged to return to conditions which are unfavorable to the disease. Anything which can be done to encourage such patients to live an out-of-door country life would be beneficial. Truck farming suggests itself as a possibility. Cannot the friends of the Home who have already so much, carry their pioneer work this one step farther?"

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Current Literature.

New York Medical Journal.
Oct. 23, 1909.

1. Newmayer, S. W. *Municipal Campaigns for Reducing Infant Mortality.*
2. Egbert, J. H. *Prevalent Diseases of Tropical America.*
3. Millican, K. W. *Esperanto in Relation to Medicine.*
4. Cannday, J. E. *Cancer of the Stomach.*
5. Behan, R. J. *Economics of Health.*
6. Levitt, M. J. *The Treatment of Ophthalmia Neonatorum.*
7. LeRoy, B. R. *The Thiocyanates in Solution, the Natural Physiological Solvents of the Body; a Clinical Study.*
8. Sheffield, H. B. *A Simplified Method of Home Modification of Cows' Milk for Infant Feeding.*

The Journal of the American Medical Association.
Oct. 23, 1909.

1. Bovée, J. W. *A Method of Complete Nephro-ureterectomy in Women.*
2. *Smithies, F. *Cardiac Thrombosis: The Clinical and Pathological Findings in Three Cases.*
3. Miller, A. H. *A New and Satisfactory Apparatus for Etherization in Operations about the Face and Upper Air Passages.*

4. *ELMERGREEN, R. *Vaginal Hysterectomy.*
5. *WELCH, J. E. *The Pathology of Eclampsia and Toxemia of Pregnancy.*
6. MCPHERSON, R. *A Study of Eclampsia in the Lying-In Hospital of the City of New York.*
7. *RUDISCH, J. *The Treatment of Diabetes Mellitus.*
8. POLLITZER, S. *Acanthosis Nigricans: A Symptom of a Disorder of the Abdominal Sympathetic.*
9. MILLS, C. K. *Simulated Insanity.*
10. POLAK, J. D. *Final Results in Conservative Surgery on the Ovaries.*
11. *WATKINS, T. J. *Treatment of Puerperal Infection. A Study of the Cases Treated during the Last Four Years.*
12. *RITTER, J., AND WHEATON, C. S. *Care of the Tuberculous at Dispensaries of Chicago Tuberculosis Institute; Tuberculin as a Diagnostic and Therapeutic Agent.*

2. Smithies writes an interesting paper on cardiac thrombosis, in which he states that thrombi may be attached to the cardiac wall by a more or less altered base, or may exist free as a foreign body within a heart cavity. Ball thrombi are less common. Exciting causes may be: (1) damage to endocardium, bacterial, toxic or mechanical; (2) liberation of thrombokinase acting on the thrombogen in the circulating blood; (3) increase in the hemagglutinins in the blood caused by bacteria either locally involving the endocardium or circulating free in the blood stream. It does not seem probable that the increase of blood platelets in itself has any definite bearing on either agglutination or blood coagulation. (4) Slowing of the blood stream. Cardiac thrombi are relatively infrequent in the majority of infectious diseases, with the exception of influenza, tuberculosis and, perhaps, rheumatism. They are not a rarity in syphilis; in fact, Smithies believes that it is one of the exciting causes. The majority spring from the septum, the foramen ovale and the auricular appendage, but may have their bases at any part of the endocardium. The symptomatology varies with the location of the growth. They may be suspected during life, but an accurate diagnosis is rarely possible. The signs and symptoms are those of impeded circulation. Smithies illustrates his article with three cases in which symptoms were marked.

4. Elmergreen urges the many claims for vaginal hysterectomy. Among them are: (1) Septic cases in which drainage is necessary and the Fowler position is assumed, the mortality of vaginal hysterectomy is practically *nil*. (2) In carcinoma of the fundus, with movable uterus and without glandular metastases, it is the operation of choice. (3) The non-occurence of shock, early convalescence, absence of gas in intestinal tract and other post-operative suffering are all in its favor.

5. Welch presents a careful analysis of fourteen cases of eclampsia and toxemia of pregnancy examined post-mortem, and concludes from his study: (1) The liver lesions in eclampsia are not uniform. Pregnant or post-partum women dying from convulsions may have hemorrhages, central necrosis, general autolysis or cloudy swelling in the liver. (2) The liver lesions in toxemia of pregnancy are not uniform. They may be either hemorrhagic or central necroses, both of which are found in eclampsia. (3) The hemorrhagic lesions are produced by liver and placental cell emboli, thrombi formed from blood plates and fused red blood cells and by a solution of vascular endothelium. Heightened blood pressure increases the extent of the hemorrhages. (4) The agent producing the hemolysis and general cell destruction is probably an enzyme.

7. Rudisch believes that in the treatment of diabetes mellitus the large quantities of fat ordinarily used often cause severe digestive disturbances, with anorexia and diarrhea and a consequent loss to the patient of all that has been gained by weeks of careful treatment. In some cases vegetable fats can be substituted for animal fats with great advantage. Olive oil is the form best borne. The presence of the acetone bodies need not deter one from putting the patient on a strict protein diet with advantage, provided they have not developed acetone under observation. The general opinion is that foods averaging from 30 to 40 calories per kilo of body weight are necessary. Rudisch believes that 25 calories is quite sufficient and that patients may even gain considerable weight under this régime.

11. Watkins expresses some rather advanced ideas in regard to the treatment of puerperal infection, and his paper is interesting and worth considering. He believes that to pack the uterus and allow it to empty itself is always good treatment, and is especially good treatment, even with a dilated cervix, to be employed by the unexperienced or to be used when the surroundings are unfavorable for surgical work. The harm resulting from retention of some of the secundines has been very much overestimated. One should treat an infection of the uterus much as one would an infection of the hand. One should not scrape, tear and cauterize sloughing tissue on an infected hand; one is no more justified in doing so in the uterus. The systemic infection is much more important than the local infection, and the systemic treatment is more important than the local treatment. The most important systemic treatment consists in supporting and increasing the physiologic resistance; the infection will last till an immunity is established. There is more danger of doing too much than too little. It often requires more courage to avoid radical procedures than to perform them. The energetic local treatment generally used is more dangerous than the infection.

12. Ritter and Wheaton summarize as follows:

(1) In cases of pulmonary tuberculosis without elevated temperature and low resistance, the proper administration of tuberculin is of undoubted efficacy.

(2) Tuberculin is capable of producing great injury to the patient, and this injurious influence calls for the greatest discretion in its administration.

(3) There is frequently increased cough and expectoration following its injection. This, in itself, is not an untoward symptom. Tuberculin is an expectorant *par excellence*.

(4) Persistence of such clinical manifestations as general lassitude and physical weakness should cause the discontinuance of its administration.

(5) In the presence of a mixed infection with high temperature incident thereto, the use of tuberculin is inexpedient.

(6) We caution against the use of tuberculin in advanced cases with positive findings. In this stage alarming results have followed its administration.

(7) Tuberculin should not be administered to any patient unless it is possible to obtain an accurate daily record of the case.

(8) Pulmonary hemorrhages are contra-indications to the use of tuberculin; should slight hemorrhages appear during treatment, its use must be discontinued.

[E. H. R.]

THE AMERICAN JOURNAL OF THE MEDICAL SCIENCES.
SEPTEMBER, 1909.

1. *MORSE, J. L. *Infection of the Urine and the Urinary Tract by Bacillus Coli in Infancy.*
2. *KROTOSZYNER, M. *The Diagnosis and Treatment of Bilateral Cystic Kidneys, with Special Reference to the Determination of Renal Function.*
3. *COLLINS, J., AND SACHS, B. *The Value of the Wassermann Reaction in Cardiac and Vascular Disease.*
4. *ÇHOKSY, N. H. *The Various Types of Plague and Their Clinical Manifestations.*
5. *HEISER, V. G. *Leprosy in the Philippine Islands and Its Treatment.*
6. *CHURCHMAN, J. W. *Luetic Bursopathy of Verneuil.*
7. SWIFT, G. M. *Chorea a Symptom, Not a Disease.*
8. BAILEY, P. *The Practical Value of the Association Test.*
9. *LIBMAN, E., AND CELLER, H. L. *The Importance of Blood Cultures in the Study of Infections of Otitic Origin.*
10. *EBRIGHT, G. E. *Tuberculin-treated Guinea Pigs in the Recognition of Tuberculosis.*

1. Morse discusses the subject of urinary infections in infancy as illustrated by fifty cases. These cases are more common than is recognized. The infection, usually by the colon bacillus, may occur theoretically in three ways: (1) ascending; (2) from the blood; and (3) by a transparietal route from the intestine. Morse believes that the last of these is the cause of most cases in boys and of a

fair proportion of those in girls; that in the majority of cases in girls the infection is ascending; that the hematogenous infection occasionally occurs. The pathology varies from simple bacteriuria without lesions to inflammation of the whole urinary tract. In most cases there is slight fever with general symptoms, but little to call attention to the urinary tract. Anorexia and vomiting are frequent. Pain may occur, but disturbance of micturition is exceptional. These cases can be detected only by routine examination of urine. In the author's fifty cases there was but one death. The duration of the illness was from a few weeks to several months, with frequent exacerbations and relapses. The treatment is mainly by drugs which influence the condition of the urine. Most benefit has seemed to result from the alkaline diuretics; hexamethylenamine (urotropin) is sometimes of service when this fails. Local treatment of the bladder is not indicated. Treatment by vaccines may be tried if the case threatens to become chronic.

2. Krotoszyner reports three cases of bilateral cystic kidney, in two of which the diagnosis was made during life. He emphasizes the fact that polycystic degeneration of the kidneys is almost always bilateral and that nephrectomy is always contra-indicated. Three tests of renal function, — repeated determinations of twenty-four-hour urea excretion, cryoscopy and the phloridzin test, — give some evidence as to the efficiency of the kidneys, and where these reveal a deficiency of renal function, operative interference is to be avoided. In certain cases of good renal function, however, certain conditions, such as severe pain, suppuration of cysts or profuse hematuria may demand surgical interference for the evacuation of cysts.

3. Collins and Sachs have applied the Wassermann test to 36 cases of cardiac and vascular disease, adhering closely to the original Wassermann technic. Of 5 cases of aneurism, the reaction was positive in all. Of 13 cases of aortic disease, 10 gave strongly positive reactions and 2 more gave weakly positive reactions, whereas of cases of mitral endocarditis, only 1 in 7 gave a positive reaction. This series tends to support the belief of Citron that syphilis is a far commoner cause of aortic insufficiency than has hitherto been understood.

4. Choksy's article is an excellent didactic description of the different clinical forms of infection by bacillus pestis, or "bubonic plague." Most common is the bubonic type, forming, in a large series of cases, 92% of all. Other types, however, exist as follows: the cellulo-cutaneous type, localized in the skin and subcutaneous tissues; the septicemic type, in which the blood stream becomes directly infected; the pneumonic type; and finally the mild ambulatory type. The clinical course in each of these types is minutely described.

5. Heiser briefly outlines the process of segregation of lepers in the Philippine Islands since 1905, and shows that whereas under the old system there were about 700 new infections annually, during the past year there have been but 300. In early diagnosis he calls attention to the appearance of an ulcer on the nasal septum as the earliest and most constant symptom, present in two thirds of all cases, and often before any other symptom or sign has developed. Protection of the nasal mucous membrane by cotton plugs is regarded as important in prophylaxis. Many forms of treatment have been tried, but the x-rays only have produced a cure, and these are applicable only to special cases.

6. Churchman describes a case of multiple bursitis associated with lesions of tertiary syphilis and disappearing under anti-syphilitic treatment. He also tabulates 26 other cases found in literature, beginning with the 5 cases of Verneuil published in 1868. The condition is an indolent one, with little functional disability, not associated with joint disease.

9. Libman and Celler report results of blood culture studies in 50 cases of mastoid disease and in 10 of uncomplicated otitis media. They obtained positive cultures only in cases complicated by meningitis or sinus thrombosis. They conclude, therefore, that positive cultures indicate the presence of one of these complications, and that negative cultures while they may occur in the presence of sinus thrombosis, render its existence unlikely.

10. Ebright summarizes the various methods that have been used in the attempt to use guinea-pigs for the diagnosis of tuberculosis, and describes a new procedure which promises to make a positive diagnosis possible within a week. He has found that when a guinea-pig six to nine days inoculated with tubercle bacilli is injected with tuberculin (0.25 ccm.) and killed twenty-four hours later, bacilli may be found in the tissues. The method requires further study. [F. W. P.]

The Archives of Internal Medicine.
September, 1909.

1. *Barker, L. F., and Hirschfelder, A. D. *The Effects of Cutting the Branch of the His Bundle, Going to the Left Ventricle.*
2. *Herb, I. C. *Experimental Parotitis.*
3. *Symmers, D. *Certain Unusual Lesions of the Lymphatic System, Including a Description of Primary Hodgkin's Disease of the Spleen, and a Case of Gastro-intestinal Pseudoleukemia.*
4. *Bachmann, G. *Sphygmographic Study of a Case of Complete Heart Block; a Contribution to the Study of the Action of Strophanthus on the Human Heart.*
5. *Marine, D., and Lenhard, C. H. *Effects of the Administration or Withholding of Iodin-Containing Compounds, in Normal, Colloid or Actively Hyperplastic Thyroids of Dogs.*
6. *Lavenson, R. S. *Observations on a Child with Gastric Fistula in Relation to Recent Advances in the Physiology of Gastric Secretion.*
7. *Greer, J. R., and Wells, G. *The Absence of Adrenalin in Malignant Renal Hypernephromas.*

1. Barker and Hirschfelder report a number of experiments to show that the His bundle plays but little, if any, rôle in the co-ordination of the two ventricles. It seems more probable to them that any such incoördination, if present, would be between the different layers of muscle fibers common to the walls of both ventricles rather than between the two ventricles themselves, and that in some cases of apparent hemisystole seen in animals just before the heart stops beating (and after the circulation has ceased), the outer layer of fibers in one ventricle has stopped beating, while the outer layer of the other (inner layer of the first) continues to beat for a few minutes longer. They do not claim that a hemisystole never occurs under clinical conditions, but merely that, in the absence of experimental evidence of its occurrence, a considerable degree of skepticism is warrantable.

2. Herb reports her work with a diplococcus isolated from a case of mumps. She describes its characteristics. When injected into dogs and monkeys, into Steno's duct, this diplococcus causes a diffuse non-suppurative parotitis, and occasionally orchitis of the same character. During the course of the experimental parotitis, the opsonic index for the diplococcus shows a marked rise, reaching the highest point at about the time when the parotid swelling is most marked. In one case of human mumps (the only one studied) a similar rise of the opsonic index for this organism took place. This diplococcus corresponds well with the description given by Laveran and Catri of the diplococcus isolated by them from cases of mumps.

3. From his observation of three cases of apparently primary Hodgkin's disease of the spleen in one case, and the retroperitoneal lymph nodes in the second, and the lymph nodes at the hilum of the liver in the third, and a case of gastro-intestinal pseudo-leukemia, the author concludes that the use of "pseudo-leukemia" as a synonym for Hodgkin's disease is erroneous and misleading and that the term "Hodgkin's granulomatous lymphoma" appears to be the most suitable name for Hodgkin's disease, since it designates the types of tissue in which the disease commences, the initial changes by which it is characterized, and the secondary changes that occur in the course of its development, while it reserves to Hodgkins the recognition that is due him. The three cases show that the spleen and abdominal lymph nodes may be the seat of the origin of the disease. The histogenesis of Hodgkin's disease, both in the lymphatic system proper and in the viscera, appears to be conceived in the formation of lymphomatous foci, while the characteristic granulomatous changes are sequential.

4. The article contains tracings of a case of complete heart block observed for a number of days, some of the

tracings showing the action of the heart during a syncopal attack. In this case strophanthus in doses of five to ten minims brought about such an improvement in the condition of the patient that he left the hospital. The author believes that in such cases of complete heart block the strophanthus may be of great service, because in these cases the inhibitory action of the drug through its influence on the vagus can act only on the auricle, while the stimulating effect of the drug comes directly to the muscles of the ventricles. He suggests that its use might be contra-indicated in cases of incomplete block, where the inhibitory effect would still be felt. He refers to the literature on the subject to justify his conclusions.

5. Marine and Lenhart's experiments are concerned with the effect of iodine on normal, colloid and actively hyperplastic (parenchymatous) thyroids of dogs. They present a large mass of carefully prepared data on the subject. They have used numerous forms of iodine and iodine-containing substances applied in different ways, but they all show the same resulting physiological effect, viz., the return to the colloid or quiescent condition. They find that very small amounts are necessary to induce thyroid changes. The more marked the hyperplasia. the greater is the amount of iodine taken up. They find that iodine, administered to dogs with hyperplastic thyroids, acts like the dessicated thyroid itself, and that also very beneficial results are obtained by the use of very small doses gradually increased in these hyperplastic conditions; it hastens the return to the quiescent state. Repeating Halsted's experiments of removing part of the thyroid from a pregnant bitch, they were able to produce hyperplastic goiters in the pups, and also their experiments point to the possibility that by administering iodine to the pregnant animal, the condition of the offspring's thyroid may be influenced.

6. The author reports his observations on a case of complete cicatricial stenosis of the esophagus in a girl of fourteen in whom feeding had been accomplished by a tube through a gastrostomy wound of eleven years' standing. The article is most interesting as it contains an account of the experiments of the author on the results of feeding different substances on the secretion of gastric juice, and of the effect of physical and psychic stimuli on the gastric secretions. Among other points brought out, it appears that the predominating influence in the control of the periodic opening of the pylorus is exerted by the chemical reaction of the contents on the duodenal side of the pylorus; though the chemical reaction, prevailing on the gastric side of the pylorus, is of importance in the pyloric mechanism, it is distinctly subordinate to that on the duodenal side. [W. B. R.]

QUARTERLY JOURNAL OF MEDICINE. VOL. 2. NO. 8. JULY, 1909.

1. *HASLETT, E. E. *Syncopal Attacks, Associated with Prolonged Arrest of the Whole Heart.*
2. *LEWIS, T. *Irregular Action of the Heart in Mitral Stenosis, the Inception of Ventricular Rhythm, etc.*
3. MACALISTER, G. H. K. *The Pathology of Paroxysmal Hemoglobinemia. A Critical Review.*
4. *WHITE, W. HALE, AND JANMAHOMED, H. I. *On the Frequent Failure of the Urine to Decompose in Cases of Pulmonary Tuberculosis.*
5. *TREVELYAN, E. F. *Peripheral Birth Palsy.*
6. *HALL, A. J. *Clinical Observations on the Effects of Certain Drugs in Diabetes Mellitus.*
7. *HUTCHISON, R., AND PANTON, P. N. *A Contribution to the Study of Congenital Family Cholemia.*
8. GARROD, ARCHIBALD E. *Critical Review. The Excretion in the Urine of Sugars Other than Glucose.*

1. Haslett describes a remarkable case of a woman with attacks of fainting, associated with bradycardia, but not due to heart block. The arterial pulse tracing showed at these times long intervals of as much as five seconds during which there was no contraction of either auricles or ventricles. The *a–c* interval was also normal, which proves that there was no disturbance of conductivity in the auriculo-ventricular bundle. The injection of atropin caused a marked acceleration of the pulse-rate. The author believes that the condition is probably due to vagus inhibition.

2. Lewis reports a case of mitral stenosis in which the arterial pulse tracing showed rhythmical phases, during which the pulse intervals became first longer and then shorter with surprising regularity. Such phases could be induced by forced respiration or pressure over the vagus nerve, and are ascribed by the author to vagus inhibition. A prolongation of the *a–c* interval was also observed. Subsequent to the disappearance of the presystolic murmur, the *auricular* type of venous pulse was noted, the first instance of the kind on record, the rule being for the *ventricular* type to be present under these circumstances. Lewis infers from his tracings that the left auricle must have been paralyzed, the right not.

4. The authors have observed that in pulmonary tuberculosis the urine often remains acid after standing for long periods of time. The acidity of such urines is usually high, but the failure to decompose is certainly not entirely due to this, for urines from patients with other diseases, showing an equal degree of acidity, decomposed much more quickly. The cause of this phenomenon was not ascertained.

5. Birth palsy of the arms is usually due to traction on the brachial plexus during labor, owing to separation of the head and shoulders. In Trevelyan's experience, the prognosis is bad for complete recovery. If medical measures do not produce marked improvement within a year, he advises operation, which may produce excellent results, either by freeing the nerves from adhesions or by suture of the ruptured nerves.

6. Hall's observations on the use of codeia and opium in diabetes seem to show that in most cases these drugs have no favorable effect. In a few instances the glycosuria and daily output of urine were decreased to a moderate degree, as a rule more so by opium than by codeia. Secretin showed little, and aspirin no, effect. The value of the work is impaired by the fact that the total quantity of carbohydrate in the diet was not estimated, although even the " strict diet " contained a considerable quantity. None of the seven patients became sugar-free, although they had " strict diet" and codeia or opium over long periods. The paper serves to emphasize the paramount importance of diet and the subordinate position of drugs in the modern treatment of diabetes.

7. The authors make a further report on a family showing congenital cholemia, previously described by Murchison. The disease has now appeared in three generations. They add no new facts, but confirm the decreased resistance of the red cells to salt solution of varying strengths. [W. T.]

DEUTSCHE MEDIZINISCHE WOCHENSCHRIFT. NO. 39. SEPT. 30, 1909.

1. *SCHAUTA, F. *The End Results of Extensive Vaginal Extirpation of the Uterus in Cancer of the Cervix.*
2. RISEL, W. *An Essay on Thrombotic Obliteration and Cavernous Transformation of the Portal Vein.*
3. HACKENBRACH. *Goiter Excisions under Local Anesthesia.*
4. HEYMANN, B. *Trachoma Bodies.*
5. HEUSER, K. *Atypical Bacillary Dysentery in an Insane Asylum.*
6. WEINSTEIN, J. *The Importance of the Wassermann Syphilis Reaction in Rhinology and Laryngology.*
7. DREYER AND MEIROWSKY. *Serodiagnostic Examination in Prostitutes.*
8. KUDLEK. *The Differential Diagnosis between Floating Kidney and Movable Intra-abdominal Tumor.*
9. OFFERGELD, H. *Lateral Dislocation of the Knee Occurring during Birth in Breech Presentation by Rupture of the Collateral Tibial Ligament.*
10. WOHLAUER, F. *The Effect of Roentgen-Rays on Lung Tissue.*
11. ASHER, W. *A Case of Frequent Artificial Mydriasis in a Family.*
12. SCHMEY, F. *A Case of Glycerine Poisoning.*

1. Schauta still favors, for certain reasons, the vaginal operation for carcinoma of the cervix because the fatality of the operation is less than by the abdominal route and because in this form of cancer the glands are involved only at a late date. Moreover, when the glands once become involved, total excision is generally impossible. He

then describes his technic for the operation and the cases which he thinks suitable for this style of operation. He then takes up a statistical review of his cases and puts down the cause of death both at the operation and subsequent to it for cases that have gone from two to five years. In cases of recurrence he has noticed a local recurrence more frequently than a gland recurrence, and thinks the glands are usually secondary to the recurrence. He then shows his percentage of absolute cures from two to five years' duration, which varies from 13 to 28%.

He concludes that the search for glands is unnecessary, as when they are involved (which is rare) it is almost impossible to remove them, and also since frequently, if not removed, they may remain quiescent if the bulk of the tumor is excised. Finally, he considers the vaginal route more accessible in regard to surrounding structures and less open to infection. [C. F., Jr.]

Münchener Medizinische Wochenschrift. No. 40.
Oct. 5, 1909.

1. Saathoff. *Tuberculin Diagnosis and Treatment, with Studies of Metabolism in the Tuberculin Reaction.*
2. Lust, F. *The Antiproteolytic Substance in the Blood Serum of Healthy and of Diseased Infants.*
3. Meizbacher, L. *Reactive Glioma.*
4. Prorok. *The Chemistry of Tuberculous Sputum.*
5. Schumm, O., and Hegler, C. *The Pancreas Reaction of Cammidge.*
6. Kreuter. *Chronic Inflammatory Tumors of the Abdominal Wall following Operations for Hernia.*
7. Koelsch. *Subphrenic Abscess and Perityphlitis.*
8. Reinhardt, L. *Poisoning by Unripe Seeds of Hellebore.*
9. Marcuse, J. *Therapeutic Use of Cold Local Applications on the Neck.*
10. Emmerich, R. *Observations on the Demonstration of the Poison of Cholera.*
11. Ziegenspeck, R. *A New Shear-shaped Instrument for Trephining.*

1. Saathoff presents some interesting observations on the use of tuberculin. He observed that many patients not only feel better after a tuberculin test, but begin at once to gain weight, and the gain seems to mark a distinct change for the better in the course of the disease. He believes that those who give a well-marked local reaction, whether by injection or by the method of Pirquet, do better than those who show a weak reaction. In choosing cases for tuberculin treatment, he is not guided by the amount of fever which the patient has had, but by the extent of the local reaction and the effect on the weight. In tuberculin tests the degrees of the local reaction and of the febrile reaction go hand in hand. The method of treatment is as follows: Beginning with 0.001–0.005 mgm. of old tuberculin, injections are given every second day until a considerable local reaction results. Subsequent injections are given after the local reaction of the previous injection has subsided, and the dose is kept large enough to give a well-marked local reaction. It is seldom necessary to use as much as 0.1 mgm. The cause of the gain of weight is not clear, although experiments performed by the writer seem to show that it is due neither to retention of fluid and salts nor to diminution of proteid metabolism. Saathoff emphasizes the fact that tuberculin treatment, even by so simple a method as his, requires much study of the case by the physician and willing co-operation by the patient in order that good results may be obtained. He believes tuberculin treatment to be distinctly useful when carried out as above described. [G. C. S.]

Berliner Klinische Wochenschrift. No. 41.
Oct. 11, 1909.

1. *Ebstein, W. *Some Observations on the Occurrence of Albumen and Casts in the Urine in Chronic Constipation.*
2. *Halberstaedter, L., and v. Prowazek, S. *Chlamydozoa Occurring in Non-gonorrheal Blennorrhea of the New Born.*
3. *Omorokow, L. *Prevention of Cobra Venom Hemolysis in the Insane.*
4. *Weiss, S. *A Rare Case of Cystic Dilatation of the Common Bile Duct.*
5. Hinze, V. *Severe Sausage Poisoning.*
6. Ratkowski. *The Treatment of Hemorrhoids by Means of a Pessary.*
7. *Bebert, K. *Internal Therapy of Urinary Diseases, with Especial Reference to Cystopurin.*
8. Ehrmann, R. *The Biology of the Adrenal System.*
9. v. Hansemann, D. *What is Anaplasia?*

1. Ebstein reviews the subject, again stating the fact that albumen and casts may occur in chronic constipation, though the amounts are generally too small to be detected by ordinary laboratory methods. He cites several cases of severe constipation, with headaches, palpitation, albumen and casts in the urine, which were mistaken for chronic interstitial nephritis with uremic symptoms.

2. The authors describe a characteristic and specific finding in trachoma and some non-gonorrheal infections in the new-born. It consists in the characteristic cell inclusion of a certain group of micro-organisms which they consider specific etiologic factors in these conditions. As yet they have been unable to isolate or grow them, though in two cases they have observed the same condition in mother and offspring.

3. By perfecting the methods of investigation, Omorokow has obtained nearly constant results and has found that normal hemolysis occurring on the addition of cobra venom to human blood serum is absent in serum of patients suffering from mental disease of whatever type it may be. The same reaction occurs in placental blood. Out of fifty-three cases of mental disease, the majority of which were dementia precox, this reaction was absent in only four.

4. Weiss reports a singular case of cystic disease of the common bile duct, probably congenital. It was considered clinically to be an echinococcus cyst. It manifested itself by periodic attacks (analogous to those in intermittent hydronephrosis) of kinking of the sac followed by pain, jaundice and absence of bile in the stools.

7. Bebert claims that cystopurin, which is a synthetic product of hexamethyltetramin and sodium acetate, surpasses other members of this group in that its action is obtained more quickly because of the diuretic action of sodium acetate, and its action lasts longer. Its chief uses are in chronic infections of the bladder and in prophylaxis in connection with operations and instrumentation. Bebert even suggests that acute gonorrheal urethritis, and at any rate its severe complications, might be prevented. [H. P. G.]

Annales de l'Institut Pasteur.
Aug. 25, 1909.

1. Vallée, H. *Researches upon Antitubercular Immunization.*
2. *Levaditi, C. *The Mechanism of Action of the Arsenic Derivatives in the Trypanosomiases.*
3. Remlinger, P. *Rabies and Antirabic Treatment in Constantinople.*

2. Levaditi, in a long and carefully prepared paper covering a large amount of work, first takes up the question of why atoxyl works against trypanosomes *in vivo* and not in the test tube. He shows by experiments that this is due to some change in the atoxyl within the body, so that it destroys the trypanosomes, and he shows that this change occurs by contact with the atoxyl and tissue cells. For atoxyl and ground-up liver, after incubating for a while, will produce a substance which destroys the trypanosomes. The next part of his work was an attempt to find out what the process was and what was the nature of the substance which caused the destruction of the trypanosomes. He found that both atoxyl and arsacetine, when taken into the body, underwent a reduction, and then part of the arsenic molecule was replaced by a proteid molecule. The arsenic toxalbumin thus formed is peculiar to each species of animal. This specificity depends upon the kind of proteid taken up and the amount of arsenic in the compound. This accounts for the fact that trypanosomes resistant to atoxyl in one animal may succumb to atoxyl in another. This toxalbumin is toxic both to the trypanosomes and to the cells of the body in which it is produced. Therefore, unless it can get at the trypanosomes soon after being formed, it will not act upon them. [C. F., Jr.]

Miscellany.

ERA OF LOW MORTALITY REACHED BY THE CIVILIZED WORLD.

That the civilized world has indeed arrived at an era of low mortality is the conclusion stated in *Census Bureau Bulletin 104*, on mortality statistics for 1908, prepared by Dr. Cressy L. Wilbur, chief statistician for vital statistics under Director Durand, who has transmitted it to Secretary Nagel, of the Department of Commerce and Labor.

The death-rate of the registration states in 1908 was 15.3 per 1,000 of population, which was slightly lower than that for the entire registration area, 15.4 per 1,000, and it is the lowest on record. Dr. Wilbur states it is probably the lowest death-rate that has ever occurred in the United States.

The death-rate of the rural portions of these states was still lower, being only 14 per 1,000, while that of the urban population was 16.5 per 1,000, the latter including all cities having a population of 8,000 or more inhabitants in 1900, and being, as usual, somewhat greater than the rural rate. Such rates would have seemed quite out of the question a few years ago.

The death-rate of England and Wales for 1908 was only 14.7 per 1,000 of population, and of London for the same year, 15.8 per 1,000. For each year since 1893 the death-rate of England and Wales has been less than 16 per 1,000, with the exception of the year 1904, for which year it was 16.2 per 1,000, while no rate as low has been recorded for any previous years of registration.

The early publication of the data relating to the mortality of the year 1908 for the registration area of the United States was only made possible by the increased promptness of the returns from the state and city offices, most of which now make monthly reports.

The registration area embraces the registration states and separate registration cities in non-registration states accepted by the Census Bureau as having approximately complete registrations of deaths based upon the requirement of compulsory burial permits. For the year 1908, the registration states were California, Colorado, Connecticut, Indiana, Maine, Maryland, Massachusetts, Michigan, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, South Dakota, Vermont, Washington and Wisconsin.

The District of Columbia and seventy-four registration cities in non-registration states, together with the registration states mentioned, made up the aggregate registration area for 1908, whose total estimated population for the year was 45,028,767, or over one half (51.8%) of the total estimated population of the continental United States, which was 86,874,990. The addition of Ohio for the year 1909 has still further increased the percentage of the population reporting to 55.2%, and other areas may be included for the calendar year 1910.

Nearly one fifth of all the deaths that occurred were of infants under one year of age; and over one fourth of children less than five years of age. For both 1907 and 1908, 93.3% of all deaths were those of white persons, which shows the unequal division of the registration area in this respect. Maryland is the only registration state with a considerable proportion (23.6%) of colored population.

Nearly one fourth of all deaths registered were those of persons born outside of the United States. The states having the largest proportion of native-born Americans of native stock are, Dr. Wilbur states, the ones in which it is the most difficult to secure the passage of effective registration laws. Therefore, the actual mortality of Americans of native parentage is not fully represented in the registration area, although over two thirds of the deaths registered were of native-born persons and one third were of native-born with native parents.

It appears that the month of maximum mortality in 1908 was January, with 67,763 deaths, and that of minimum mortality was June, with 49,701 deaths.

The death-rates of the individual registration states vary for the year 1908 from 18.4 for California to 10.1 for South Dakota. Dr. Wilbur points out that the total variation is less than that among the great towns of England and that the range of mortality is not excessive.

With the exception of South Dakota, all the registration states for which data are presented for more than a single year show lower rates for 1908 than 1907, and in several instances the rates for 1908 were the lowest on record, at least since fairly accurate registration has been in effect. For Massachusetts a comparison of the rates given in the state reports since 1851 shows that, with the single exception of the rate (16.3) in 1904, the rate (16.5) in 1908 is the lowest.

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TYPHOID AND THE CRUSTACEA.

In a discussion of the sources of typhoid infection, at a recent meeting of the Belfast Medical Society, emphasis was laid on the importance of shellfish in the dissemination of the disease. It is estimated that nearly a quarter of the typhoid fever occurring in Portsmouth, England, is due to the eating of raw cockles and oysters taken from the sewage-saturated beds of the neighboring shore. Even when cooked, such shellfish are supposed to be frequently productive of intestinal toxemias. These opinions suggest the possible dangers to our own community of eating clams dug from sands near large cities and the desirability of forbidding such digging by private persons even for their own consumption. At present the law forbids the collection of clams, except for bait, only within certain limits in Boston harbor. These limits might perhaps be extended and similar restrictions established at other seacoast towns. Such action would appropriately be supplemented by further public education as to the dangers of eating raw clams and oysters, and inculcation of the favorite gastronomic maxim of a Boston physician, "Beware the crustacea."

Correspondence.

THE OLIVER WENDELL HOLMES CENTENARY IN NEW YORK.

New York, Oct. 25, 1909.

Mr. Editor: The Centennial Memorial Meeting of Oliver Wendell Holmes in this city was a tribute to one of the most striking figures in the history of medicine. I regret that absence from the city prevented my dilating upon the "Achievements of Holmes as a Physician." Holmes's achievements in medicine have, as Dr. Otis so well stated, been overshadowed by his literary triumphs. This deplorable fact is evident and pardonable among lay people. His original and epoch-making contributions would not be overshadowed in the minds of medical men if the history of medicine were taught in our medical schools.

As an illustration of the ignorance of physicians of Holmes's most important discovery, let me cite the fact that several years ago the editor of a prominent journal, whom I know to be "learned" far above the average, commented upon an article of an English physician on Holmes's discovery of the "Contagiousness of Puerperal Fever" as follows: "Most of us have forgotten, if we ever knew, that Holmes had claims to the gratitude of the world as a life saver and medical discoverer; . . . we hope that this epoch-making essay will be published in a form more accessible to American readers."

This editorial was written in 1905, two years after I had published this very claim.[1]

As I have elsewhere stated in an address before the Section on History of the Congress of German Naturalists and Physicians at Carlsbad, Sept. 22, 1902, on "Some American Contributions to the History of Modern Therapy,"[2] I dwelt with pride on this notable discovery of our own Holmes and I was astonished that in that assemblage of professors and instructors on medical history in the German and Austrian universities not a single voice was raised to refute this claim or defend that of Semmelweiss, of whom I said, "Far be it from me to take aught from the man who introduced the idea successfully in Austro-Hungary." To the unfortunate Semmelweiss is given the credit of being the pioneer in urging the importance of prophylaxis in this terrible scourge. When it is remembered that his mind was wrecked by the criticisms he encountered, even the most truth-loving historian must pause ere he would snatch one leaf from the laurel-crowned brow of this self-sacrificing man. Nevertheless, historical justice demands that the claims of an American physician be recognized whose views antedate those of Semmelweiss by five years. Semmelweiss did not publish these[3] until eighteen years later, as can be established by irrefutable evidence. The latter was clearly set forth in my essay without being called in question until after adjournment. Then I was approached by two gentlemen, one an instructor in history of medicine in Vienna, the other in Budapest, who asked me if I was sure of my dates and if my sources of information were reliable. On their request, I submitted the manuscript to them for careful perusal. Its return was accompanied only by formal thanks. In the November, 1902, number of the historical Amsterdam journal, *Janos*, my claims for Holmes were disputed by Privatdocent von Györy, of Budapest, in an essay which "does credit to the polemic ability and patriotism of the author," but only established the fact that I was in error in assuming that Semmelweiss had himself published his views in 1848, and that he really did not do so until 1861.[4] Thus was added and established by the defender of Semmelweiss an historical fact that Holmes really antedated Semmelweiss eighteen years in the publication of his valuable discovery. Another historical fact was inadvertently brought out by Von Györy, who stated that "his [Holmes] prophylactic measures were the same as those of the English." Semmelweiss knew them quite well, it seems, for he wrote,[5] "The English never visit a healthy pregnant or parturient woman without previously washing their hands with chloride of lime," etc. The latter practice was first used in our country in 1835 by a friend of Holmes, whose name he suppresses, but whom he quotes as having lost five cases of childbed fever and "not having encountered a single case of this terrible disease since he had adopted the practice of washing his hands in chloride of lime solution before introducing his finger into the vagina." We may, therefore, justly add to our claim for priority the discovery of manual asepis in midwifery by an American, in 1835. Owing to the meager literary interchange of thought, this fact (Holmes's great discovery) was not noticed by even the most progressive men at that time.

The history of the controversy and defense of Holmes against the criticisms which, alas, degenerated into unseemly attacks by some leading obstetricians of his time, may also serve as a lesson of the hideousness of professional jealousy and self-interest on the one hand, and of the beauty of Holmes's tolerance, of his sympathetic love of his kind and of that truly poetic spirit which actuated him even in the chamber of sickness and death. What a lesson is conveyed in these noble words, quoted from his monograph, "Puerperal Fever as a Private Pestilence," published by Ticknor & Fields, in 1855? "The subject has the same profound interest for me at the present moment as when I was first collecting the terrible evidence out of which it seems to me the commonest exercise of reason could not help shaping the truth it involves. I have abundant evidence that it has made many practitioners more cautious in their relations with puerperal females. For my own part, I had rather rescue one mother from being poisoned by her attendant than claim to have saved forty out of fifty patients to whom I have carried the disease. . . . I take no offense, and attempt no retort. No man can make a quarrel with me over a mother with a newborn babe at her breast! There is no epithet in the vocabulary of slight or sarcasm that can reach my personal sensibilities in such controversy. I appeal from the disparaging language of the professor in Philadelphia to the recorded opinions of those whom I do not know, and who do not know me, nor care for me, except for the truths that I may have uttered; to Copeland, who has spoken of my essay in phrases to which the pamphlets of American scribblers are seldom accustomed from European authorities; to Ramsbotham, whose compendious eulogy is all that self-love could ask; to the fifth annual report of the Registrar-General of England, in which an abstract of my essay figures largely, and not without favorable comment. I will take it for granted that so far they have counterpoised the depreciating language of my fellow countrymen and teachers. The teachings of the professors of the two great schools in Philadelphia are sure to be listened to, not only by their students, but by the profession at large. I am too much in earnest either for humility or vanity, but I do entreat those who hold the keys of life and death to listen to me also for this once. I ask no personal favor, but I beg to be heard in behalf of the women whose lives are at stake, until some stronger voice shall plead for them. If the doctrine I have taught is a mournful truth, if to disbelieve it and practise on this disbelief, and to teach others to disbelieve and practise, is to carry desolation into confiding families, let it be proclaimed as plainly what is to be thought of the teachings of those who sneer at the alleged dangers and scout the very idea of precaution. . . . The pestilence carrier of the lying-in chamber must look to God for pardon, for man will not forgive him."

The dignified and solemn language of Oliver Wendell Holmes stands in painful contrast with that of his ironical but influential critics.

It is fit and proper to call attention to this episode as illustrative of the high type of manhood and altruistic medical spirit which characterized the man whose memory we cherish and revere. In this sordid age Holmes's medical work and striving may serve as an example for emulation.

Very truly yours,
Simon Baruch, M.D.

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[1] Therap. Gaz., February, 1903.

[2] Janos, November and December, 1902; Therap. Gaz., February, 1903.

[3] Die Aetiologie, der Begriff und die Prophylaxie des Kindbettfiebers. Pest' 1861.

[4] *Ibid.*

[5] *Loc. cit.*, p. 146.

RECORD OF MORTALITY

For the Week ending Saturday, Oct. 23, 1909.

Cities.	Reported deaths in each.	Deaths under five years.	Cities.	Reported deaths in each.	Deaths under five years.
New York	—	—	Waltham	5	2
Chicago	598	161	Pittsfield	6	3
Philadelphia	—	—	Brookline	8	—
St. Louis	—	—	Gloucester	2	—
Baltimore	164	43	North Adams	2	—
Cleveland	—	—	Northampton	6	1
Buffalo	—	—	Chicopee	3	3
Pittsburg	—	—	Medford	1	—
Cincinnati	—	—	Beverly	6	1
Milwaukee	—	—	Leominster	2	1
Washington	—	—	Hyde Park	1	1
Providence	—	—	Melrose	2	0
Boston	262	59	Newburyport	5	—
Worcester	33	9	Revere	4	—
Fall River	42	23	Westfield	—	—
Cambridge	21	6	Woburn	3	1
Lowell	27	12	Peabody	—	—
New Bedford	37	14	Marlboro	8	3
Lynn	23	4	Attleboro	2	1
Springfield	24	6	Adams	3	1
Lawrence	31	16	Clinton	5	—
Somerville	17	3	Gardner	4	0
Brockton	12	1	Milford	—	—
Holyoke	7	5	Watertown	3	—
Malden	20	7	Plymouth	—	—
Chelsea	8	3	Southbridge	—	—
Newton	5	3	Weymouth	2	0
Salem	9	2	Framingham	—	—
Haverhill	12	3	Wakefield	—	—
Fitchburg	—	—	Webster	—	—
Everett	6	3	Arlington	0	—
Quincy	—	—	Greenfield	4	—
Taunton	20	5			

LIST OF CHANGES OF STATIONS AND DUTIES OF COMMISSIONED AND OTHER OFFICERS OF THE PUBLIC HEALTH AND MARINE-HOSPITAL SERVICE FOR THE SEVEN DAYS ENDED OCT. 20, 1909

Kerr, J. W., assistant surgeon-general. Detailed to represent the Service in a National Conference on Pellagra, to be held in Columbia, S. C., Nov. 3–4, 1909. Oct. 18, 1909.

Woodward, R. M., surgeon. Granted fourteen days' leave of absence from Oct. 16, 1909, on account of sickness.

Lavinder, C. H., passed assistant surgeon. Detailed to represent the Service in a National Conference on Pellagra, to be held in Columbia, S. C., Nov. 3–4, 1909. Oct. 18, 1909.

Robertson, H. McG., passed assistant surgeon. Leave granted for two months from Oct. 1, 1909, amended to read two months from Oct. 4, 1909.

Roberts, Norman, passed assistant surgeon. Granted two days' leave of absence from Oct. 13, 1909, under paragraph 191, Service Regulations.

Sweet, E. A., passed assistant surgeon. Bureau order of Oct. 12, 1909, suspended.

Sweet, E. A., passed assistant surgeon. Directed to accompany a deported alien leper sailing from New York, Oct. 20, 1909.

Frost, W. H., passed assistant surgeon. Granted nine days' leave of absence from Oct. 23, 1909.

Ashford, F. A., passed assistant surgeon. Bureau order of Oct. 12, 1909, suspended.

Wollenberg, R. A. C., assistant surgeon. Leave granted for two months from Sept. 10, 1909, amended to read two months from Oct. 6, 1909.

Kolb, L., assistant surgeon. Relieved from duty at Baltimore, Md., and directed to proceed to the Reedy Island Quarantine Station and report to the Medical Officer in Command for duty and assignment to quarters. Oct. 16, 1909.

Barnes, W., acting assistant surgeon. Granted thirty days' leave of absence from Nov. 1, 1909.

Bean, L. C., acting assistant surgeon. Granted five days' leave of absence from Oct. 23, 1909.

Curley, C. P., acting assistant surgeon. Leave granted for twenty-one days from Sept. 25, 1909, amended to read sixteen days from Sept. 21, 1909.

Delgado, J. M., acting assistant surgeon. Granted twenty-two days' leave of absence from Nov. 5, 1909.

Fisher, C. E., acting assistant surgeon. Granted sixteen days' leave of absence from Oct. 15, 1909.

Gustetter, A. L., acting assistant surgeon. Leave granted for five days from Oct. 13, 1909, amended to read five days from Oct. 16, 1909.

Kimmet, W. A., acting assistant surgeon. Granted thirty days' leave of absence from Oct. 15, 1909.

Onuf, B., acting assistant surgeon. Granted four days' extension of annual leave from Oct. 5, 1909, on account of sickness.

Onuf, B., acting assistant surgeon. Granted twenty-three days' leave of absence from Oct. 21, 1909.

Wise, A. H., acting assistant surgeon. Granted fifteen days' leave of absence from Oct. 16, 1909.

Slough, Charles, pharmacist. Leave granted for twenty-three days from Sept. 18, 1909, amended to read twenty-one days from Sept. 18, 1909.

Eldredge, M. B., pharmacist. Leave granted for twenty-four days from Sept. 28, 1909, amended to read eleven days from Sept. 28, 1909.

APPOINTMENT.

Dr. Clifton R. Wallace appointed an acting assistant surgeon, for duty at Norfolk, Va. Oct. 13, 1909.

RESIGNATION.

Acting Assistant Surgeon **A. H. Wise** resigned, to take effect Oct. 31, 1909.

BOARD CONVENED.

Board of medical officers convened to meet at Seattle, Wash., Oct. 16, 1909, for the purpose of examining an alien. Detail for the Board: Passed Assistant Surgeon M. W. Glover, chairman; Assistant Surgeon C. W. Chapin; Acting Assistant Surgeon F. R. Underwood, recorder.

RECENT DEATHS.

Charles Henry Cobb, M.D., M.M.S.S., died in Boston, Oct. 31, 1909, aged sixty-four years.

Dr. L. J. Young, a prominent physician of Haverhill, Mass., died recently in his sixtieth year. His death was from apoplexy and occurred while making a professional call. Dr. Young was born in Barnstead, N. H., received his medical education at the University of Vermont, graduating in 1877, and had been an active practitioner in Haverhill for upwards of twenty-five years. At the time of his death he was chairman of the City Board of Health, and during his active life had held many other positions of trust and responsibility.

Dr. Samuel R. Elliott, retired, of New York, died from pneumonia at his home at Livingston, Staten Island, on Oct. 26, in his seventy-fourth year. He was a native of New York City, and was educated at Columbia University, Heidelberg and Paris. On his return to this country after his European studies he practised with his father, the late Dr. S. MacKenzie Elliott, who was a prominent New York oculist, and eventually succeeded to his practice. Dr. Elliott served throughout the Civil War and for several years afterward contributed war stories to the magazines.

Dr. Josiah F. Cadmus, retired, of New York, died in Oct., in the ninety-first year of his age. He was a graduate of the College of Physicians and Surgeons and for sixty years resided in the city.

BOOKS AND PAMPHLETS RECEIVED.

Introductory Address to the Departments of Medicine, Dentistry, Pharmacy and Pharmaceutical Chemistry of the Medico-Chirurgical College of Philadelphia. By L. Webster Fox, M.D., LL.D. Reprint.

The Enzyme Treatment for Cancer. Final Report. By William Seaman Bainbridge, Sc.D., M.D. Reprint.

The Rôle of Visual Function in Animal and Human Evolution. By George M. Gould, M.D. Reprint.

Tincture of White Soap. By F. P. Dunnington. Reprint.

Fifty-Seven Varieties of Medical and Ophthalmic Blunders. By George M. Gould, M.D. Reprint.

Diseases of the Ear. By Edward Bradford Dench, Ph.B., M.D. Fourth edition, revised and enlarged. Illustrated. New York and London: D. Appleton & Co. 1909.

Chemical and Microscopical Diagnosis. By Francis Carter Wood, M.D. Second edition. Illustrated. New York and London: D. Appleton & Co. 1909.

Renal, Ureteral, Perirenal and Adrenal Tumors and Actinomycosis and Echinococcus of the Kidney. By Edgar Garceau, M.D. Illustrated. New York and London: D. Appleton & Co. 1909.

REPORT OF AN EPIDEMIC OF BACILLARY DYSENTERY AT THE DANVERS STATE HOSPITAL, MASSACHUSETTS, IN 1908.

(From the Laboratory of the Danvers State Hospital.)

I. STATISTICAL REPORT OF THE DYSENTERY EPIDEMIC AT DANVERS HOSPITAL IN 1908.

BY C. T. RYDER, A.B.,
Student, Harvard Medical School, and Special Laboratory Interne,[*] Danvers State Hospital, Summer, 1908.

II. INVESTIGATION OF THE POSSIBLE AND PROBABLE SOURCES OF INFECTION AND OF THE CAUSES OF SPREAD OF DYSENTERY IN DANVERS HOSPITAL.

BY C. T. RYDER.

III. IDENTIFICATION OF EPIDEMIC DYSENTERY IN DANVERS HOSPITAL AS DUE MAINLY TO BACILLUS DYSENTERIÆ (SHIGA TYPE).

BY E. T. F. RICHARDS, M.D., C.M.,
Assistant Physician, State Infirmary, Tewksbury; Assistant in Neuropathology and lately Assistant in Pathology, Harvard Medical School.[†]
With the assistance of
ANNA H. PEABODY, M.D.,
Assistant Physician, Danvers State Hospital,
AND
MYRTELLE M. CANAVAN, M.D.,
Assistant Pathologist, Danvers State Hospital.

IV. A STUDY OF AGGLUTINATIONS IN DANVERS DYSENTERY CASES: COMPARATIVE AND SERIAL TESTS WITH THE SHIGA AND FLEXNER-HARRIS STRAINS OF BACILLUS DYSENTERIÆ.

BY E. T. F. RICHARDS.[‡]

V. THE BLOOD CELL PICTURE IN BACILLARY DYSENTERY.

BY MYRTELLE M. CANAVAN.

VI. THE LESIONS OF BACILLARY DYSENTERY.

BY E. E. SOUTHARD, M.D.,
Bullard Professor of Neuropathology, Harvard Medical School; Pathologist to the State Board of Insanity, Massachusetts; lately Pathologist and Assistant Physician, Danvers State Hospital, Massachusetts,
AND
E. T. F. RICHARDS.

VII. THE NERVOUS SYSTEM IN BACILLARY DYSENTERY.

BY E. E. SOUTHARD,
With the assistance of
C. G. MC GAFFIN, M.D.,[¶]
Pathologist and Assistant Physician, Taunton State Hospital, Massachusetts.

VIII. ULCERATIVE VAGINITIS IN A CASE OF BACILLARY DYSENTERY.

BY MYRTELLE M. CANAVAN.

IX. THE OCCURRENCE OF DYSENTERY IN HOSPITALS AND IN THE COMMUNITY AT LARGE, WITH A SUMMARY OF THE PROPHYLACTIC MEASURES WHICH SHOULD BE EMPLOYED TO CHECK THE DISEASE.

BY C. T. RYDER.

X. CONCLUSIONS FROM WORK ON THE DANVERS DYSENTERY EPIDEMIC OF 1908.

BY E. E. SOUTHARD.

I.

STATISTICAL REPORT OF THE DYSENTERY EPIDEMIC AT DANVERS HOSPITAL IN 1908.

BY C. T. RYDER.

THE geography and chronology of the epidemic are represented in detail in the appended table (Table I). To the graphic representation, however, some explanation and comment must be added. In the first place, with regard to the arrangement of the hospital and the location of its different wards and departments: The hospital is constructed on the so-called Kirkbride plan. The main system is grouped about a central building containing the living rooms and offices of the administrative staff of the hospital (front center) and the living rooms of some of the servants and attendants, the great congregate dining-room, and the kitchens, pantries and storerooms (rear center); on either side of this building are four ward buildings, of which the first pair, D and G, connect directly with the central building; the next pair, C and H, connect with the farther corners of D and G respectively and are followed in turn by B and I, beyond which in the same manner come A and J, which thus lie at opposite ends of the plant. Each building has three floors, each of which constitutes a ward, the wards being numbered according to floors. A, B, C and D are on the female; G, H, I and J on the male side. Connecting with A and J are hospital wards (annexes) for bedridden and other patients. A1 (female) and I1 (male) are receiving wards. A2 and A3 (female) and J2 and J3 (male) contain as a rule noisy or violent patients. B2 and B3 (female) and I3 (male) contain as a rule demented or untidy patients. C1 and C2 (female) and H2 might be termed convalescent wards. C3 and D3 (female) and G3 and H3 (male) contain, as a rule, mild chronic cases. D2 (female) and H1 (male) contain patients who do some work in the hospital. The parole wards are D1 (female) and G2 (male). C1 and G1 are visiting wards.

The two small tuberculosis buildings are at opposite ends of the system, near A and J respectively.

Dayton Hall is about half a mile from the main hospital, near the filter beds of the sewer system, upon which the ten men who live there work.

Middleton Colony is about a mile distant, and is occupied almost entirely by custodial female patients of about average physical condition.

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[*] By courtesy of the Danvers Hospital Superintendent and Trustees.

[†] Resident in Danvers Hospital by courtesy of the Superintendent and Trustees, and working under a grant from the Proctor Foundation for the Study of Chronic Disease, Harvard Medical School.

[‡] With the assistance of Drs. Peabody and Canavan.

[¶] Working in Danvers Hospital by courtesy of the Superintendent and Trustees.

Grove Hall is two or three hundred yards from the hospital, near the stock barn, and the patients living there are men who work on the farm.

In the table (Table I) cases and deaths are indicated in the wards in which the onset occurred. Thus if a patient was taken sick in I2 and transferred to J1, and died there, his death is indicated in I2, of which he was a resident when he contracted the disease.

Transfers are indicated by Roman numerals, which stand in every case for the number of patients believed to be suffering from dysentery transferred to the ward on the day specified. Transfers *from* wards are not shown, as they can have no bearing upon the spread of infection; nor are transfers, during the period of the epidemic, of patients not suffering from the disease.

The *doubtful diagnoses*, of which there are eleven, belong to cases in which there was diarrhea of greater or less severity and the presence of dysentery was suspected but not corroborated by the finding of blood or mucus in the stools. In all other cases there was mucus or blood or both, and in many the diagnosis was confirmed by the clinico-pathological tests or by autopsy. The fatal cases with doubtful diagnoses had either a doubtful clinical diagnosis and no autopsy secured (one case) or were doubtful at autopsy (three cases *). The remaining cases showed typical lesions of bacillary dysentery. No cases at first supposed to be dysentery but afterwards definitely determined not to be are entered at all.

In the summaries at the right-hand side of the table, the totals include doubtful cases, the number of which is indicated in parenthesis; and percentages are calculated on the basis of these totals. It is believed that less error results from including than from excluding these cases, since there is ample proof that many cases of bacillary dysentery fail to show blood and mucus in the stools. The percentages here and elsewhere in the article are subject to slight inaccuracies owing to the fact that the totals upon which they are based, though here considered as constant quantities, are in reality subject to variation within reasonably small limits, since the population of the hospital and of each ward changes more or less from day to day. The totals are, however, sufficiently near to the average for the summer so that no material error is introduced.

In the main body of the table, which consists of a detailed representation of incidence of cases, transfers and deaths, by days and hospital departments, the following facts are to be noted:

1. The first case occurred in A1, female side, and this ward suffered continuously and severely throughout the epidemic.

2. Wards situated near A1 did not become infected any sooner or any more severely than wards remote from it. It should be stated in this connection that there is but little communication between adjacent wards.

3. The second case occurred in G3, male side, more than half the length of the hospital from A1, three days after the onset of the first case. Shiga[1] † gives the incubation period as usually two to three days, rarely three to eight days; and he cites laboratory infections reported by Flexner, Strong and Kruse in which it was one to two days.

4. The spread was gradual and scattering; not "explosive," not progressive from ward to adjoining ward.

5. Ultimately all departments of the hospital were involved, with the sole exception of the female parole ward, D1, which had but seventeen patients, and all classes of the hospital population, sane and insane, were represented.

6. There is no immediate and definite increase in the morbidity of a ward after sick patients have been transferred to it. In J1, for example, 6 cases began in the five weeks preceding, and only 3 in the five weeks following, the conversion of the sun-room connected with the ward into a hospital for all the dysentery cases on the male side. In this ward, however, and in B2, on the female side, to which many dysentery patients were transferred, cases continued to occur after nearly all other departments of the hospital had been free from the disease for weeks; and I3, to which early and frequent transfers were made, had a morbidity double that of the epidemic as a whole and of B3, the corresponding ward on the female side.

In the *summary by days* at the bottom of the table, the chronological configuration of the epidemic as a whole is shown. The same facts are embodied in a graphic form in Fig. I, in which incidence of cases and deaths are plotted according to weeks. The line of incidence shows a steady rise to the maximum in the fifth week, then a decline (the possible explanation of which will be considered in Article II), then another rise occupying two weeks, followed by a rather sudden drop, and the cessation of the epidemic proper about the middle of September. Again in October there is a slight recrudescence, and in November, 1 case. Since November there have been 3 more cases, 1 in January and 2 in March, 1 fatal. The line of deaths follows the line of incidence at an interval corresponding roughly to the duration of the disease, departing noticeably from it only in the fifth week.

The *summary by wards* at the right-hand side of Table I shows:

1. The general distribution of the epidemic throughout the hospital.

2. The wide variation in per cent mortality in different departments, as contrasted with the morbidity, which is much more nearly constant. The highest morbidity is in the debilitated patients of A1, and that of J1 is also high, but not so high as that of I3 or C1. Mortality, on the other hand, is distinctly highest among the debilitated, while of the physicians, nurses, attendants and servants who had the disease, none died. As Mott[2] points out, the disease is the same in the sane as in the insane, but the mortality is lower because of better constitutions,

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* A consideration of these cases will be found in Article VI.

† References at the end of the series of articles.

TABLE I.

EPIDEMIC OF DYSENTERY AT DANVERS STATE HOSPITAL, MASSACHUSETTS, IN 1908.

	Total cases	Total deaths	Total residents	Per cent. Morbidity	Per cent. Mortality	Relapses
Ward A 1	(1?) 17	(1?) 9§	59	28.8	52.9	1§
„ 2	(1?) 5	(1?) 3	38	13.1	60.0	
„ 3	3	1	56	5.3	33.3	
„ B 1	(1?) 4		52	7.7		
„ 2	(3?) 9		56	16.0		
„ 3	6		57	10.5		
Ward C 1	11	1	55	20.0	9.1	
„ 2	5	1	39	12.8	20.0	
„ 3	6	1	34	17.6	16.6	
D 1			17			
2	(1?) 2		29	6.9		
3	7		44	15.9		
Front center	2		20	10.0		1
Rear center	1		27	3.7		
Ward G 1	4		28	14.3		1
2	3	1	28	10.7	33.3	1
3	5		50	10.0		
H 1	(1?) 6		47	12.7		
2	1		28	3.6		
3	3	1	51	5.9	33.3	
I 1	5	1	42	11.9	20.0	
2	4	1	35	11.4	25.0	
3	12	3	55	21.8	25.0	1
J 1	11	7	56	19.6	63.6	
2	3	1	44	6.8	33.3	
3	(3?) 10	(2?) 3	56	17.8	30.0	
Male tuberculosis building	2	1	17	11.8	50.0	
Female tuberculosis building	1		17	5.8		
Dayton Hall	1	1	10	10.0	100.0	
Grove Hall	4		50	8.0		
Middleton Colony	3		255	1.2		
Other residents, approximate			140			
Totals	156	36	1,592	9.8	23.1	5

EXPLANATION.

Plain Arabic numerals mean the number of cases beginning in the ward on the day represented by the square in which the numeral occurs.

Arabic numerals followed by a dagger, the number of cases dying in the ward on the day indicated.

An Arabic numeral followed by a circle indicates that the patient was an officer, attendant, nurse or servant.

An Arabic numeral followed by an asterisk indicates a relapse.

A question mark indicates a doubtful diagnosis.

Roman numerals in parenthesis indicate the number of patients suffering from dysentery who were transferred to the ward on the day represented by the square in which the numeral occurs.

The "Other residents" are nursing attendants who live at the nurses' home or the hospital, but are not included in the ward population. Those who had the disease are entered in the ward in which they served, and the numerals designating them marked with a circle.

§ One of these patients died at home in Haverhill of a relapse.

and because they are capable of co-operating for their own better care. The following tables further illustrate the above fact.*

TABLE II.

	Approximate total.	Cases.	Deaths.	Per Cent. Morbid.	Per Cent. Mortal.
Patients, male,	600	71	20	11.8	28.2
Patients, female,	800	73	16	9.1	21.9
Physicians, officers and assistants,	12	2	0	16.6	
Nurses,	75	6	0	8.0	
Attendants,	65	1	0	1.5	
Servants, mechanics, etc.,	135	3	0	2.2	

TABLE III.

	Cases.	Deaths.	Per Cent Mortality.
Bed patients,	30	19	63.3
Other patients,	109	17	15.6

The general morbidity, 9.8%, though high, is not unexampled, as Konrich [3] reports an epidemic in the two German villages of Triptis and Miesitz, where sanitation and living accommodations were bad, with a morbidity of 4.9% in Triptis and 10.7% in Miesitz. The calculated morbidity does not include any of the "servants, mechanics, etc," who appear in Table II, except those who are resident in the hospital departments.

The general mortality, 23.1%, is about equal to that of many reported epidemics, as the following table illustrates.

TABLE IV.

Author.	Place.	Per Cent. Mortality. Male.	Female.
Konrich,[3]	Triptis and Miesitz, Germany,	13.0	
Shiga,[1]	Prov. Niegata, Japan,	21.5	22.3
	Prov. Shizuoka, Japan,	23.2	25.3
	Tokio City Hospital,	15.4	26.8
Knobel,[4]	English and Welsh asylums,	19.8–27.5	
Haenisch,[5]	Gelsheim, Germany,	28.0	
Rosenthal (cited by Shiga [1]),	Russia,	12.2–17.5	
Kruse (cited by Shiga [1]),	Germany,	10.0	

The conspicuously low morbidity of the Middleton Colony is interesting in connection with the approximately constant morbidity among patients elsewhere; the probable explanation will be considered in Article II.

3. But five definite relapses occurred in the course of the epidemic. This is in accord with the observation of Konrich.[3] The statement of Shiga [1] that the majority of relapses are in incompletely recovered cases was also corroborated.

Certain other statistical points not appearing in Table I must be considered before passing (Article II) to the investigation of the source and causes of spread of the epidemic. First is the distribution of cases according to eating places, which may be presented in tabular form.

Here again it is apparent that the morbidity, where the figures are large enough to admit of any deductions, is practically constant, being little or no greater among patients who through weakness or mental incapacity have to be fed in their beds or at the ward tables than among those who are able to go to the congregate dining-room. But here again the low morbidity of the Middleton Colony is conspicuous.

TABLE V.

Eating Place.	Approximate Total.	Cases.	Per Cent. Morbidity.
Congregate dining-room,	580	75	12.9
Ward tables and beds, male,	200	30	15.0
Ward tables and beds, female,	290	37	12.8
Male tuberculosis building,	17	2	11.8
Female tuberculosis building,	17	1	5.8
Dayton Hall,	10	1	10.0
Grove Hall,	50	4	8.0
Middleton Colony,	255	3	1.2
Front Center,	20	2	10.0
Rear Center,	35	1	2.8
Supervisor's dining-room,	12	0	

Finally as to the duration of the disease: In cases which recovered, the average time from the first appearance of frequent loose, bloody or slimy stools till the movements became normal and the patient appeared to be free from symptoms was twelve days, the minimum three or four days, the maximum about two months. It is impossible to state these limits more explicitly because of the absence of any criterion of complete recovery, especially in insane patients. The average duration of fatal cases was also twelve days, the minimum four days and the maximum forty-one days. According to Shiga [1] the duration of light cases is four to eight days, of severe cases three to six weeks to recovery, of fatal cases two to three weeks. Konrich [3] gives three weeks as the average duration of symptoms, ten to twelve days as the average time during which blood and mucus are present in the stools, and it is natural that in an asylum epidemic the figures should correspond rather to the duration of signs than that of symptoms.

II.

INVESTIGATION OF THE POSSIBLE AND PROBABLE SOURCES OF INFECTION AND OF THE CAUSES OF SPREAD OF DYSENTERY IN DANVERS HOSPITAL.

BY C. T. RYDER.

Before discussing the etiology of this epidemic it will be well to present a brief review of the most important theories of the past, and of the status of opinion at present with regard to the etiology of asylum dysentery.

Up to the end of the last century the subject was entirely dark, and speculation prevailed. The disease was attributed to dietary indiscretions, to the inhalation of fecal odors in hospital wards, to obscure unwholesome influences arising from disturbances of the subsoil; many explained it correctly, by analogy, as an infection caused by an organism then unknown; but the most widely accepted theory was that of Claye Shaw (mentioned by Candler [6]), who assumed a "trophic ulceration" of the intestinal mucosa, dependent upon a primary degeneration of Meissner's plexus. The only basis for this hypothesis was the greater frequency of the disease in the insane than in the sane, plus the very imperfect analogy of bedsores in the paralytic insane.

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* The relation of age and of mental disease to individual susceptibility is presented in tabular form in Article X.

With the discovery of the bacillus dysenteriæ by Shiga in Japan in 1898, [7,8] corroborated in 1900 by Flexner [9] and Strong and Musgrave [10] in Manila and by Kruse [11] in Germany, the era of positive knowledge of the etiology of dysentery began. Two years later Mott [2] identified asylum dysentery with the disease described and elucidated by Shiga. Since 1900 the specific organism, with or without slight variations from the type originally described, has been recovered in many asylum epidemics,[12,13,5] and it is now almost universally held that the dysentery or "colitis" of asylums is in practically all cases an infectious disease caused by the bacillus dysenteriæ of Shiga or by some closely allied member of its group, differing from it only in minor cultural and biological details. This knowledge does not absolutely controvert all the theories which preceded it; undoubtedly the reduced vitality of many insane patients makes them more susceptible to this as to other infections, septic and tubercular, for example, and quite probably any dietary indiscretions which result in irritation of the intestinal mucosa make it an easier prey for the specific organism. What the knowledge distinctly does, however, is to make perfectly clear that these casual or inevitable factors are not the main issue; that this widespread and fatal disease is caused by an organism which is carried in various ways from the sick to the well, and which can be, and ought to be, intercepted in transit.

Fortunately, in the Danvers epidemic it was entirely unnecessary to consider any of the obsolete non-infectious theories of causation, since, to anticipate in part the pathological report, in a sufficient number of cases the specific organism was recovered, and the typical lesions of bacillary dysentery found at autopsy, and many agglutination tests were performed with positive results. It was necessary, however, to investigate very carefully the different possible methods by which the infection could have been introduced into the hospital, and the vehicles by which it could have been spread. The results of this investigation must be considered in detail.

The possible sources of infection which have been suspected or proved in other reported epidemics are as follows:

A. *A primarily * infected water supply.*[14,1]

B. *A primarily * infected milk supply.*[1]

C. *A primarily * infected food supply*, e. g., uncooked vegetables grown in specifically contaminated soil.[2,1]

D. A localized focus of infection arising from a disturbance of specific organisms residing in the *subsoil*, as by digging for water works or foundations.[4]

E. The *introduction into the institution* of individuals who are already suffering from the disease, whether in a severe or in a mild and unrecognized form; or who have recovered from an attack, but still have the organisms in their intestines, thus serving as *carriers* for the infection.[2,6,14,5,3,1]

F. The *continuous presence in the hospital com-*

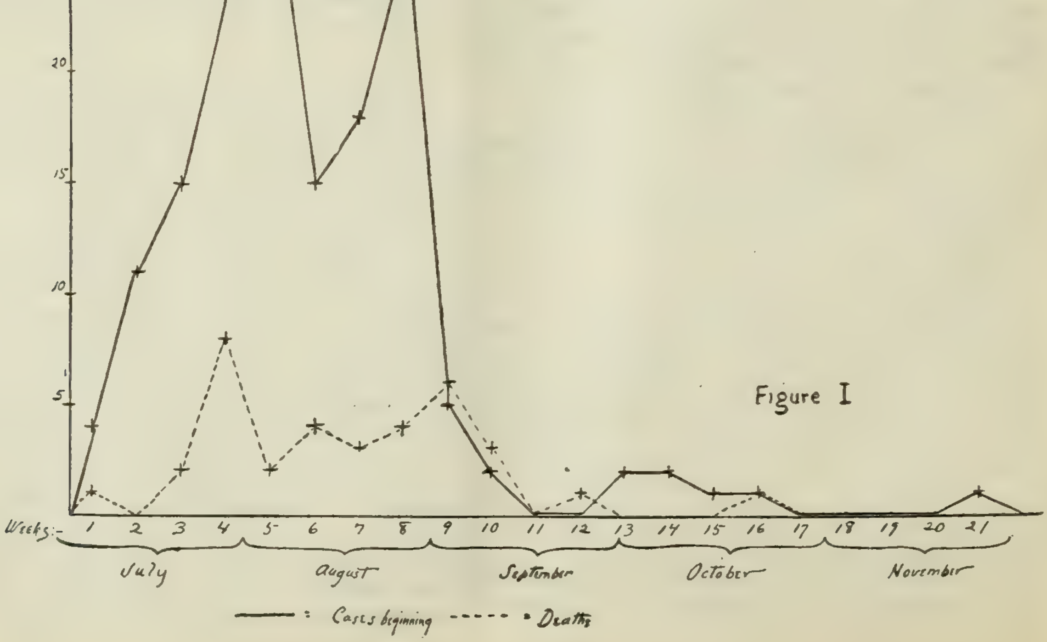

Figure I

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* That is, infected before reaching the hospital proper, in contradistinction to an infection taking place within the hospital in the processes of preparation and serving.

munity of carriers with a dissemination of the infection from them to others under favoring conditions.[6,12,14,5,1]

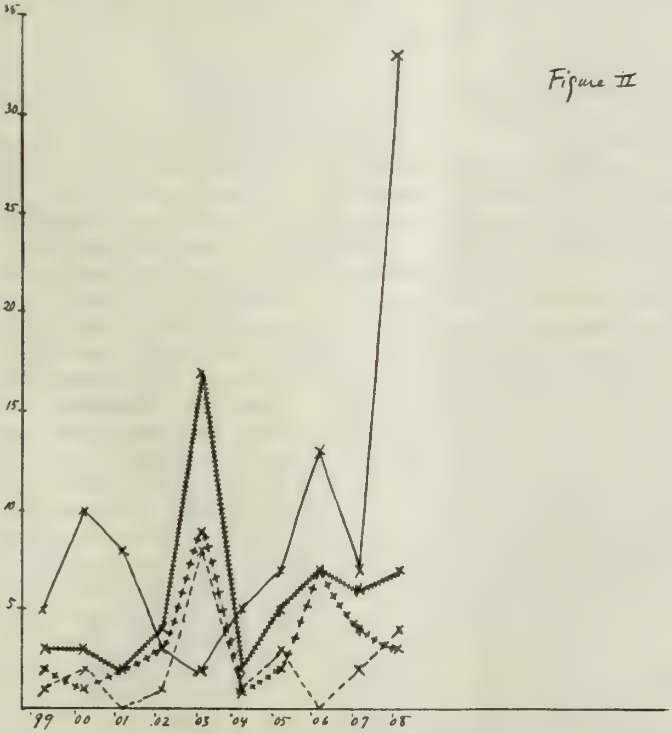
We shall consider these possibilities in turn:

A. The character of the epidemic makes it extremely improbable at the start that it is due to an infected *water supply*, since epidemics so caused are of the "explosive" type,[14] with simultaneous onset in many individuals, while the onset of this epidemic, as already shown (Table I) was gradual, and showed a constant increase over a period of about five weeks. (Fig. I.)

The presence of cases of dysentery in the village of Middleton, however, where the pond and reservoir are situated which supply water to the town of Danvers and to the hospital, made it necessary to investigate the water supply thoroughly, even in the face of this rather strong evidence against its being in any way responsible for the epidemic.

Middleton Pond is very close to the village of Middleton, but somewhat higher in the valley than most of the houses, which are, therefore, on the drainage slope of the outlet, not of the pond itself, and hence cannot be supposed to contaminate its water. A few houses are on the slope which drains into the pond itself, but they are all at a considerable distance from the shore, and the soil upon which they are built is rather sandy, so that any drainage from them would undergo considerable filtration before reaching the pond. The possibility of some such drainage taking place must be entertained, as the village has no sewer system. Mr. A. W. Beckford, water commissioner of Danvers, states that the town owns 82.5 feet above high water all around the pond; within this area there is only one house, that of the engineer, and this is piped, and the sewage conducted to a tight cesspool below the level of the pond. The intake last summer (1908) was about 135 feet out from the pump well; last winter (1909) a new intake was completed, 260 feet out. The water is pumped to a reservoir on the top of the hill which overlooks the pond, and from the reservoir mains run to supply part of Middleton, the hospital, Danvers proper and several small settlements which with Middleton are part of the township of Danvers. The last State Board of Health report gives an entirely satisfactory analysis of the water.[16]

Dr. George W. Ewing, who has most of the medical practice in Middleton, was consulted in August, 1908, and again in January, 1909, with reference to the presence of dysentery in the village. He stated that there were in his opinion more cases than usual last summer. He himself treated about 20, with no deaths. The first case was in the latter part of July, the last in September. The majority of his patients were persons living off the line of the water supply, who, therefore, do not take the town water at all. One doubtful case occurred in one of the houses near the pond in August; in this case there was diarrhea, but no blood or mucus or other clinical signs of dysentery. The fact that the earliest known case in Middleton was about a month later than the first case at the hospital is an added



Incidence of Fatal Cases in the Hospital and the Town of Danvers for the Last Ten Years.

—— indicates deaths from dysentery, colitis and diarrhea reported from the hospital.
· indicates deaths from dysentery, colitis and diarrhea among residents of Danvers, adults and infants.
. . . indicates deaths from dysentery, colitis and diarrhea among infants in Danvers (including cholera infantum).
·········· indicates deaths from dysentery, colitis and diarrhea among adults in Danvers.

point against the contamination of the water supply, although it is, of course, not impossible that earlier cases of which we have no record may have occurred in Middleton.

Finally, to determine whether the water could be supposed ever to have figured as a bearer of infection, statistics were secured from the town clerk's record of deaths in Danvers, covering the number of deaths from dysentery in the town and in the hospital each year for the last ten years. The results are plotted in Fig. II. In this and in subsequent statistical summaries, deaths reported as due to colitis, ileo-colitis, acute enteritis and diarrhea are assumed to have been due to dysentery. Undoubtedly by proceeding on this assumption we include some cases which were not dysentery; on the other hand, we have encountered each of these diagnoses in cases which were definitely known to be dysentery; in fact, the cases on one side of the hospital in last summer's epidemic were reported as enterocolitis, while at Austin Farm the same disease is recorded as acute enteritis. Moreover, bacteriological investigation has brought many diarrheas of formerly obscure cause into the dysentery class,[13] so that in the absence of proof to the contrary, the assumption is rather for than against dysentery in any acute inflammatory disease of the colon.

Since the work of various investigators (Duval and Bassett, Knox and Wollstein, Flexner and Holt and Ohno) has demonstrated that severe acute diarrhea in infants is very frequently, if not usually, caused by the bacillus dysenteriæ, all deaths in infants (under three years) from the above causes and from "cholera infantum"—according to Shiga [14] a severe form of true dysentery in infants — are included in the summaries, but always with a separate designation.

It is evident from Fig. II that there is no correspondence by years between fatal cases of the disease at the hospital and in the town, and this speaks strongly against the water supply as a cause.

Of three physicians interviewed in Danvers, one did not think that the disease had been any more prevalent than usual last summer; one thought it had been somewhat more so; one said he had had more cases than ever before, and they had been more severe. Judging by fatalities, however, there was nothing to correspond to the epidemic at the hospital. Moreover, a comparison of the annual death-rate from dysentery and cholera infantum in Danvers for the last four years with that in the two neighboring towns of Andover and Peabody shows that it is not excessive, which is against a contaminated water supply. (Table VI.)

B. The *milk supply*, like the water supply, can almost be excluded on the basis of the statistics. Within its area of distribution a milk-borne epidemic has the "explosive" character of a water-borne one. It will be remembered, moreover, that the per cent morbidity was practically the same in the ward dining-rooms and beds as in the congregate dining-room (Table V). The only patients, however, who during the summer of 1908 received raw milk were those for whom it was specially ordered, and these were chiefly bed patients; no raw milk was served in the congregate dining-room. All milk used in the hospital is supplied by the hospital herd, and is produced under good hygienic conditions; all milking is done by milking machines or into closed pails. No one connected with the farm suffered from the disease till late in August, near the end of the epidemic, and the man taken sick then stopped work immediately.

TABLE VI.

Town.	Population, 1905.	Deaths per annum from dysentery, etc., in adults, 1905–08.	Infants.	Total.	Annual mortality per 10,000 population from these causes.
Andover, Mass.	6,632	2.5	1.5	4.	6.15
Danvers, Mass.	9,063	2.25	4.25	6.5	7.22
Peabody, Mass.	13,098	3.	12.75	15.75	9.65

C. We have no positive evidence by which to exclude infection of *food supply*, e. g., uncooked vegetables, as a possible vehicle of infection. Lettuce, cucumbers, radishes, small onions and Swiss chard are served raw, the season beginning the last of April and lasting into September, therefore covering the period of the epidemic, but preceding its onset by two months. These vegetables are grown in soil which is not known to be contaminated, being across the road from the filter beds of the sewer. The green corn is grown in part near these beds, and is very likely somewhat contaminated, but it is always thoroughly cooked before being eaten.

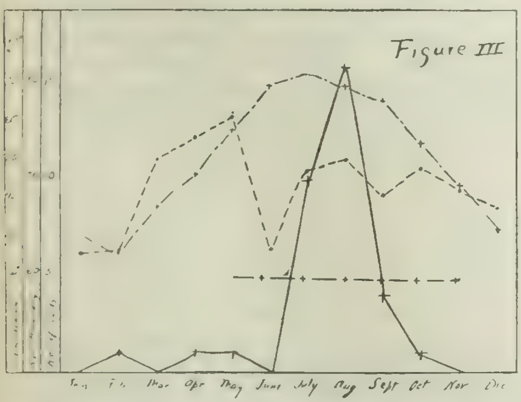
It is possible that the handling of corn contaminated by the sewage from cases of dysentery already existing in the hospital, and of other food by the same individuals, may result in some food infection; if so, it serves as one of the methods of spread rather than the source of the epidemic. Even this, however, can scarcely be important, since the vegetables supplied to the colony, where the morbidity was only 1.2%, are the same as those supplied to the main hospital.

In connection with the possible presence of infection in sewage, it is worthy of mention that a healthy patient who was working on the sewer beds was taken sick with a severe case of dysentery July 13, eight days after the onset of the first case, and died July 25.

D. The possibility of the organisms being present in the *subsoil* and being liberated by disturbances of it cannot be absolutely eliminated in this case, as a certain amount of trenching went on about the hospital during the summer. The ground disturbed, however, was nearest to the central wards, which were late and lightly affected; and ward A1, in which the epidemic started and was most severe, is in the part of the hospital farthest from it, and is occupied entirely by women, most of whom are feeble and closely confined. So far as is known, no relationship capable of transmitting infection was ever established between the two points, with the exception of the omnipresent flies, to be discussed later.

E. *Introduced carriers.* The introduction into hospital and other communities of persons suffering from dysentery or harboring the organism without showing symptoms of the disease has undoubtedly precipitated many epidemics. Whether it was to any degree responsible for the Danvers epidemic cannot be proved, as the individual in question died before the careful investigation of the dysentery cases was begun. This individual was Margaret Hennessey, the first case in the epidemic. She was admitted from the Catholic Orphan Asylum in Salem, June 10, 1908, and it is recorded that on admission she had a dry, cracked tongue. She was first reported sick with dysentery July 5, and died July 10. On subsequent inquiry at the Orphan Asylum, the matron of that institution was inclined to think Mrs. Hennessey had had previous attacks of severe diarrhea, but a later message from the Mother Superior stated that this was a mistake. Autopsy was not secured, so there is no objective evidence to show whether her sickness was an exacerbation of an old chronic process or a recent acute infection.

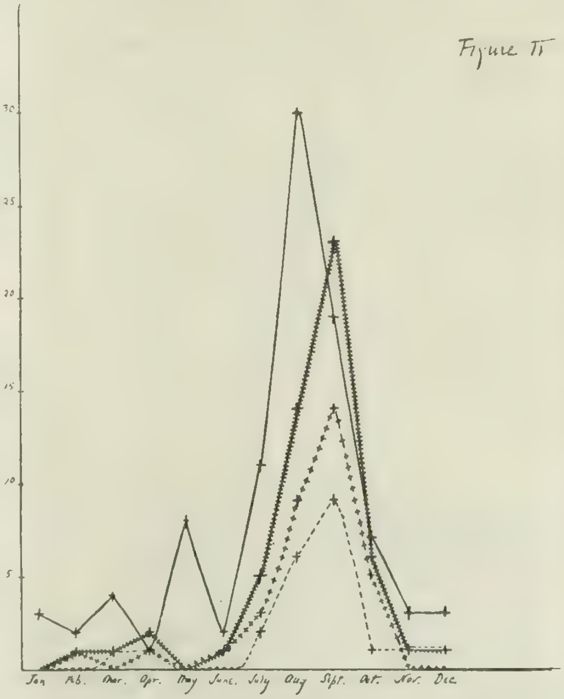
F. *Intramural carriers.* Assuming that Mrs. Hennessey had never had dysentery before, we still have not far to seek for a probable cause of the epidemic in the certainly occasional, probably continuous, presence in the community at all seasons of the year of individuals harboring the organisms of dysentery, with or without symptoms of the disease. This fact is illustrated in Fig. III, together with certain other facts the bearing of which on the epidemiology of the disease will be discussed later. In this diagram the deaths from dysentery at the hospital in 1908 are plotted according to months, and it is apparent that the disease was present, and fatal, in February and again in April and May, though it did not become epidemic till July. This is perfectly in accord with Shiga's statement [14] that cases of diarrhea at any season of the year may show the bacillus dysenteriæ; that the organism survives the winter in the human intestinal tract, and then is spread about under the favorable conditions of summer, starting the annual summer epidemic.



Fatal Cases at Danvers Insane Hospital in 1908. From the Hospital Record of Deaths.

----- Mean relative humidity by months.
—.— Mean temperature by months.
—+— Approximate duration of fly season.
—— Fatal cases of dysentery.

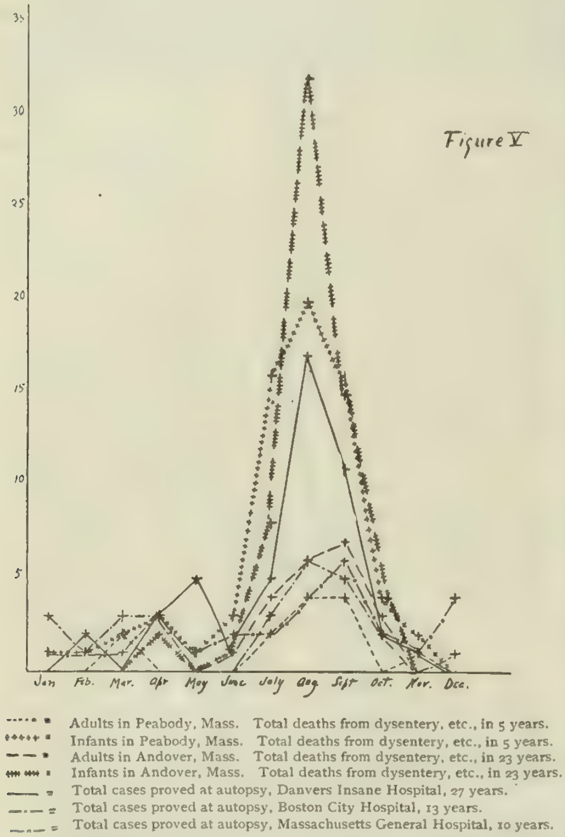
We must now proceed to consider what are the *favorable conditions* which cause the disease to become epidemic in summer, for the seasonal distribution of the disease is most striking, not only here, but in other insane hospitals, general hospitals and communities at large. This fact is illustrated in Fig. IV, which is based upon the same data as Fig. II, arranged according to months instead of years. While the annual distribution in the town and the hospital did not correspond at all, the seasonal distribution corresponds almost perfectly. The same fact is shown in a more general application in Fig. V. A practically identical condition is noted by Amako [15] and by Shiga [14],[1] in central (temperate) Japan, and by Kruse in Germany.



Distribution of fatal cases occurring in the hospital and the town of Danvers in the last ten years according to calendar months. The meaning of the different lines is as in Fig. VII.

The two most conspicuous peculiarities of the summer season in this climate, from an epidemiological point of view, are represented in Fig. III, the *temperature* and the *fly season.* The mean *relative humidity* is also included in the diagram, but only to show its unimportance; it obviously can bear little or no relationship to the spread of the disease, since it was highest at the time of year when the hospital was practically free from dysentery.

The mortality, however, follows the line of *temperature* quite closely both in ascent and descent, at an interval accounted for by the duration of the disease. The temperature plotted by days showed a period of about a week of even, moderately cool weather, corresponding to the drop in incidence of cases noted in Fig. I. This relation to temperature has been noted by various investigators in the study of the diarrheal diseases of infancy, and is graphically represented by Gregg in his report of the infant mortality in Boston in 1907.



The effect of temperature plainly cannot be direct, as dysentery is a specific infection, not a species of heat prostration; it is probably to be accounted for by two facts: first, the greater viability of the organisms outside the body in warm weather; second, a point the importance of which we shall proceed to discuss, — the great number of *flies* at large in the midsummer months, with the favorable effect of warmth on their productiveness and activity. The influence of flies on the spread of this as of other infections has been suggested by Shiga [1] and others [17] and found most ample circumstantial support in the Danvers epidemic.

As long ago as 1850 [18] Nicholas suggested that flies were probably agents in the spread of Asiatic cholera. This suggestion was corroborated bacteriologically at Bologna in 1886 by Tizzoni and Cattani. The rôle of flies as carriers of typhoid was first suggested by Celli in 1888. Its importance was emphasized by Kober in the District of Columbia in 1895, and most impressively by the Army Typhoid Commission (Reed, Vaughan and Shakespeare) during the Spanish War in 1898. In 1904 Lord, of Boston, proved that flies may act as carriers of tuberculosis. Howard, in a recent paper, from which the above data are taken, says of the house-fly, or "typhoid fly," "It is a prime agent in the spreading of summer dysentery, and in this way is unquestionably responsible for the death of many children in summer."

Auché [48] has found that flies may take up living dysentery bacilli from pure culture or from stools of patients suffering from the disease, may carry them in a living state for a period of hours, and may then, by lighting on culture media, produce successful inoculation with growth of colonies.

In the Report of the English Commissioners in Lunacy for 1907, the following note appears: "Dr. Seward (of Colney Hatch Asylum) notes the coincidence in 1906 of an epidemic of dysentery in August and September with the presence of a very exceptional number of house flies. In the summer of 1907 the number of house flies was exceptionally small and the cases of dysentery very few."

The fly season in this climate, according to Dr. L. O. Howard, of the United States Bureau of Entomology, begins about the middle or latter part of May and lasts into November; but as is well-known, July, August and the early part of September constitute fly time.* During this period the hospital contained very many flies, which were said to be much more numerous and troublesome than in former summers. These flies could easily pass from the excreta of the sick patients to the wards and the kitchens. Since bad ward hygiene must almost inevitably exist in insane hospitals where many of the patients are untidy and disobedient, and since many attendants, moreover, are persons of inadequate training, and, in spite of the explicit orders of the staff that all stools of dysentery patients should be disinfected, failed to attempt disinfection, it is not difficult to form some conception of the methods of possible and probable spread by contact (food, clothes and direct) and by flies.

Flies are believed to have been the most important factor in the spread of the epidemic. Some infection took place, as it may at any season of the year, through transfers of sick patients, and contact, direct and indirect, between the sick and well, as typhoid infections occur occasionally in general hospitals. Transfers are not the chief factors in epidemic spread, since epidemics do not occur in winter, when the conditions with respect to transfers are the same as in summer. Flies, too, cannot be responsible for the May incidence (Figs. IV and V) peculiar to Danvers Hospital. Inoculation of the food supply by flies dish by dish, in the kitchen and on the tables, must account for the increase of cases over a long period, for their general distribution, regardless of ward or eating place, and for the cessation of the epidemic in the early autumn. It may also explain what is otherwise strange — the relative immunity of the Middleton Colony, which is about a mile away and is more thoroughly screened than many older parts of the hospital.

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* "In a report by Daniel D. Jackson to the Committee on Pollution of the Merchants' Association in New York, published in December, 1907, the results of numerous observations upon the relation of flies to intestinal diseases are published, and the relation of deaths from intestinal diseases in New York City to the activity and prevalence of the common house fly is shown not only by repeated observations, but also by an interesting plotting of the curve of abundance of flies in comparison with the plotted curve of deaths from intestinal diseases, indicating that the greatest number of flies occurred in the weeks ending July 27 and Aug. 3; also that the deaths from intestinal diseases rose above the normal at the same time when flies became prevalent, culminated at the same high point and fell off with slight lag at the time of the gradual falling off of the prevalence of the insects.

"Similar studies have been carried on during the summer of 1908 in the city of Washington, and the curve of typhoid-fly abundance for the whole city, as well as that for a district comprising eight city squares in which intensive studies have been made both of flies and of disease, will be plotted at the close of the season. At the time of present writing this work has not been completed." (Howard.[17])

To summarize: Bacillus dysenteriæ (see Article III) is almost certainly present in the hospital at all times. When the weather conditions are such that the organisms may live longer in the open, when flies are unusually numerous, an epidemic may occur, ceasing with the advent of cooler weather, but undoubtedly leaving "carriers" in whom the bacilli live over winter. Sporadic or widely separate "endemic" hospital cases may then occur.

III.

IDENTIFICATION OF EPIDEMIC DYSENTERY IN DANVERS HOSPITAL AS DUE MAINLY TO BACILLUS DYSENTERIÆ (SHIGA TYPE).

BY E. T. F. RICHARDS, A. H. PEABODY AND M. M. CANAVAN.

THE present report deals with the isolation of bacillus dysenteriæ from the stools of living patients and from autopsies in the Danvers Hospital epidemic (1908).

During the latter half of the past summer (1908), there occurred in the Danvers Insane Hospital 156 cases clinically diagnosed as acute dysentery. Epidemics had broken out in the hospital in previous years, but no systematic bacteriological investigation had been carried out. It was, therefore, with the hope of definitely determining the causative factor, and, if possible, of instituting methods of prophylaxis, that the following work was undertaken.

The Bacillus Dysenteriæ.

A brief summary of the main properties of bacillus dysenteriæ is in order because of the steady progress being made in the bacteriology of the disease, and also because workers in the past, regarding the technic of their day as final, have not always given sufficient data concerning their isolations. For example, Eyre,[19] who was undoubtedly the first in England to recover bacillus dysenteriæ from cases of asylum dysentery, reports in 1904 a number of cases due to what is probably the Shiga type. In 1908 Aveline, Boycott and Macdonald[20] state that Eyre (personal communication) recovered *also* the Flexner type of bacillus dysenteriæ from the same cases. In neither statement is there a sufficient account given of the cultural characters possessed by the organisms recovered. Jessie W. Fisher's more recent data[21] concerning an epidemic at Middletown Hospital for the Insane, Connecticut, due to mannite fermenters, are more specific. Vedder, and Duval[13] recovered a few organisms of the Shiga type, but chiefly mannite fermenters, from their institutional cases.

In this investigation the following properties were regarded as the most important and essential in classifying an organism as the dysentery bacillus.

1. *Morphology* and *motility.* — The organism is a short, Gram-negative, non-motile bacillus.

2. *Cultural characters.* — The bacillus grows well on the ordinary media.

In bouillon there is a diffuse clouding with slight sedimentation. On agar plates there appear in twenty-four hours small round colonies, which by the end of forty-eight hours have increased in size and have assumed a grayish-white, moist appearance.

In connection with the growth of the dysentery bacillus on agar, it is interesting to note that many workers recommend an acid medium for its cultivation, whereas it was our experience that the organism grows at its best on a medium which is slightly alkaline to litmus and neutral to phenolphthalein.

In media containing glucose (agar, bouillon) there is a profuse growth without gas production.

In litmus milk the bacillus produces in twenty-four to seventy-two hours a weak acidity, which slowly fades and is followed by a return to the normal and then by a deepening alkalinity. This cycle may be completed in a week, or it may be a matter of five to six weeks before the end reaction appears. Much stress has been laid by previous investigators upon the reaction of the dysentery bacillus in litmus milk. It is without doubt one of the most important cultural characters of the organism. A primary acidity without coagulation of the milk, followed by a lessening in the degree of the acidity, are the steps in the reaction which must be emphasized. A failure of a marked terminal alkaline reaction in appearing does not necessarily exclude the organism from the dysentery group. Of greater importance is the agglutination of the organism by a highly diluted (1–1500, 1–2000, 1–2500) anti-dysenteric serum. This must be properly controlled by negative agglutination tests with other organisms, such as bacillus fecalis alkaligenes, bacillus proteus, bacillus coli and others. Further, in the case of the Shiga type, the highly toxic effect of the true organism upon rabbits is of the greatest importance.

The organism does not liquefy gelatine.

3. *Types of the dysentery bacillus.* — According to its effect on mannite, [21],[22],[23] bacillus dysenteriæ is divided into two main groups:

(*a*) Those which ferment mannite.

(*b*) Those which do not ferment mannite.

Mannite-litmus-agar is a satisfactory medium for the determination of these types.

The non-mannite fermenters are represented by the Shiga type, whereas the fermenters of mannite include several varieties.

Depending upon their action on saccharose, maltose and dextrin, the mannite fermenters are subdivided into three main groups as shown in the following table:

Type.	Maltose.	Saccharose.	Dextrin.
II. (Park, Hiss)	—	—	—
III. (Flexner-Strong)	—	+	—
IV. (Harris-Wollstein)	+	+	+

The mannite fermenters produce indol in Dunham's peptone solution (some only faintly, Type II), whereas the Shiga variety does not.

4. *Agglutination of bacillus dysenteriæ.* — The organism agglutinates in high dilutions (1–500 up to 1–3000) of anti-dysenteric horse or rabbit serum. The macroscopic agglutination method (for the technic of this method, see Article IV) is to be recommended in preference to the microscopic as giving more clear-cut and satisfactory results.

5. *Animal inoculations with bacillus dysenteriæ.* — The effect upon rabbits of the toxin of the Shiga type of bacillus dysenteriæ is very characteristic, death with the production of a hemorrhagic myelitis occurring twenty-four hours after intravenous inoculation.

Flexner (personal communication) looks upon the production of hemorrhages in the spinal cord of the rabbit following injection of the toxin as perhaps the most important characteristic of the Shiga organism.

Technic.

The technic followed corresponds closely with that employed by Duval[13] and others[24] during the summers of 1902 and 1903.

The stools to be examined were transferred immediately after being passed into sterile Petri dishes and sent directly to the laboratory. As a rule, plating of the specimen had begun within half an hour from the time of its passage. The character of the stools received ranged from pure mucus with streaks of blood to semi-formed feces. The majority contained mucus and blood in varying amounts (see Table VII). Those specimens containing mucus in large quantities were found to yield the best results.

Particles of mucus were selected from the specimen and suspended in bouillon, which was then shaken and allowed to stand for two or three minutes. From the upper third of the suspension a varying number of loopfuls, preferably three or four, were transferred into melted agar, which was then plated. As a rule from 25 to 30 plates were employed.

It was found that the agar to be used for plating was kept liquid for a longer period by melting it by means of steam (Arnold steam sterilizer) rather than by the water bath method. The steam method has the additional advantages that more tubes can be prepared simultaneously and that it is more rapid.

After eighteen to twenty-four hours in the thermostat at 37° C., all small grayish colonies were put into glucose agar or glucose bouillon. The plates were then replaced in the thermostat and at the end of forty-eight hours all colonies which had appeared in the second twenty-four were transferred to the glucose medium. A useful means of recognizing the second twenty-four-hour crop is at the end of the first twenty-four to encircle with a wax pencil-mark all colonies which have appeared during that time. It is as well not to discard the plates for a week or more, so that, if necessary, any later colonies which develop may be examined. By observing these precautions the chances of failure to obtain the organism are reduced to a minimum. The organism was recovered in about an equal number of the cases from the first twenty-four-hour growth as from the second twenty-four. As a rule a great many tubes of the glucose medium were inoculated. In one case (Case No. 14015, Table VII) a total of 460 colonies were studied, two only of these proving to be the dysentery bacillus. No tube of glucose agar was considered negative as regards gas until after an incubation for forty-eight hours at 37° C.

Two methods of procedure are now open.

1. To examine at once all non-gas-forming growths for (*a*) morphology, (*b*) motility and (*c*) staining properties. Then to plant all non-gas-producing, non-motile, Gram-negative, small bacilli into litmus milk.

2. To transfer directly into litmus milk every growth which did not produce gas, deferring the examination for morphology, etc., until the primary reaction in milk has been observed.

Of these methods, the second is to be preferred for the reasons that it is more rapid and there are fewer opportunities for contamination to occur.

The growth of the organism in the milk must be carefully observed and recorded from day to day so that the reactions of the organism in this medium may be accurately followed.

Having determined the character of the organisms, the next step consisted in testing all Gram-negative, non-motile, small bacilli for indol production and at the same time observing their growth in gelatin.

All suspected organisms were then tested by the macroscopic method (using a suspension in 0.6% salt solution of a twelve to twenty-four hour growth on agar slant) for agglutination with anti-dysenteric horse serum (Shiga and Flexner-Harris). The positive organisms agglutinated usually in dilutions as high as 1–2500, one case only not going above 1–500 (see Table VII).

To determine the type of the dysentery organism, mannite-litmus-agar was employed. Thirteen of the cases yielded bacilli which proved to be of the Shiga variety. One was doubtful. One belonged to the class of mannite fermenters.

To further differentiate the mannite-fermenting bacillus, it was grown for forty-eight hours in 1% sugar bouillons (maltose, saccharose, dextrin). These were then tested for acid production by titration with $\frac{N}{10}$ sodium hydrate, phenolphthalein being used as an indicator.

Cultures from Living Cases.

The feces of 17 patients ill with the disease (14 epidemic, 3 in March and April, 1909) were ex-

TABLE VII.

Bacteriological Investigation.

Clinical number	Day of disease	Condition of stool. or condition of intestine.	Plates made.	Morphology.	Motility.	Gram.	Agar slant	Gas	Reaction in litmus milk.	Gelatine.	Bouillon.	Indol.	Mannite-litmus-agar.	Colonies.		Agglutination with Anti-Dysenteric Serum (Shiga).										Agglutination with Anti-Dysenteric Serum (Flexner - Harris).					Control.	Result.	Remarks.
														Exam'd.	P'sitive.	1-100.	1-500.	1-1000.	1-1200.	1-1500.	1-1800.	1-2000.	1-2500	1-5000.	1-10000.	1-100.	1-500.	1-1000.	1-5000.	1-10000.			
13058	3d	Blood and mucus.	25	Small, plump bacillus.	0	0	Grayish-white growth.	0	Acid, then returning to normal, then alkaline (one week).	Not quefied.	Clouded.	0	No fermentation.	32	32	++	+	+	+	+	+	+	+	0	0	0	0	0	0	0	0	B. Dysenteriæ (Shiga).	On 26th day of disease serum clumped B. Flexner up to 1–80 and B. Shiga up to 1–20.
14322	8th	Blood and mucus.	29	Short bacillus.	0	0	Smooth, grayish-white, profuse.	0	Acid, then returning to normal, then becoming alkaline (1 week).	Not iquefied.	Clouded.	0	No fermentation.	25	2	++	+	+	+	+	+	0	0	0	0	+	0	0	0	0	0	B. Dysenteriæ (Shiga).	On 18th day of disease serum clumped B. Flexner up to 1–20. Negative with B. Shiga.
Employee	12th	Blood and mucus.	25	Short, slender bacillus.	0	0	Smooth, grayish-white, profuse.	0	Acid, then returning to normal, then becoming alkaline (3 weeks)	Not iquefied.	Clouded.	0	No fermentation.	50	2	++	+	+	+	0	0	0	0	0	0	0	0	0	0	0	0	B. Dysenteriæ (Shiga).	On 5th day of disease serum clumped B. Shiga up to 1–80 Negative with B. Flexner.
Nurse	2d	Blood and mucus.	25	Small bacillus.	0	0	Smooth, grayish-white, profuse.	0	Acid, then normal, then alkaline (1 week).	Not iquefied.	Clouded.	0	No fermentation.	47	4	++	+	+	+	+	+	+	+	0	0	+	0	0	0	0	0	B. Dysenteriæ (Shiga).	On 28th day of disease serum clumped B. Shiga up to 1–40 and also B. Flexner up to 1–80.
3803	19th	Blood and mucus.	36	Small bacillus.	0	0	Smooth, grayish-white, profuse.	0	Acid, then normal, then alkaline (2½ weeks).	Not iquefied.	Clouded.	0	No fermentation.	62	43	++	+	+	+	+	+	+	+	0	0	0	0	0	0	0	0	B. Dysenteriæ (Shiga).	On 49th day of disease serum clumped both Shiga and Flexner up to 1–80. Six months later clumps Shiga 1–40. Flexner negative.
14156	4th	Thin fecal material, with streaks of mucus and blood.	25	Small bacillus.	0	0	Smooth, grayish-white.	0	Acid, then normal, then faintly alkaline (11 days).	Not iquefied.	Clouded.	0	No fermentation.	57	2	++	++	+	+	+	+	+	+	0	0	+	0	0	0	0	0	B. Dysenteriæ (Shiga.)	On 5th day of disease serum clumped B. Shiga up to 1–80 and B. Flexner up to 1–40.
14161	8th	Much mucus, with streaks of blood.	25	Small, slender bacillus.	0	0	Smooth, grayish-white.	0	Slightly acid, then returning to normal, then becoming alkaline (3 weeks).		Clouded.	0		90	1	See note under "Remarks."																B. Dysenteriæ.	Agglutination tests not available, owing to organism being lost. Milk reaction places it in the dysentery group. The fact that three months after attack patient's serum clumps B. Shiga 1–80 and is negative to B. Flexner suggests that organism is of Shiga type.
14365	3d	Mucus and blood.	25	Short, plump bacillus.	0	0	Profuse, grayish-white.	0	Primary acid, returning to normal. No coagulation.	Not iquefied.	Clouded.	0	No fermentation.	35	4	+	++	++	++	+	+	+	+	0	0	+	0	0	0	0	0	B. Dysenteriæ (Shiga).	On 10th day of disease serum agglutinated both B. Shiga and B. Flexner up to 1–80.
[illegible]	6th	Fecal material, with much blood, slight amount of mucus.	50	Short, plump bacillus.	0	0	Profuse, grayish-white.	0	Acid, then returning to normal. No coagulation.	Not iquefied.	Clouded.	0	No fermentation.	48	15	++	++	+	+	+	+	+	+	0	0	+	0	0	0	0	0	B. Dysenteriæ (Shiga).	On 8th day of disease serum clumped both Shiga and B. Flexner up to 1–80.
[illegible]	2d	Mucus and blood.	24	Small, slender bacillus.	0	0	Profuse, grayish-white.	0	Acid, then normal. No coagulation.	Not iquefied.	Clouded.	0	No fermentation.	48	2	+	+	0	0	0	0	0	0	0	0	0	0	0	0	0	0	B. Dysenteriæ (Shiga).	Serum negative to B. Shiga and B. Flexner on 3d day of disease.
[illegible]	11th	Blood and mucus.	25	Slender bacillus.	0	0	Smooth, grayish-white.	0	Acid, returning to normal. No coagulation. Finally, faint alkalinity.	Not iquefied.	Clouded.	+	Marked fermentation.	47	4	++	++	+	0	0	0	0	0	0	0	+	+	+	0	0	0	B. Dysenteriæ (Park-Hiss type)	Serum negative on 3d day to B. Shiga and B. Flexner. No fermentation of saccharose, maltose or dextrin.
14015	2d	Semi-liquid stool, with blood-streaked mucus.	50	Short, plump bacillus.	0	0	Grayish-white, profuse.	0	Acid, returning to normal. No coagulation.	Not iquefied.	Clouded.	0	No fermentation.	460	2	++	++	+	+	+	+	+	0	0	0	+	0	0	0	0	0	B. Dysenteriæ (Shiga)	Previous attack in February, 1908.
14805	6th	Thin stool, blood stained with shreds of mucus.	25	Short, slender bacillus.	0	0	Smooth, grayish-white, profuse.	0	Acid, returning to normal. No coagulation.	Not liquefied.	Clouded.	0	No fermentation.	57	7	+	+	+	+	+	+	+	+	0	0	0	0	0	0	0	0	B. Dysenteriæ (Shiga).	Serum does not clump B. Shiga or B. Flexner on 3d or on 17th day.
11759	4th	Large masses of mucus, with small amount of blood.	30	Small, plump bacillus.	0	0	Profuse, white.	0	Acid, returning to normal. No coagulation.	Not liquefied.	Clouded.	0	No fermentation.	60	53	++	++	+	+	+	+	+	+	0	0	+	0	0	0	0	0	B. Dysenteriæ (Shiga).	Two previous attacks. Serum agglutinates B. Shiga up to 1–250 on 13th day of disease.
14537	2d	Very bloody, with much mucus; foul odor.	26	Small bacillus.	0	0	Profuse white.	0	Increasing alkaline reaction.	Not liquefied.	Clouded.	0	First decolorizes medium, then produces deep blue color.			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	Negative.	On 4th day of disease serum agglutinates both B. Shiga and B. Flexner up to 1–80.
13809	13th	Semi-solid feces, blood-streaked.	20	Bacillus.	0	0	Grayish-white.	+	Acidified and coagulated.	Not liquefied.	Clouded.	0	Splits media.			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	Negative.	Serum negative to both B. Shiga and B. Flexner three months after attack.
13828	19th	Homogeneous yellow stool, with some mucus.	20	Small, slender bacillus-filaments.	+	0	Smooth, gray-white.	+	Turned acid and remaining acid.	Liquefied.	Clouded.	0	Acid production, with splitting of media.			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	Negative.	Tubercle bacillus obtained in blood and in stools. Serum negative to Shiga and Flexner on 14th day of disease.
2647	11th	Injection, with ulceration and thickening of colon.	24	Bacillus.	0	0	Grayish-white.	0	Acidified and peptonized.	Liquefied.	Clouded.	0	Destroys color.			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	Negative.	
14437	13th	Marked ulceration of colon.	23	Small bacillus.	0	0	Profuse, grayish-white.	0	Acid, then returning to normal, then becoming alkaline (18days).	Not liquefied.	Clouded.	0	No fermentation.	32	2	+	+	+	0	0	0	0	0	0	0	+	0	0	0	0	0	B. Dysenteriæ (Shiga).	
13632	35th	Questionable ulcers of colon.	23	Bacillus.	0	0	Grayish-white.	0	Acidified and peptonized.	Liquefied.	Clouded.	0	Destroys color.			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	Negative.	
14365	13th	Ulceration of colon.	25	Small bacillus.	0	0	Grayish-white.	+	Acidified and peptonized.	Not liquefied.	Clouded.	0	Acid production, with splitting of media.			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	Negative.	
14466	33d	Swelling and injection of follicles in colon. Healing ulcers.	25	Small, slender bacillus.	0	0	Smooth, gray - white, profuse.	0	Acidified, then normal, then peptonized and rendered alkaline.	Not liquefied.	Clouded.	0	Destroys color.			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	Negative.	

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amined for the organism. Of these, 14 (82.4%) yielded bacillus dysenteriæ. The organism was recovered as early as the second day and as late as the nineteenth day of disease (see Table VII). In most of the positive cases one stool only was necessary, but in several, repeated examinations had to be carried out in order to recover the organism.

The proportion of colonies of the dysentery bacillus obtained in the positive cases varied greatly: In one case every colony isolated (32) proved to contain the Shiga type (Case No. 13058, Table VII). In others about one half or two thirds of the colonies isolated were positive. On the other hand, in one case in which 460 colonies were examined, only two colonies proved to be dysentery bacilli.

The fact that the Shiga organism was by far the prevailing type of infection in this epidemic is of extreme interest owing to the severity of the clinical symptoms manifested throughout. Contrary to the recently expressed opinion of Shiga himself, Torrey and others believed that the Shiga type of the dysentery bacillus produces a much more severe form of infection than that usually caused by the organisms of the mannite-fermenting group. The fact that the Shiga type has never been isolated from the normal intestine, whereas other types of the dysentery bacillus, viz., the mannite fermenters, have been so isolated, has led to the belief that these latter may be normal inhabitants of the intestinal tract, while the Shiga bacillus represents a true parasite.

Cultures from Autopsies.

During the epidemic, there occurred 36 deaths directly the result of the disease (23.1% mortality; see Article I, *supra*). Of these, 16 came to autopsy. Three acute cases and 2 chronic cases were selected out of this number, and numerous cultures made from the mucosa of the large bowel. In one of these we were successful in obtaining the bacillus dysenteriæ (Shiga type) (see Table VII, autopsy No. 1269). Two of the negative cases were very late in the disease, one being a thirty-three-day case with healing ulcers, the other a thirty-five-day case with questionable ulcers (see Article VI, *infra*). Our failure to obtain the bacillus in these is consistent with the statements of both Shiga and Flexner that in the chronic cases the bacillus is isolated with much greater difficulty than in the acute.

Blood and Cerebrospinal Fluid Cultures.

Blood cultures were taken in 3 cases, one on the fifth day of disease, another on the eleventh day (day of disease of third not known). All of these were negative.

In 3 cases cultures were made from the cerebrospinal fluid removed by lumbar puncture. These were also negative.

Search for Carriers.

In March of this year (1909) the stools of five patients whose blood had retained the power of agglutinating bacillus dysenteriæ were examined for carriers. These patients had all had severe attacks of the disease six to seven months previous. A complete search was carried out in each case, in one instance as many as 200 colonies being examined. The results in these 5 selected cases were uniformly negative.

The fact that there follow upon every epidemic of bacillary dysentery frequent sporadic cases strongly suggests a protracted persistence of the organism.

The organism has been cultivated by some workers from " normal " children, but not as yet from adults.

The maintenance of sporadic and epidemic bacillary dysentery is undoubtedly accomplished by bacillus carriers, who may be:

1. Healthy, as in the cases of (*a*) three children investigated by Conradi [25] in a contact epidemic of dysentery at Metz, (*b*) three autopsies on non-dysenteric children by Wollstein, and (*c*) two healthy children from whose stools Duval and Shorer [26] cultivated the Flexner-Harris type.
2. Mild cases of dysentery (non-epidemic cases, cases of " winter diarrhea ").
3. Convalescent dysentery cases (feces positive one or two weeks after recovery).

In convalescence after severe bacillary dysentery, the bacillus has been recovered by Shiga and Ohno [27] as late as nineteen days after recovery. The evidence for longer persistence is indirect, but von Drigalski [28] has given examples of recurrence two to five months after recovery.

Conclusions.

1. We confirm previous work on the relation of bacillus dysenteriæ to epidemic asylum dysentery (14 of 17 stools examined positive).
2. Contrary to the experience of most previous investigators of asylum dysentery, we find that the prevailing organism of the Danvers dysentery is the original or Shiga type [12] of bacillus dysenteriæ. (Fisher at Middletown never obtained the original Shiga type.)
3. We obtained the Shiga type from one autopsy in acute dysentery. Two acute and two healing cases yielded no bacillus dysenteriæ.
4. The blood and the cerebrospinal fluid (three trials each) yielded no bacillus dysenteriæ.
5. Contrary to the recommendations of most workers, we would advocate the use of a slightly alkaline agar medium in preference to an acid medium.
6. In the determination of bacillus dysenteriæ, we think that the agglutination of the organism by high dilutions of anti-dysenteric horse serum (such as 1–1000), *as a single test,* is equal or superior to the litmus milk reaction.

IV.

A STUDY OF AGGLUTINATIONS IN DANVERS DYSENTERY CASES: COMPARATIVE AND SERIAL TESTS WITH THE SHIGA AND FLEXNER–HARRIS STRAINS OF BACILLUS DYSENTERIÆ.

BY E. T. F. RICHARDS, A. H. PEABODY AND M. M. CANAVAN.

THE following is a study of agglutinations of the Shiga and Flexner-Harris strains of bacillus dysenteriæ by means of patients' sera, dealing in particular with (*a*) The day of disease on which the agglutination reaction appears (115 cases tested, ranging from the first to the eighty-fourth day after onset of the disease).

(*b*) The question of determining the type of infection on the basis of agglutination reactions.

(*c*) The results of serial agglutination tests in 38 patients during the summer of the epidemic and the winter following.

Agglutination tests were performed with the sera of 115 patients. The macroscopic method was used throughout.

Table VIII shows those sera which were positive (*a*) to both Shiga and Flexner strains; (*b*) to Shiga alone; (*c*) to Flexner alone, and those that were negative to both. It also shows the dates on which the illnesses began.

The tests included cases on all days of the disease from the first to the eighty-fourth day after onset.

Table IX shows the steady rise in positive agglutinations during the first two weeks, and that the maximum of positive results is reached in the third and fourth weeks.

A positive reaction may appear as early as the first day (1 case out of 4 being positive, Shiga type).

During the first week about one half of the cases are positive; in the second week, 92%; in the third and fourth weeks *all* cases are positive (100%, as shown by the table).

TABLE VIII.

Agglutinations by Patients' Sera in Dilutions of 1–20, 1–40, 1–80.

Double.

Case.	Onset of disease.	Day of disease.	Case.	Onset of disease.	Day of disease.
1	Aug. 13, 1908	10	86	Aug. 19, 1908	73
16	,, 16, 1908	3	87	,, 15, 1908	69
17	,, 2, 1908	22	88	,, 4, 1908	58
18	July 27, 1908	27	91	,, 4, 1908	58
28	Aug. 24, 1908	3	92	,, 5, 1908	57
39	,, 9, 1908	8	93	July 19, 1908	73
44	,, 28, 1908	10	94	,, 26, 1908	66
54	,, 6, 1908	40	102	Aug. 21, 1908	43
67	,, 4, 1908	49	118	,, 15, 1908	58
68	July 29, 1908	55	119	,, 19, 1908	54
69	Aug. 24, 1908	30	120	,, 9, 1908	64
73	July 23, 1908	62	123	Oct. 8, 1908	4

Total, 24.

Shiga Type.

Case.	Onset of disease.	Day of disease.	Case.	Onset of disease.	Day of disease.
3	Aug. 2, 1908	21	85	Aug. 1, 1908	56
4	,, 1, 1908	23	95	July 8, 1908	84
5	,, 1, 1908	23	96	,, 11, 1908	81
7	,, 3, 1908	20	97	Aug. 11, 1908	51
36	,, 29, 1908	1	98	Sept. 1, 1908	32
41	,, 17, 1908	5	99	Aug. 8, 1908	54
43	,, 20, 1908	18	100	,, 24, 1908	40
59	,, 25, 1908	26	101	,, 21, 1908	43
70	,, 3, 1908	51	103	,, 18, 1908	46
71	,, 1, 1908	33	104	,, 3, 1908	61
75	July 24, 1908	61	105	,, 24, 1908	40
76	,, 23, 1908	31	108	,, 27, 1908	43
77	Aug. 7, 1908	46	110	,, 28, 1908	42
79	,, 17, 1908	42	111	,, 30, 1908	39
82	,, 1, 1908	59	112	,, 14, 1908	58
84	,, 2, 1908	56	122	Oct. 7, 1908	5

Total, 32.

Flexner Type.

Case.	Onset of disease.	Day of disease.	Case.	Onset of disease.	Day of disease.
2	July 28, 1908	26	53	Aug. 7, 1908	41
6	,, 28, 1908	26	55	July 8, 1908	47
19	Aug. 16, 1908	8	57	Aug. 28, 1908	14
20	,, 2, 1908	22	58	,, 24, 1908	25
21	July 29, 1908	25	60	July 28, 1908	56
23	Aug. 24, 1908	2	61	Aug. 24, 1908	29
24	,, 17, 1908	10	62	,, 25, 1908	28
25	,, 17, 1908	10	63	,, 2, 1908	51
27	,, 21, 1908	6	64	,, 16, 1908	37
29	,, 25, 1908	2	65	,, 20, 1908	33
30	,, 1, 1908	22	72	,, 1, 1908	54
31	,, 4, 1908	18	80	,, 12, 1908	37
34	,, 22, 1908	5	81	,, 20, 1908	45
45	Sept. 3, 1908	8	89	,, 19, 1908	73
46	Aug. 28, 1908	12	90	,, 18, 1908	44
49	,, 24, 1908	18	106	July 24, 1908	77
50	Sept. 2, 1908	9	107	Sept. 30, 1908	82
51	Aug. 24, 1908	25	121	,, 28, 1908	14
52	,, 23, 1908	26			

Total, 37,

Negative.

Case.	Onset of disease.	Day of disease.	Case.	Onset of disease.	Day of disease.
22	Aug. 22, 1908	2	56	Aug. 7, 1908	42
26	,, 26, 1908	1	66	July 31, 1908	52
32	July 23, 1908	32	74	Aug. 2, 1908	52
33	Aug. 24, 1908	3	78	,, 5, 1908	54
35	July 14, 1908	44	83	,, 4, 1908	56
37	Aug. 24, 1908	3	107	July 19, 1908	82
38	,, 26, 1908	1	109	,, 24, 1908	76
40	,, 24, 1908	3	113	,, 19, 1908	82
42	Sept. 6, 1908	1	114	Aug. 1, 1908	69
47	,, 6, 1908	3	115	,, 14, 1908	56
48	,, 9, 1908	2	116	,, 23, 1908	47

Total, 22.

Table X shows the results of a series of agglutination tests performed in 38 cases. Many cases (such as 67, 73, 86, etc.) demonstrate that the agglutinins may persist as late as the seventh or eighth month after the attack. Further tests may show that they persist even longer.

Several of the cases (such as 107, 109, 113) give a positive reaction with the Flexner type of bacillus dysenteriæ seven months after the attack, whereas *during* the attack they were negative. This may possibly be explained by a slight recurrence of the infection. In a series of ten controls, one gave a positive reaction to Flexner in dilutions of 1–20, 1–40 and 1–80. It is possible that this individual had had dysentery at some previous time, but this could not be definitely determined.

A number of the cases show common agglutinins, for example Cases 89 and 79. In such the serum of the patient agglutinates both the Shiga and the Flexner-Harris strains of the bacillus, but usually one in a higher dilution than the other.

The transient character of certain of the agglutinins (all being of the Flexner type) is of interest. Cases 112 and 116 illustrate this point; the reaction was not present in October, but appeared in February. In March it was again absent.

If the supposition that the Flexner strain of bacillus dysenteriæ is a normal inhabitant of the intestinal tract be accepted, many of these results are rendered capable of explanation.

TABLE IX.

Agglutinations of B. Dysenteriæ by Patients' Sera, Arranged According to Day of Disease.

Day since onset of disease.		Total cases.	Positive to			Negative.		
			Shiga type.	Flexner type.	Both.			
First week	1	4	1			3	19 cases tried, 52.6 % positive.	32 cases tried; 69% positive.
	2	3			1	2		
	3	7		1	2	4		
	4	1			1			
	5	3	1		2			
	6	1		1				
Second week	8	3		1	2		13 cases tried, 92.3% positive.	
	9	1			1			
	10	4		2	2			
	12	2		1	1			
	14	3		2		1		
Third week	18	3	1	2			5 cases tried, 100% positive.	19 cases tried; 10.% positive.
	20	1	1					
	21	1	1					
Fourth week	22	3	1	2			14 cases tried, 100% positive.	
	23	2	2					
	25	3		3				
	26	4		1	3			
	27	1			1			
	28	1			1			
Fifth week	29	1		1			6 cases tried, 83.3% positive.	16 cases tried; 88% positive.
	30	1			1			
	31	1	1					
	32	2	1			1		
	33	1		1				
Sixth week	37	2		2			10 cases tried, 90% positive.	
	39	1	1					
	40	3	2		1			
	41	1		1				
	42	3	2			1		
Seventh week	43	3	2		1		11 cases tried, 81% positive.	26 cases tried; 73% positive.
	44	2			1	1		
	45	1			1			
	46	2	2					
	47	2		1		1		
	49	1			1			
Eighth week	51	3	2		1		15 cases tried, 60% positive.	
	52	2				2		
	53	1	1					
	54	4	1		2	1		
	55	1			1			
	56	4	1		1	2		
Ninth week	57	1			1		10 cases tried, 100% positive.	14 cases tried; 93% positive.
	58	5	2		3			
	59	1	1					
	61	2	2					
	62	1			1			
Tenth week	64	1			1		4 cases tried, 75% positive.	
	66	1			1			
	69	2			1	1		
Eleventh week	73	3			3		9 cases tried, 66% positive.	
	76	1				1		
	77	1			1			
	81	1	1					
	82	2				2		
	84	1	1					

TABLE X.

SERIAL AGGLUTINATIONS WITH PATIENTS' SERA IN THIRTY-EIGHT CASES.

Date.		Shiga Type.			Flexner Type.		
		1–20	1–40	1–80	1–20	1–40	1–80
	Aug., 1908	0	0	0	0	0	0
22	Feb., 1909	+	0	0	0	0	0
	March, 1909	+	+ sl.	0	0	0	0
	Sept., 1908	+	+	+	+	+	+
54	Feb., 1909	0	0	0	0	0	0
	March, 1909	0	0	0	0	0	0
	Sept., 1908	+	+	0	+	+	+
63	Feb., 1909	+	+	0	0	0	0
	March, 1909	+	0	0	0	0	0
	Sept., 1908	+	+	+	+	+	+
67	Feb., 1909	+ +	+ +	0	0	0	0
	March, 1909	+	+	0	0	0	0
	Sept., 1908	+	0	0	0	0	0
71	Feb., 1909	+	0	0	0	0	0
	March, 1909	+	0	0	0	0	0
	Sept., 1908	+	+	+	+	+	+
72	Feb., 1909	0	0	0	0	0	0
	March, 1909	+ sl.	+ sl.	0	+ sl.	+ sl.	+ sl.
	Sept., 1908	+	+	+	+	+	0
73	Feb., 1909	+	0	0	0	0	0
	March, 1909	+	+	0	0	0	0
	Sept., 1908	–	–	–	–	–	–
74	Feb., 1909	–	–	–	–	–	–
	March, 1909	–	–	–	–	–	–
	Sept., 1908	+	+	+	0	0	0
75	Feb., 1909	0	0	0	0	0	0
	March, 1909	0	0	0	0	0	0
	Sept., 1908	+	+	0	0	0	0
79	Feb., 1909	+	+	0	+	0	0
	March, 1909	+	0	0	0	0	0
	Sept., 1908	+	+	0	+	+	+
81	Feb., 1909	+	0	0	0	0	0
	March, 1909	+	+	0	0	0	0
	Sept., 1908	+	+	0	0	0	0
82	Feb., 1909	0	0	0	0	0	0
	March, 1909	+	+	0	0	0	0
	Sept., 1908	0	0	0	0	0	0
83	Feb., 1909	0	0	0	0	0	0
	March, 1909	+ sl.	+ sl.	0	0	0	0
	Sept., 1908	+	+	+	0	0	0
84	Feb., 1909	0	0	0	0	0	0
	March, 1909	0	0	0	0	0	0
	Oct., 1908	+	+	+	+	+	+
86	Feb., 1909	+	+	+	0	0	0
	March, 1909	+ +	+	+	+	+	+ sl.
	Oct., 1908	+	+	+	+	+	+
87	Feb., 1909	0	0	0	+ ?	+ ?	0
	March, 1909	+	0	0	+	0	0
	Oct., 1908	+	+	+	+	+	+
88	Feb., 1909	0	0	0	+	0	0
	March, 1909	+	0	0	+	0	0
	Oct., 1908	+	+	0	+	+	+
89	Feb., 1909	0	0	0	+	+	+
	March, 1909	+	0	0	+	0	0
	Oct., 1908	+	0	0	+	+	+
90	Feb., 1909	+ +	+ +	+	0	0	0
	March, 1909	+	+	0	0	0	0
	Aug., 1908	+	+	0	+	+	0
91	Feb., 1909	0	0	0	+	0	0
	March, 1909	0	0	0	+	0	0
	Oct., 1908	+	+	+	+	+	+
92	Feb., 1909	0	0	0	+	+	0
	March, 1909	0	0	0	0	0	0
	Oct., 1908	+	+	+	+	+	+
93	Feb., 1909	0	0	0	0	0	0
	March, 1909	+	0	0	0	0	0
	Oct., 1908	+	+	0	0	0	0
96	Feb., 1909	0	0	0	+	+	+
	March, 1909	0	0	0	0	0	0
	Oct., 1908	+	+	+	0	0	0
97	Feb., 1909	0	0	0	+	0	0
	March, 1909	Refused.					
	Oct., 1908	+ +	+ +	+ +	0	0	0
99	Feb., 1909	+	0	0	+	+	0
	March, 1909	+ +	0	0	+	0	0
	Oct., 1908	+	+	+	0	0	0
101	Feb., 1909	0	0	0	+	+	0
	March, 1909	0	0	0	+	0	0
	Oct., 1908	+ +	+ +	+ +	0	0	0
103	Feb., 1909	+ +	0	0	0	0	0
	March, 1909	0	0	0	0	0	0
	Oct., 1908	+ +	+ +	+ +	0	0	0
104	Feb., 1909	+ +	0	0	0	0	0
	March, 1909	+	0	0	+	0	0
	Oct., 1908	+ +	+ +	+ +	0	0	0
105	Feb., 1909	0	0	0	+	0	0
	March, 1909	Away on vacation (attendant).					
	Oct., 1908	+	+	+	+	+	+
106	Feb., 1909	0	0	0	0	0	0
	March, 1909	0	0	0	+	+	0
	Oct., 1908	0	0	0	0	0	0
107	Feb., 1909	0	0	0	0	0	0
	March, 1909	0	0	0	+	+	+
	Oct., 1908	+ +	+ +	+ +	0	0	0
108	Feb., 1909	0	0	0	0	0	0
	March, 1909	0	0	0	+	0	0
	Oct., 1908	0	0	0	0	0	0
109	Feb., 1909	0	0	0	0	0	0
	March, 1909	0	0	0	+	+	+
	Oct., 1908	+	+	0	0	0	0
110	Feb., 1909	0	0	0	+	+	+
	March, 1909	+	0	0	+	+	0
	Oct., 1908	+	+	+	0	0	0
112	Feb., 1909	0	0	0	+ +	+ +	+
	March, 1909	0	0	0	0	0	0
	Oct., 1908	0	0	0	0	0	0
113	Feb., 1909	0	0	0	0	0	0
	March, 1909	0	0	0	+	+	0
	Oct., 1908	0	0	0	0	0	0
115	Feb., 1909	0	0	0	0	0	0
	March, 1909	0	0	0	+	0	0
	Oct., 1908	0	0	0	0	0	0
116	Feb., 1909	0	0	0	+ +	+ +	+ +
	March, 1909	0	0	0	0	0	0

NOTE. No. 86, Clumps B. Shiga, 1–300, in March, and B. Flexner, 1–200. No. 109, Clumps B. Shiga, 1–300, B. Flexner negative.

TECHNIC OF MACROSCOPIC AGGLUTINATIONS.*

Since in working with the insane many difficulties not usually encountered in other hospitals are met with, the simplest methods are desirable.

The blood is most easily collected in wide-mouthed tubes, glass tubing of 0.6 cm. bore and 6 cm. in length being employed. These are sealed at one end and the other end flared by heat and pressure. (They may be used repeatedly if carefully cleansed and sterilized each time.)

The hand of the patient is soaked in warm water for five to ten minutes, dried quickly and one of the fingers then punctured with a blood lancet. The blood will in most cases drip readily into the expanded end of the tube, rapidly filling it. When the blood is hard to obtain by reason of poor superficial circulation, such devices as putting an elastic band at the base of the finger, prolonging the bath, etc., may be resorted to. Having filled and labeled the tube, cover it with a rubber cap and set aside for a few hours.

Remove cap and gently separate blood from sides of tube to facilitate clotting. When the serum has separated into a clear zone above the clot the dilutions of the serum may be made. For this, sterile pipettes graduated to $\frac{1}{20}$ ccm., thin glass tubes 10 cm. long by 1 to 1½ cm. in diameter, test tube racks and 0.6% salt solution are required.

We found that blocks of wood 32 cm. long, 6 cm. wide and 4 cm. deep, with places for 20 tubes, were more convenient than the ordinary test-tube racks. (Observation of apparently minor points, such as these, are of advantage when from two to three hundred tubes have to be set up at a time.)

The suspension of the organism is next prepared. This is done by adding a small quantity to begin with of 0.6% salt solution to an abundant eighteen-hour agar slant culture and rubbing it up to a smooth paste. More of the salt solution is then added, until about 1.5 or 2 ccm. of an even emulsion are obtained.

For the routine agglutinations, stock cultures of the Shiga and Flexner organisms were used with three dilutions of the patient's serum, viz., (*a*) a dilution of 1-20, (*b*) 1-40 and (*c*) 1-80. The method of procedure is now as follows:

Label the tubes with the organism, the serum and the dilution and place them in the test-tube holder. Put into tube: "Flexner (*a*)," 3.8 ccm. NaCl; "Flexner (*b*)," .5 ccm. NaCl; "Flexner (*c*)," .75 ccm. NaCl. Put into tube: "Shiga (*b*)," .5 ccm. NaCl; "Shiga (*c*)," .75 ccm. NaCl.

Into "Flexner (*a*)," which contains 3.8 ccm. NaCl (as above), place 0.2 ccm. serum. The dilution is, therefore, 1-20 and the amount 4 ccm. From this, 0.5 ccm. is placed in "Shiga (*b*)," and 0.25 ccm. of "Flexner (*a*)" is placed in "Shiga (*c*)" and "Flexner (*c*)." The remainder is then divided with "Shiga (*a*)." There are now two complete sets of diluted serum — 1-20, 1-40, 1-80.

One cubic centimeter 0.6% salt solution is used for every set as a control. With a sterile pipette draw up one of the prepared suspensions and place 3 drops into each of the corresponding tubes as well as into the control tube. With a fresh pipette repeat for the other organism. Shake the tubes, stopper with cotton and place on ice. At the end of eighteen to twenty-four hours they are withdrawn from the refrigerator and observations upon the reaction made.

CONCLUSIONS.

1. Sera of 115 dysenteric patients were tested for agglutination with stock cultures of the Shiga and Flexner-Harris types of bacillus dysenteriæ. Eighty-one per cent of these sera gave positive agglutination reactions, in the sense that they reacted with Shiga (32 cases), with Flexner-Harris (37 cases) or with both (24 cases). Nineteen per cent (22 cases) were negative.

2. Ten control sera, from persons without obtainable history of dysentery, proved negative, except in one instance (positive with the Flexner-Harris type, $\frac{1}{80}$).

3. A positive reaction was obtained in 1 case of 4 tested on the first day of symptoms, in 52.6% of all cases (19) tested during the first week and in 92.3% of cases (13) tested during the second week. The cases (19) tested during the third and fourth weeks after onset were all positive to Shiga, Flexner-Harris or both. The percentages of positive reactions during subsequent weeks decline somewhat gradually.

4. The serum of a case showing the Shiga type on culture may agglutinate in higher dilution a *stock* Flexner-Harris type than a *stock* Shiga type. One serum from a case whose stools yielded the Park-Hiss type of bacillus dysenteriæ in this epidemic failed to agglutinate the stock cultures of either Shiga or Flexner-Harris.

5. Analysis of the table of agglutinations (VIII) shows that there was a sharp increase in the number of cases with sera agglutinating the Shiga type (14) as compared with sera agglutinating the Flexner-Harris type (7) during the first two weeks in August, corresponding with the highest elevation in point of morbidity. (Fig. I.) The cases arising during other weeks are either too few for deductions or else show a marked preponderance of Flexner-Harris agglutinators. It is possible, but cannot be proved, that the first prominence in the curve of Fig. I (first phase of epidemic) corresponds to an invasion of organisms of the Shiga type, whereas organisms of the mannite-fermenting type may be found throughout the epidemic. This point should be considered in future work.

6. Serial agglutination tests were carried out in 38 cases: (1) During disease or convalescence, 1908; (2) in February, 1909, and (3) in March, 1909. The cases were chosen at random as clinically typical cases of dysentery. Only 1 of the 38 cases was negative in all three serial tests. This high percentage (97%) of positives with employment of serial tests may be contrasted with the percentage (81%) obtained from cases tested during the disease alone. The results are interesting and capable of several explanations (such as tardy development of agglutinins? persistence of organisms producing agglutinins in the absence of symptoms? reinfection? crossed agglutinin formation [bacillus coli]?).

7. Several instances occurred in the serial tests of the development of agglutinins for Flexner-Harris many months subsequent to recovery from dysentery. In some instances these agglu-

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* We desire to express our thanks to Dr. F. P. Gay for suggestions in regard to this technic.

tinins were transient (e. g., present in February, absent in March). No instance of *de novo* development of Shiga agglutinins (either persistent or transient) was observed during the February and March, 1909, examinations.

8. Conclusions 5, 6 and 7 point with some probability to the hypothesis, already advanced, that the Shiga type of bacillus dysenteriæ is a true parasite, whereas the other (mannite-fermenting) types are frequently normal inhabitants of the intestinal tract.

V.

THE BLOOD CELL PICTURE IN BACILLARY DYSENTERY.

BY MYRTELLE M. CANAVAN.

THE result of the blood findings in cases of dysentery occurring in the epidemic at the Danvers Insane Hospital in the summer of 1908 is here given. It represents frequent complete examinations, beginning with new cases on the first day when possible, and continuing to the tenth day.

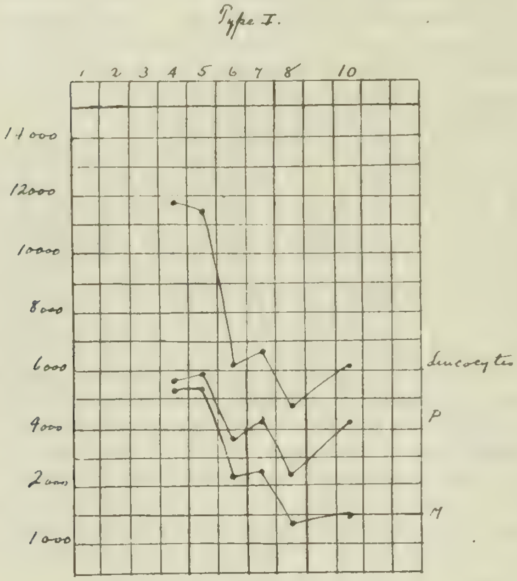


FIG. VI.

It was found that all cases presented an initial increase of the white blood corpuscles, which fell to the normal limits on the fifth day and did not rise again. The proportion of the lymphocytes is slightly higher than normal and did not at once drop with the decrease in the total number of the white corpuscles on the fifth day, but gradually returned to normal by the tenth day.

The injection of anti-dysenteric serum in doses of from 10–40 ccm. did not in any way directly affect the counts. In one of the 34 cases treated with serum an antitoxin rash developed and with it an increase of the white blood corpuscles of the polynuclear variety.

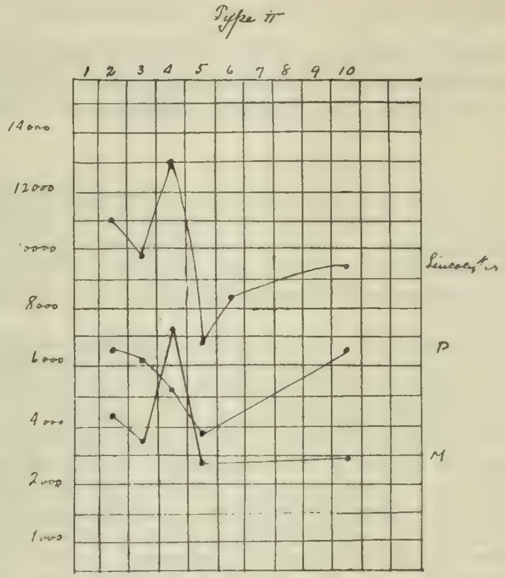


FIG. VII.

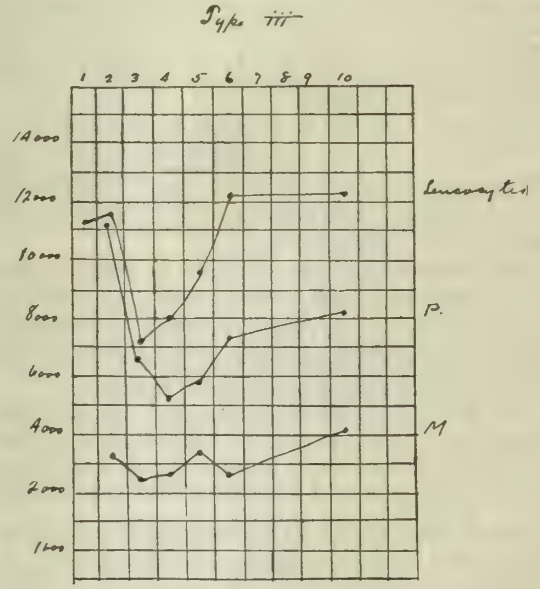


FIG. VIII.

Types of counts illustrate: (M.L.) Variations by days with no serum. (V.S.) Variations by days not influenced by serum. (M.V.) Variations by days with antitoxin rash following inoculation with serum.

The negative results in the pathology of the spleen in this infection are interesting from the fact that the bacillus is not found in the blood and from the viewpoint of the blood picture.

VI.

THE LESIONS OF BACILLARY DYSENTERY.

BY E. E. SOUTHARD AND E. T. F. RICHARDS.

THE lesions of bacillary dysentery have never been subjected to a comprehensive analysis, such as we possess for the lesions of amebic dysentery,[29] epidemic meningitis,[30] typhoid fever,[31] diphtheria[32] and smallpox.[33] In these diseases the value of a thorough study of all the viscera, both those which bear the brunt of the disease and all the other

TABLE XI.

CASE 1. M. L.

Day of disease.	Hour.	HB.	R. B. C.	Index.	W. B. C.	No. cells.	Total per cent.	P.	S. L.	L. L.	T.	E.	M.	Serum.	Remarks.
4	3 P.M.	70	3,940,000	.8	11,800	458	97.13	47% N5,546	45.54 5,165.92	1.4 165.20	1.4 165.20	.7 82.60	1.09 128.62	0	12–14 bloody stools first day.
5	3 P.M.	70	4,294,000	.7	11,400	944	100	48.71 5,592.94	36.33 4,141.62	8.44 962.16	3.21 365.94	3.31 337.34	4 seen	0	Patient's serum agglutinated 1–80 Flexner.
6	10 A.M.	70	3,438,000	1.0	6,200	568	99.12	59.95 3,716.9	23.71 1,470.02	7.57 469.34	5.9 365.8	1.05 65.1	1.05 65.1	0	Bloody stools.
7	11 A.M.	70	3,708,000	1.0	6,800	584	99.93	60.52 4,115.36	35.49 2,413.12	1.02 69.36	1.3 88.40	1.6 108.80	4 seen	0	4 bloody stools.
8	10 A.M.	70	2,670,000	1+	4,800	514	99.59	60.11 2,885.28	22.76 1,092.48	14.20 681.60	1.02 48.9	1.5 72.0	4 seen	0	No bloody stools.
10	10 A.M.	–	–	–	6,200	524	99.93	66.79 4,140.98	27.67 1,715.54	2.86 177.32	1.3 80.6	1.31 81.22	6 seen	0	Patient up and dressed.

CASE 2. V. S.

Day of disease.	Hour.	HB.	R. B. C.	Index.	W. B. C.	No. cells.	Total per cent.	P.	S. L.	L. L.	T.	E.	M.	Serum.	Remarks.
2	10 A.M.	60–70	3,882,000	.9–1	11,000	560	99.96	58.92 6,481.2	23.57 2,592	7.5 825	8.9 979	1.07 117.7	0	32 hr. after 20 ccm.	Frequent painful M. and B.
3	11 A.M.	70	3,785,000	1.0	9,800	325	99.81	63.38 6,211.24	23.69 2,321.62	7.74 758.12	5.0 490	2 seen	3 seen	20 ccm.	Serum agglutinated Shiga and Flexner, 1–40.
4	10 A.M.	60	3,158,000	1.0	13,000	620	99.52	40.32 5,241.60	31.4 4,082.0	12.8 1,664.0	15.0 1,950	3 seen	1 seen	0	No blood in morning stools.
5	9 A.M.	60	3,710,000	1+	6,800	419	99.98	58.35 3,967.80	28.83 1,960.44	7.4 503.20	5.4 367.20	2 seen	2 seen	0	Blood-covered formed movements.
6	10 A.M.	60	2,720,000	1+	8,400	–	–	–	–	–	–	–	–	–	
10	10 A.M.	70	3,640,000	1+	9,400	567	99.99	70.51 6,697.24	22.65 2,129.10	4.93 463.42	1.9 178.60			40 ccm.	

CASE 3. M.V.

Day of disease.	Hour.	HB.	R. B. C.	Index.	W. B. C.	No. cells.	Total per cent.	P.	S. L.	L. L.	T.	E.	M.	Serum.	Remarks.
1	1.45 P.M.	70	3,052,000	1+	11,400	553	99.96	56.92	30.74	4.5	3.4	4.2	0	0	Frequent watery stools.
2	10 A.M.	60–70	3,625,000	1.0	14,600	534	99.91	76.10 11,110.60	16.60 2,423.06	4.11 600.06	2.2 321.20	.9 131.40	0	32° after 10 ccm.	Rash on body.
3	11 A.M.	60	3,896,000	.9	9,200	547	99.16	70.56 6,491.52	21.02 1,933.84	5.48 504.16	.9 82.80	1.2 110.40	0	0	Rash faded.
4	10 A.M.	60	3,784,000	.9	8,000	501	99.84	62.87 5,029.60	27.10 2,168.0	5.18 414.40	1.1 88	3.59 257.20	0	0	
5	10 A.M.	60	3,700,000	.9	9,600	523	99.91	62.14 5,795.44	27.70 2,719.20	4.95 475.20	2.86 274.56	2.4 23.04	0	0	Injected serum, 10 ccm., in afternoon.
6	9.30 A.M.	70	3,282,000	1+	12,200	317	99.58	76.21 9,297.62	15.86 1,934.92	4.11 501.42	3.4 414.80	4 seen	0	+	Rash again; frequent stools.
10	10 A.M.	60	3,532,000	.9	12,200	568	99.90	65.14 7,957.08	27.36 3,337.92	3.0 366.0	2.1 256.20	2.3 280.60	Several seen	0	Rash out.

NOTE.— P. indicates polymorphonuclear leucocytes; S. L., small lymphocytes; L. L., large lymphocytes; T., transitional cells; E., eosinophile cells; M., mast-cells.

major viscera, has been convincingly shown by Councilman and his associates in extensive monographs. The effort of these men has been to extend the lines of research in such wise as to include the widest and most intimate effects of toxemia on the body at large. These reactions of the body as a whole to toxemia of several types and to septicemias of all sorts deserve the most rigorous and extended consideration. But, so far, such searching analysis has for the most part been neglected in favor of organological studies or studies of local tissue reactions. Nevertheless, it is certain that some of the most fruitful studies in organology have followed closely on comparative analyses such as those mentioned above (compare Mallory's more recent work on the liver [34] following his typhoid fever work, or Councilman's kidney work [35] growing out of the comparative analysis of great groups of cases).

It has been thought wise to subject the tissues of fatal dysentery cases to a careful comparative study with a view to discovering the essential lesions of the disease and to tracing the main features of its histopathology in the body at large. The classical descriptions are certainly of no great service in this aim and are in some cases too brief and summary, and in others, as in Shiga's own account,[1] much too schematic.

Lesions of the Trunk Viscera.

Heart. — Lesions of the heart were noted in the gross in every case except one (1264), and even the single case devoid of gross heart lesion showed a slight degree of chronic interstitial myocarditis upon microscopic examination. The gross lesions discovered were valvular in 12 cases (mitral alone involved or in combination with other valves, aortic alone involved or in combination with other valves, 8 cases); pigmentation in 7 cases, hypertrophy in 3 cases (445, 410, 380 gm. respectively). Vegetative endocarditis was noted in 4 cases, in each case affecting the aortic valve. Microscopically no one of the 16 hearts examined was quite devoid of interstitial myocarditis (sections from the left ventricle were examined as routine), ranging from extremely slight or slight in 3 cases (1255, age seventy-two; 1256, age, fifty-three; 1264, age sixty), to extreme (1271, age seventy-six). Fatty myocarditis was not a prominent factor in these fatal cases.

It would appear that death in dysentery may occur in the absence of heart and kidney lesions providing there is another coexistent acute disease.

The case with least well-marked heart lesions was also devoid of any chronic kidney lesion, but gave evidence of a septicemia (staphylococcus pyogenes albus) and infection of the cerebrospinal fluid (staphylococcus pyogenes aureus).

This case (1264), an imbecile of sixty years, showed emaciation and slight decubitus, together with a bronchopneumonia of one week's duration. There were no ulcerations in the intestines, which showed merely a reddening of the jejunal mucosa and slightly enlarged mesenteric lymph nodes, from which a bacillus (bacillus of the dysenteric group?) was obtained.

Circulatory system. — Only one case was quite devoid of gross lesions in the vessels. This case was 1269, age fifty-three, which showed aortic, vegetative endocarditis, and fatty myocarditis with chronic nephritis (death after twelve days of dysentery with acute and healing ulcers, pseudomembrane and enlarged mesenteric lymph nodes).

Only one of the cases showed a high degree of general arteriosclerosis. Thirteen of the cases showed aortic sclerosis, though in three instances slight. Eleven cases showed a combination of aortic and coronary arteriosclerosis.

The acute lesions of the vessels of the mucosa and submucosa of the intestine are considered under the head of the intestines. No generalized occurrence of such lesions was noted, although reference may be made to 2 cases (926 and 1201) which showed acute thrombi of superficial cerebral arteries.

Kidney. — Next in importance to the lesions of the heart and vessels, and possibly more closely related to conditions favoring death in dysentery, are the lesions of the kidney. Varying degrees of chronic nephritis were detected in the gross in 11 cases, and in one other microscopic lesions of the chronic interstitial type were detected. Three cases showed acute nephritis with fatty change. One case showed extensive amyloid degeneration of kidney as well as of liver and spleen (tuberculous lymph nodes in iliac chain).

A striking acute interstitial nephritis of 1 case is described in detail in Article VIII. It is a question whether this lesion is to be attributed to the dysentery toxin, since the blood, cerebrospinal fluid, mesenteric lymph nodes and rectal wall showed at autopsy a bacillus of the group of typhaceæ, possibly in part responsible for the extreme severity of the case.

One case (1264) showed no evidence of renal lesion. The cause of death in this case is mentioned above under the heading of lesions of the heart. It seems scarcely possible to exclude either the lesions of the heart and vessels or those of the kidney from the factors which lead to death in dysentery. It is possible that these factors are more directly responsible for death in the presence of dysentery than the factor of mere age or of organic nervous disease.

Liver. — The liver fails to show constant lesions in bacillary dysentery. Eight of the livers examined show few or no lesions in the gross. There were, however, 3 cases of grossly evident chronic passive congestion, 3 cases of chronic perihepatitis, 2 cases of grossly marked fatty liver, 4 cases of well-marked hepatic atrophy of the chronic type. Focal necroses were found in Case 1273 (see Article VIII). It may be remarked that the liver in the cases without intestinal ulceration showed in 2 cases chronic passive congestion, in 1 case marked chronic perihepatitis, in 1 case hepatic atrophy (725 gm.). There were 2 cases in which the duration of the dysentery was sixteen and twenty-one days. One of these (1258) was the case of marked hepatic atrophy, and the other case showed chronic passive congestion. It cannot be stated that there was a marked disorder in the bile formation in the liver in these cases.

Gall bladder. — The incidence of disease of the gall bladder in cases of dysentery is especially interesting on account of the work of Flexner and Sweet on the "Pathogenesis of Experimental Colitis." [36] They found that "in rabbits the characteristic action of the toxin depends upon the integrity of the biliary secretion into the intestine. When the bile is prevented from entering the intestine, either by ligature and section of the duct or by establishment of a biliary fistula, no lesions whatever of the large intestine appear, or they are inconsiderable in extent."

Cholelithiasis occurred in 8 of 14 cases in which notes are preserved. The gall bladder is described as normal in 5 cases and as distended with green bile in 1 case. In 1 case (1261) the gall bladder "was obliterated by a single stone (4.5 x 3 x 2.5 cm.), on the surface of which were imbedded numerous small stones. The surrounding peritoneum is thin and tightly stretched over the mass in such a way that the satellite stones seem as if about to break into the peritoneal cavity." This case was that of a woman of forty-five years whose dysentery lasted eight days and showed unusually severe lesions. Another case, 1266, female of fifty-four years, with dysentery of sixteen days' duration, and thickening and superficial ulcerations of the cecum, showed a purulent cholecystitis with ulcerations of the mucosa and closure of the cystic duct, occlusion of the proximal end of the bladder by a calculus (1 cm. in diameter) and enlargement of the neighboring lymph nodes. The common duct was, however, patent, normal and bile stained.

Flexner and Sweet were inclined to the view that dysentery toxin is both excreted by and absorbed into the blood from the intestine. They believe that it would "agree best with experimental results to conclude that of all the circulating poison at any one period, a fraction only is eliminated by the intestinal wall, while the larger fraction passes out of the circulation through the liver. This large fraction entering the intestine with the bile is then partially or wholly reabsorbed, only to be subjected in turn to the same series of events."

We have reviewed our non-ulcerative cases to determine whether there were any instances in which the bile could be definitely proved to be passed either not at all or in small quantity into the intestine. Of 6 cases without ulcerations of the intestine, 3 cases showed no lesions of the gall bladder and ducts. One case has no note concerning the gall bladder, 2 cases show cholelithiasis, and 1 case, distention of the gall bladder. With respect to the condition of the duodenal mucosa, of the 7 non-ulcerative cases, 4 show no lesions of the duodenum (1 of these 4 showed a small and constricted duodenum), but 3 other cases showed respectively: 1256, marked injection of the duodenal vessels with one small hemorrhagic area; 1258, marked congestion of the vessels of the entire intestine without ulceration, very little fecal matter in the intestines (this patient persistently refused food); 1259, engorgement of the blood vessels on the crests of the villi in the duodenum and upper jejunum. It is possible that the duodenitis in these cases may have interfered with the outpouring of bile to some extent, but in general there seems to be no definite evidence from these human cases either for or against the hypothesis of Flexner and Sweet.

Lungs. — The lungs showed well-marked bronchopneumonia in the gross in 5 cases, to which series was added a sixth upon microscopic examination. A seventh case showed tuberculosis of the lungs. There was no case of abscess of the lung in the epidemic series. The durations of dysentery in the cases of bronchopneumonia were, except in one instance, short: 1255, age seventy-two, six days; 1256, age fifty-three, eight days; 1259, age seventy, eight days; 1264, age sixty, eight days; 1268, age eighty, six days; 1271, age seventy-three, thirty-five days. It will be noted from a correlation of the cases of bronchopneumonia with cases showing no ulceration that bronchopneumonia is an important early complication in dysentery, and that all but 2 of the cases without ulceration died, showing bronchopneumonia after a period of eight days or less of dysentery. The cases in which the patient lasted longer but failed to develop ulceration showed no lung lesion, but both showed septicemia with staphylococcus pyogenes albus and an involvement of the mesenteric lymph nodes and of cerebrospinal fluid with cocci. In 1 case (1271, age seventy-three) death ensued in the healing stage of dysentery from bronchopneumonia. Six of the cases showed normal lungs.

Spleen. — The spleen showed gross chronic interstitial change in 6 cases, and amyloid degeneration in 1 case. With respect to acute changes, 2 cases showed small hemorrhages in the gross, together with a loss of consistence. Loss of consistence was also noted in 3 other cases. In the cases which showed loss of consistence in the spleen, septicemia was demonstrated in 2 cases, and in other cases osteomyelitis, decubitus (2 cases) and bronchopneumonia were demonstrable. It seems, therefore, that the spleen cannot be stated to show gross lesions in uncomplicated dysentery. Microscopically, hemorrhages were sometimes found, but as in Case 1273, especially described in Article VIII, the purity of the dysenteric infection may be questioned.

General condition. — No general statement can be made concerning the nutrition, which was good in 8 of the 16 cases, and poor in 8. The nutrition fails to vary according to the duration of the disease and was maintained well in cases of thirteen, fourteen, sixteen and thirty-five days' duration. Nutrition was poor in 5 of the 9 ulcerative cases, but was maintained in the other 4.

Decubitus is important as an index of the trophic condition of patients in asylums, and it will be remembered that Claye Shaw at one time advanced the hypothesis that dysenteric ulcers might be analogous with areas of decubitus and

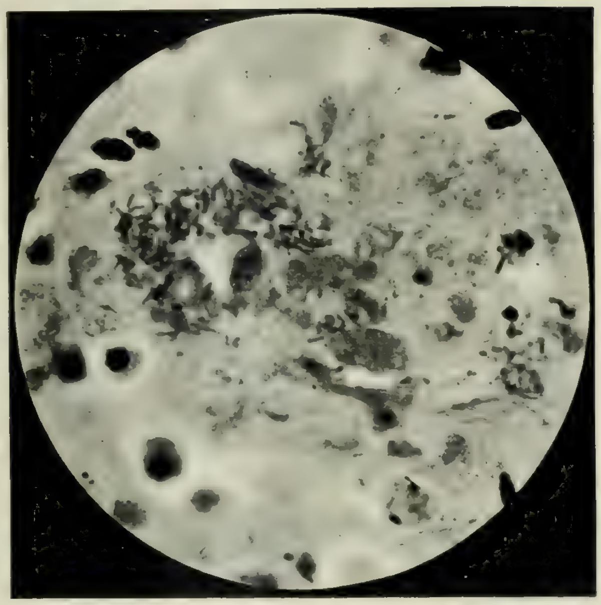


PLATE 1. x 1400. Group of bacteria having the morphology of bacillus dysenteriæ lying in the wall of a lymphatic or small tissue-cleft containing large mononuclear cells. Such groups of bacteria are, as a rule, confined to the mucosa. The absence of polynuclear leucocytes near these collections of bacteria is characteristic. Phagocytosis of bacteria resembling bacillus dysenteriæ by large mononuclear cells is an occasional finding. Elsewhere in the injured mucosa are found collections of cocci. The preparation is from tissue of colon fixed in Zenker's fluid and stained with eosin and methylene blue.

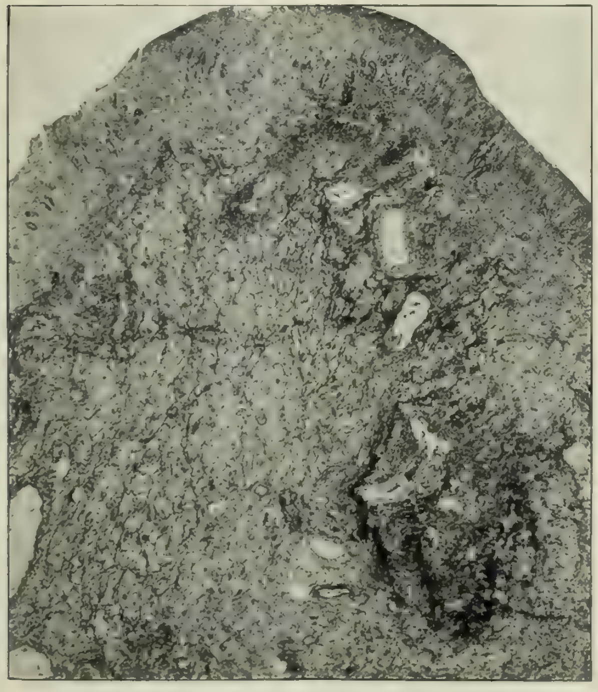


PLATE 2. x 25. The photograph demonstrates injured mucosa and a tremendously swollen submucosa. The submucosa contains much serum and an extensive deposit of fibrin. The exudation shows very little emigration of polynuclear leucocytes. Endothelial stripping is shown in a large vessel to the right and below the center of the section as well as elsewhere (for the details of this process see Plates 5 and 6). Material fixed and stained as for Plate 1.

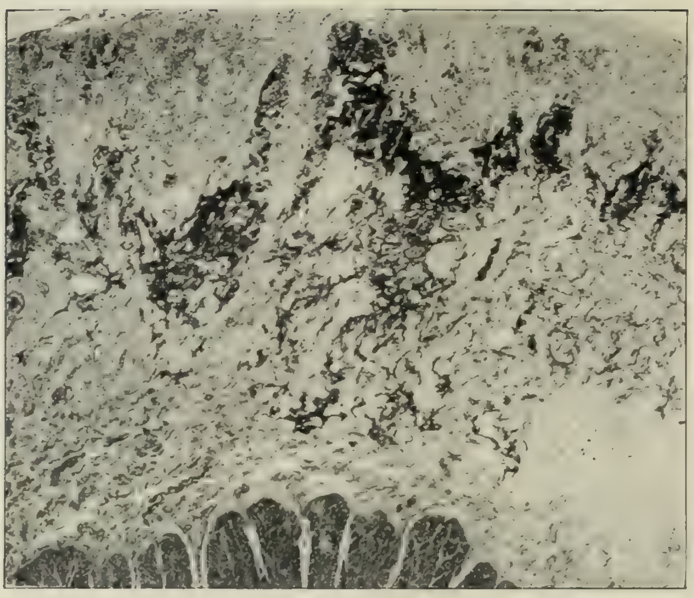


PLATE 3. x 25. Extensive deposit of deeply staining dense fibrin in the meshes of the submucosa. At one point, central in the mucosa, a mass of fibrin appears continuous with the submucous deposit and penetrating funnel-wise into and almost through the mucosa. This finding suggests an occasional mechanical method of ulcer production, due to over-distension of the submucous spaces. Material fixed and stained as for Plate 1.

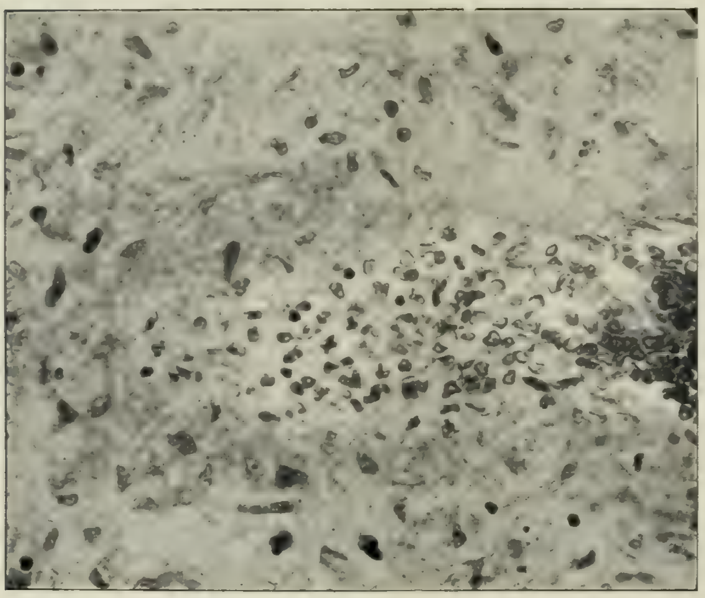


PLATE 4. x 200. Wall of artery cut obliquely. To the right is the blood-filled lumen. To the left, the endothelium and subendothelial space shows acute arteritis. The subendothelial space contains red blood globules, mononuclear cells and polynuclear leucocytes. The polynuclear leucocyte reaction is not common in the inflamed colon of bacillary dysentery except after ulcer production, permitting invasion of cocci, and in a few instances of endarteritis. Material fixed and stained as for Plate 1.

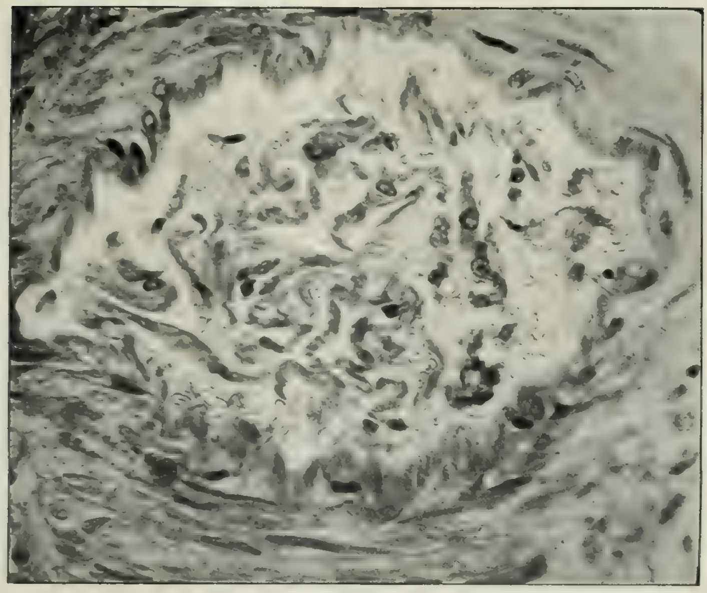


PLATE 5. x 400. Endothelial stripping with accumulation of the dissected lining at one point in the vessel. Red blood globules are found both inside and outside the stripped endothelium. This process is found in the swollen submucosa of the colon in bacillary dysentery. It has not been characteristically found beneath this layer in this disease. Material fixed and stained as for Plate 1.

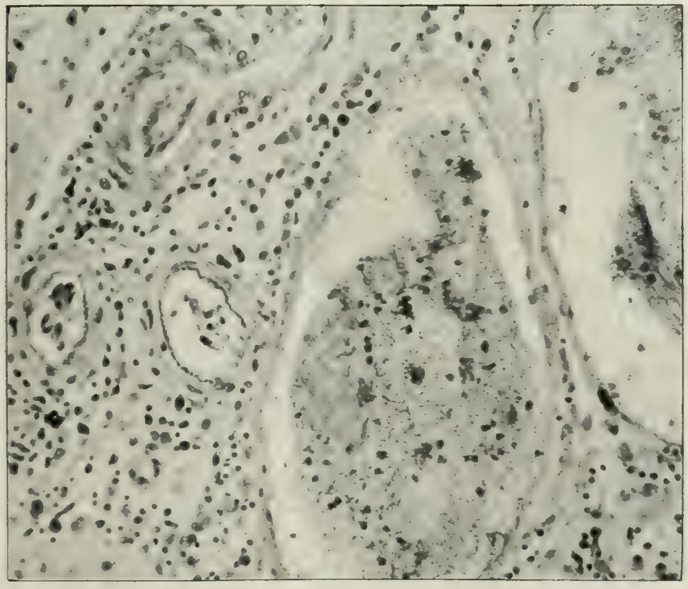


PLATE 6. x 175. Small vessels showing endothelial stripping and thrombus formation. These vessels lay in the submucosa. There is a mononuclear cell reaction about these vessels; polynuclear leucocytes are notably absent. The findings of Plates 4, 5 and 6 are in the submucosa and are not in close association either with bacilli having the morphology of bacillus dysenteriæ or with other organisms. It is assumed that these lesions represent an important factor in ulcer production in bacillary dysentery, but whether they are directly due to bacilli, cocci or toxins is an unsolved problem. It is notable that these lesions may be found beneath a relatively intact mucosa. Material fixed and stained as for Plate 1.

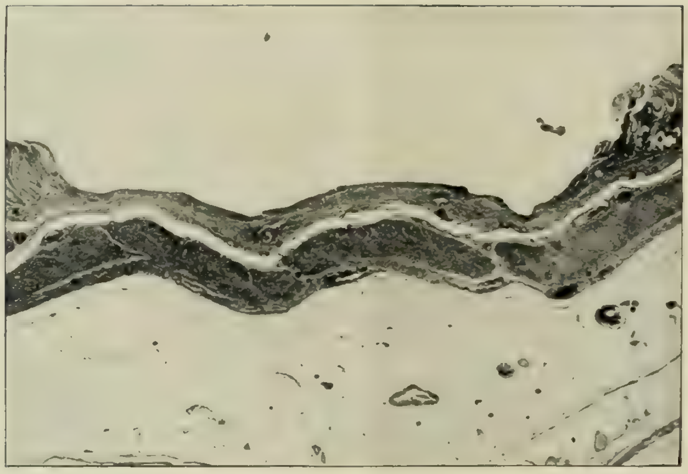


PLATE 7. x 25. Denuded intestinal wall about five weeks after onset of symptoms in bacillary dysentery. Beneath the focus of denudation the submucosa has become densely fibrous. Material fixed and stained as for Plate 1.

due to lesions of nerves having to do with the nutrition of the intestine. Decubitus was present in 6 cases, and, in 1255, age seventy-two, duration of dysentery six days, occurred in the absence of intestinal ulcerations. Intestinal ulcerations occurred in 5 cases which showed no decubitus. Septicemia was demonstrated in 7 cases, 5 of which also showed infection of the cerebrospinal fluid with a variety of organisms. One case showed invasion of the cerebrospinal fluid without the presence of organisms in the heart's blood. It is remarkable that 6 cases showed a septicemia with staphylococcus pyogenes albus. The durations of these cases were: 1255, six days; 1256, eight days; 1258, sixteen days; 1260, twenty-one days; 1264, eight days; 1266, sixteen days.

The Intestinal Lesions.

The intestinal lesions are the most obvious in the disease and have received the most study, although no intestinal lesions of consequence are found in some cases of clinically certain dysentery. In 28 cases of fatal acute dysentery in children and infants in Flexner's epidemic in New York (1903), Howland[37] found 14 cases (Group D, Howland) showing few discoverable lesions microscopically. Although Howland feels that perhaps the microscopic findings are in some respects less trustworthy than the gross findings, and that technical difficulties may account for some of his negative histology, he remains of opinion that "a large percentage of fatal cases fails to show evidence of profound structural lesions." Also, "the evidence favors the belief that the primary necrotic lesion is the result of the action of the bacillus of dysentery, the subsequent ulceration being brought about not improbably by the interaction of various micro-organisms and the ordinary processes of demarcating inflammation."

Shiga[1] holds that the general symptoms of dysentery are due to the absorption of toxins (endotoxins). It appears that, at the onset, diarrhea, colic, lack of appetite, weakness and a feeling of pressure over the abdomen may exist during an incubation period in which ulcerations cannot be demonstrated. From Shiga's brief account of the pathological anatomy, it is apparent that he regards some degree of intestinal lesion (at least hyperemia and catarrhal edema) as invariable in dysentery. It is apparent, also, that the reaction of the patient and the issue of the disease do not necessarily correspond with the intensity of the intestinal lesions.

The soluble toxin of the dysentery bacillus is thought to consist of two components, a neurotoxin producing paralyses of extremities and of bladder, and an enterotoxin causing the intestinal changes. It does not seem possible to differentiate the symptoms of the disease according to their source in different toxin components. As a matter of fact, such symptoms as might correspond with neurotoxic components (headache, sleeplessness, numbness, stupor, delirium) simply coexist with numerous other symptoms (fever, malaise, muscular pains, epigastric oppression) which occur in the severe cases having "high" localization of lesions (upper part of large intestine or small intestine). The neurotoxic question is further considered in a separate paper in the present series.

The clinical data as well as the anatomical findings do not, therefore, point unequivocally to the essential lesions of dysentery, and there is even some doubt whether the intestinal ulcerations are constant, and whether, when they occur, they are due to the bacillus of dysentery.

Following is a collection of descriptions of intestinal lesions, with the ages of patients and durations of dysentery.

792. Male, seventy. Fourteen days. Obliterative *cholecystitis.* Adhesions about cecum. Slight hyperemia of *small intestine.* Two small, deep red, transverse ulcers (2 cm. in diameter) in *ileum,* about 90 cm. from cecum. Mucosa of *colon* thickened. Numerous superficial small ulcers of colon. (*Lymph nodes* not mentioned.)

815. Male, thirty-five. Eleven days. *Stomach* mucosa injected. Mucosa lower *small intestine* injected. Serosa of *large intestine* injected. Hundreds of swollen lymph follicles (1-3 mm.) in colon. Numerous swollen agminated follicles (0.5 to 1 cm. in diameter by 0.3 to 0.5 cm. deep). Many superficial winding ulcers (1 to 2 mm. in diameter, with pale-gray, fibrin-bearing bases and swollen injected walls. Denudation of from one third to one half of mucosa in lower colon. *Mesenteric lymph nodes* enlarged and reddened.

818. Male, sixty-three. Unknown duration. Mucosa of lower *small intestine* injected. Injection of lower two thirds of colon. Many swollen lymph follicles (1, 5, 6 mm.). Numerous irregularly round or oval ulcers (0.3 to 1 cm.), with clean bases and red, elevated, often slightly undermined edges. Process severer distally. Possibly one sixth of mucosa denuded. *Mesenteric lymph nodes* enlarged (0.5 to 1 cm.) with opaque yellow-gray cortical zone, a midzonal band of translucent gray tissue and central zone of slight injection.

900. Male, sixty-five. Five to eight days. Areas of injection (1-4 cm.) with points of hemorrhage in mucosa of lower *ileum.* Peyer's patches exceptionally much injected and moderately swollen. Lower part of *colon* shows numerous irregular shallow ulcers (0.3 to 1.2 mm. in diameter), with clean or membranous bases, definite borders and surrounding zones of swollen, injected or hemorrhagic mucosa. These ulcers occur in groups of two to ten scattered over areas the size of a hand.

904. Male, thirty. Ten days. Distal half of *ileum* inflamed, with ulcerations of Peyer's patches. Distal third of ileum shows hundreds of small irregular circuitous ulcers with gray or greenish necrotic bases and walls not elevated (except in hemorrhagic instances). *Colon* shows older ulcers with clinging membrane of necrotic material. Solitary follicles swollen. Wall sometimes 4 mm. thick. *Rectum* resembles colon. *Mesenteric lymph nodes* swollen, on section bloody, with red and gray stippling. The larger nodes contain focal necroses.

926. Female, fifty-eight. Three to four days. Irregular superficial ulcer, 1 cm. in diameter, 6 cm. below pylorus in duodenum. *Small intestine* inflamed throughout, most severely in upper half of ileum, where the mucosa is swollen, dull-red or purple, and in many places covered by a delicate necrotic membrane. Superficial winding ulcers, from 0.2 to 2 cm. in diameter, beset this portion of the ileum, as a rule following the

valvulæ. *Mesenteric lymph nodes* not noted. *Peritoneal cavity* contains a few flakes of fresh fibrin.

983. Male, forty-one. Six to eight days. *Ileum* contracted to diameter of little finger. Lower 25 cm. of descending colon uniformly congested, not ulcerated, but beset with small grayish deposits not easily scraped off. *Mesenteric lymph nodes* large and dark, especially opposite cecum.

1016. Male, thirty-two. Unknown duration. Upper half of *ileum* thickened, injected, covered with grayish slime in streaks. *Mesenteric lymph nodes* conspicuous, not enlarged.

1065. Female, twenty-eight. "Septicemia," three to five days. Notes deficient. Ileocolitis.

1085. Female, seventy-five. Seven days. *Stomach* wall atrophic. *Small intestine* contains mucus of *prune-juice* color. Lower half of *ileum, cecum* and upper half of *colon* dark, injected, and lined with adherent masses of mucus, feces and necrotic material. Lower half of colon, *sigmoid* and *rectum* deep reddish-black and thickened, but without membrane. *Peritoneal serosa* slightly sticky, especially that of ileum. *Mesenteric lymph nodes* just palpable.

1088. Female, eighty. Seven days. *Stomach* wall atrophic. *Small intestine* soft and in places red and injected, easily tearing apart. *Cecum* and *colon* reddened in a few places. *Mesenteric lymph nodes* not remarkable.

1093. Male, sixty. Ten days. Swelling of mucosa of *ileum* with foci of deep injection. Peyer's patches above ileocecal valve show beard appearance. *Large intestine* shows swollen mucosa throughout. *Colon* shows a few recent ulcers with attached masses of necrotic material. *Retroperitoneal lymph nodes* swollen, pale. *Mesenteric lymph nodes* swollen, showing minute hemorrhages. Peritoneal serosa moist and slightly sticky.

1099. Male, sixty-seven. Unknown duration. *Stomach* wall atrophic. Mucosa of *ileum* injected, slightly roughened, with fibrinous material adherent over large areas. *Cecum* and *colon* diffusely darkened and finely injected. The bottoms of some sacculæ are eroded in areas 0.5 cm. in diameter. Process less intense in lower colon and *sigmoid*. *Mesenteric lymph nodes* are noted.

1146. Female, sixty-four. Five to six days. Small zone of injection about midway in wall of *cecum*. Ten centimeters above rectum, sigmoid shows a round area of injection just above a pale belt of diminished lumen (3 cm.), and thickened walls (0.5 to 1 cm.). Below constriction another area of injection. Scybala throughout colon. *Rectum* congested. *Mesenteric lymph nodes* normal.

1169. Male, sixty-seven. Unknown duration. *Stomach* wall atrophic. Lower *jejunum* shows injection and contains excess of mucus. *Ileum* inflamed throughout, but progressively more inflamed distally, without involvement of Peyer's patches. *Cecum* and *colon* evenly inflamed and diffusely injected, without ulceration. *Peritoneal serosa*, especially of ileum and colon, injected and slightly sticky. *Mesenteric lymph nodes* not noted.

1176. Female, sixty-eight. Unknown duration. *Stomach* wall atrophic. *Small* and *large intestines* injected and contain excess of mucus. Peritoneal serosa very moist. *Mesenteric lymph nodes* not noted.

1201. Female, forty-nine. One month. *Stomach* wall atrophic. Congestion of mucosa of distal quarter of *ileum*. *Cecum* and *colon* injected and swollen, with very numerous, irregular, discrete or anastomosing ulcers (0.2 to 1.5 cm. in cross section), with undermining edges. Ulcers as a rule superficial, but occasionally penetrate to the serosa. *Mesenteric lymph nodes* not noted.

1237. Female, eighty-one. Ten days. *Stomach* wall atrophic. *Small intestine* reddened throughout, contains blood-stained mucus. *Mesenteric lymph nodes* not enlarged.

1241. Female, sixty-four. Unknown duration. *Stomach* wall atrophic. Distal sixth of mucosa of *ileum* thickened, deeply injected and covered with mucus and exudate. No ulcers. Remainder of tract normal. *Peritoneal cavity* contains blood-stained fluid, perhaps derived from a small, recent, sharply defined hemorrhagic area at about the middle point of the jejunum. *Mesenteric lymph nodes* not enlarged.

1255. Male, seventy-two. Six days *Stomach* dilated with greenish-black fluid. Mesenteric vessels running to lower *ileum* and *colon* injected. Injection of ileum and colon. No ulceration. *Mesenteric lymph nodes* enlarged.

1256. Female, fifty-three. Eight days. *Stomach* wall atrophic. Injection of vessels of duodenum with one small hemorrhagic area. Slight injection of *jejunum* and *ileum*. Diffuse injection of *colon* and *rectum*. *Mesenteric lymph nodes* enlarged and soft.

1258. Male, sixty-four. Sixteen days. Entire *intestine* markedly congested. No ulcers. Serosa of *peritoneum* moist and sticky over intestine. Mesenteric vessels engorged. *Mesenteric lymph nodes* numerous but small.

1259. Female, seventy. Eight days. Injection of vessels of *stomach*. Engorgement of blood vessels on crests of folds in *duodenum* and upper *jejunum*. Injection of *ileum*. More marked injection of *colon* and *rectum*.

1260. Female, fifty-three. Twenty-one days. *Stomach* dilated with green-gray mucoid material. *Duodenum* contracted. *Jejunum* contains material stained with bismuth. *Ileum* congested, and in lower part stripped of mucosa. *Cecum* and *colon* show granular hemorrhagic mucosa with pseudomembrane. No ulceration. Intestinal vessels engorged. Duodenal and cecal *lymph nodes* large and injected. Excoriation about anus and on buttocks.

1261. Female, forty-five. Eight days. Punctate old hemorrhages of lower 10 cm. of *esophagus*. Excess of mucus. Injection of greater curvature and punctate hemorrhages of lesser curvature of stomach. *Duodenum* in places injected, mucus in excess. *Jejunum:* mucosa swollen but not reddened. *Ileum:* mucosa swollen and pale proximally, more and more reddened distally; contents have a peculiar odor resembling that of smoked ham. Peyer's patches normal. *Cecum:* wall thicker than normal, diffusely injected. *Appendix:* slightly injected. Ascending *colon* thickened (at tips of rugæ, 0.25 to 0.75 cm.), and beset with a thin diphtheritic membrane. Remainder of colon progressively thicker distally, with shallow "geographical" ulcers. Upper part of rectum shows maximal thickening and ulceration. *Mesenteric lymph nodes* moderately enlarged. Some nodes of iliac chain reddened. Walls of *peritoneum* moist. Omentum shows extreme venous congestion. Pancreatic tissues congested.

1262. Female, seventy. Seven days. *Large intestine* injected throughout. At one point in the transverse colon the mucosa is thickened, thrown into longitudinal folds, reddened, and slightly ulcerated, forming a band which encircles the gut, extending 3 cm. along major axis.

1264. Male, sixty. Eight days. Mucosa of *jejunum* reddened. *Mesenteric lymph nodes* soft, slightly enlarged.

1265. Male, eighty. Fourteen days. *Ileum:* in the distal meter, serosa grayish-black, mucosa dark, thickened, and overlaid with mucus and feces. At about midway in the darkened part of the ileum are minute hemorrhagic areas. Mucosa of *large intestine*, from ileocecal valve to within the last 15 cm. of rectum, thickened, hemorrhagic, riddled with ulcers (0.2 to 1.5 cm. in diameter). The strict limitation of the ulcerative process in this case is remarkable. The iliac portion of the *peritoneal serosa* shows recent exudate. *Mesenteric lymph nodes* not enlarged.

1266. Female, fifty-three. Sixteen days. *Stomach* reddened. *Ileum* reddened and injected. *Cecum* contracted to an internal diameter of 0.5 cm. Wall thickened. Mucosa brilliantly injected and superficially ulcerated. Small abscess cavity at base of appendix, which is 3 cm. long, surrounded by fibrous adhesions, and almost amputated by ulceration at base. The ulcerative process extends 20 cm. into ascending colon. *Mesenteric lymph nodes* enlarged.

1267. Female, ninety-three. Eleven days. *Stomach* small, pylorus of small caliber. Submucous cysts or collections of yellow material, 2 to 5 mm. in diameter, in *duodenum*. *Jejunum* and *ileum* deep red. Hemorrhagic ring about ileocecal valve. Wall of *colon* thickened. Mucosa evenly and intensely blackish-red in raised areas, 4 to 5 cm. in diameter, in the midst of less severely inflamed tissue. A few frank superficial ulcers, with injected edges and yellow purulent exudate overlying, are found throughout colon and rectum. *Omentum* injected. *Mesenteric lymph nodes* around pancreas slightly enlarged.

1268. Male, eighty. Six days. *Stomach* wall atrophic. Slight injection of mucosa of *large intestine*, chiefly in *cecum*. *Mesenteric lymph nodes* not enlarged.

1269. Male, fifty-three. Twelve days. *Stomach* contains bile-stained fecal material. *Duodenum* faintly injected. *Ileum* near valve shows injection and hemorrhages. *Colon* mucosa covered with mucopurulent brown or gray material. On scraping, the mucosa shows an irregular mottling with deep-red areas, which suggest healing ulcers. A few shallow ulcers, 1 to 2 mm. in diameter, with yellow centers, are scattered through the colon. Wall greatly thickened. Occasional stretches of pseudomembrane. *Mesenteric lymph nodes* markedly enlarged, in groups of six or more, around cecum, about head of pancreas, and along transverse colon. *Retroperitoneal nodes* along left side of aorta enlarged. Distal half of mesentery injected.

1271. Male, seventy-six. Thirty-four days. *Stomach* atrophic. Faint injection of *jejunum* and *ileum*. One small area of sigmoid containing a dozen superficial ulcers, from 0.4 to 3 cm. in diameter, with hemorrhagic undermined edges. *Mesenteric lymph nodes* not enlarged.

1273. Female, fifty-one. Thirteen days. *Stomach* wall thin. Small hemorrhages of fundus. *Jejunum* shows some areas of deeply red and swollen mucosa. Beginning with ileocecal valve, the *cecum* and colon show severe and extensive inflammation and thickening, with hemorrhages and many small notched ulcers with gray bases and red elevated edges. The *sigmoid* shows a granular, rough, brown-yellow surface with numerous ulcers. *Rectum* shows a thin bloody clot over mucosa. *Mesenteric lymph nodes* enlarged in clusters around ileocecal valve and sigmoid. *Vaginitis*.

1278. Female, fifty-eight. Thirty-three days. *Stomach* wall thin. Small hemorrhages near cardiac end of stomach. *Ileum* adjacent to valve deep red. Solitary follicles of *colon* distinct, red, swollen, some with umbilicated yellow summits. Irregular areas of blackish-red injection in winding lines.

Analysis of Intestinal Lesions.

It is certain that both in typhoid fever and in bacillary dysentery the importance of gross lesions in the intestines has been somewhat overestimated. We have learned that the symptoms in both diseases are attributable rather to toxemia than to the direct effect of local lesions. In certain diseases closely resembling typhoid fever, but due, not to bacillus typhosus, but to bacillus paratyphosus and bacillus coli communis, it is established that the major symptoms are found in the absence of intestinal lesions. Yet these major symptoms in paratyphoid and colon infections resemble those of typhoid fever so strongly that it has even been proposed to class them together in one great group of "clinical" typhoid fever,[36] defined as a fever produced by some one of the typhaceæ (in Löffler's sense).

The position of bacillary dysentery is interesting in that the Shiga bacillus seems to be able to produce, like the various members of the group of typhaceæ, symptom-complexes of a characteristic type, but not always associated with, and by no means always dependent upon, intestinal lesions.

In brief, dysentery is not to be conceived as identical with ulcerative colitis or ileocolitis. Nevertheless, in the present discussion, the question of intestinal ulcerations will be considered first, and thereafter the occurrence of pseudomembrane and of inflammation still less characteristic but unquestionably associated with the disease.

Ulcerations in some portion of the intestine were discovered in 17 (or, if certain locally hemorrhagic or locally denuded cases be included, in 21) of the 35 cases considered. In the autopsies of the summer of 1908, ulcerations occurred in 8 (or possibly 11) of 16 cases. The percentage distribution is similar in the two series: In the total series, 49% (60%?); in the epidemic series, 50% (69%?). A similar percentage has been calculated from Howland's data in an epidemic of infantile diarrhea; but Howland obtained only 7 ulcerative cases in 28, that is, 25%. It is certain from these data that no idea can be obtained from the statistical entries of "ulcerative colitis" or "ulcerative ileocolitis" as to the incidence of dysentery. The compilation of such data from autopsy records alone will invariably give too low a number of cases. And, since it is difficult or impossible to distinguish in routine clinical records between dietetic or other diarrheas and dysentery in all cases, it appears that we can never know the true proportions of dysentery as it has existed in institutions in the past. We only know that the amount has probably been underrated.

The distribution of ulcerations and its bearing upon the kind and severity of symptoms in dysentery are considered below.

The *pseudomembrane*, sometimes present on the intestinal mucosa in dysentery, has been regarded as a characteristic phase in the evolution of dysenteric lesions. Thus Shiga says, "The lesions of epidemic dysentery are those of a diphtheritic catarrh of the bowels. . . . The mucous membrane reacts by inflammation, which may be catarrhal, hemorrhagic or diphtheritic, according to the stage and grade of the process. The diphtheritic infiltrated mucous membrane becomes necrotic and thus ulcers are produced."[1]

Howland's infants showed pseudomembrane in 5 instances in 28 completely studied, that is, in 18%. The Danvers cases showed distinct pseudomembrane in 9 cases, that is, in 26%.

Seven of our 9 pseudomembrane cases showed also ulceration, but 2 had not advanced to the ulcerative stage (if we accept Shiga's conception of the evolution of ulcers in dysentery). On the other hand, 10 of our cases showed ulceration without sign of pseudomembrane, at least in the gross. Analyzing Howland's data in the same way, we find that only one of his infantile cases with ulceration (7 cases) also showed pseudomembrane (Howland's Case XXII), and that this case showed the gross membrane in the lower ileum, whereas the ulcerations were in the large intestine. Neglecting further possible evidence, and assuming that pseudomembrane has never been a factor in these ulcerative cases, it would appear that Shiga's account (above mentioned) of the genesis of dysenteric ulcers is over-simplified and too schematic. It would seem, therefore, on the gross evidence alone, that quite disparate factors may underlie the formation of ulcers on the one hand and of pseudomembrane on the other. The solving of this problem must depend upon microscopic data.

The incidence of *hemorrhagic lesions* is important in relation with that of ulcerations and of pseudomembrane. On *à priori* grounds, it might seem possible that hemorrhagic lesions have more to do with ulcer formation than have necroses of the mucosa. Such hemorrhagic breaks in the intestinal tissue could readily serve as foothold for bacteria, both Shiga bacilli and others.

But inspection of the protocols, although it shows 11 instances of hemorrhagic lesion in the alimentary tract, shows these hemorrhages so widely unlike in appearance and distribution that no generalization can be drawn therefrom. Thus the upper small intestine appears to have more hemorrhagic tendency than the colon. The ileum showed hemorrhages in 4 instances (twice together with hemorrhages in the colon); duodenum, 1; jejunum, 1; ileocecal valve, 1. The colon alone shows hemorrhagic lesions in 2 cases, and, in association with hemorrhages elsewhere, in 3 other cases. The stomach showed hemorrhages in 2 instances.

A priori, moreover, if ulceration were to have its genesis in hemorrhagic breaks of the intestinal wall, we should expect in fatal cases, showing lesions of various ages, instances of fresh hemorrhagic lesions independent of ulcers. Such are rare. In general there is in the intestines in dysentery no tendency to gross hemorrhages, such as might be due to rupture of larger vessels. It is probable, therefore, that the bloody stools are due to minute hemorrhages of capillary origin, possibly due to erosions of the mucosa. Again, as in the case of the ulcerations and the pseudomembrane, we see reason to discount the claim for hemorrhagic lesions that they are characteristic of any one stage or grade of the dysenteric process.

With respect to the general question of simple *catarrhal lesions*, it will be wiser to consider them microscopically, and they may be dismissed for the present with the remark that, of the 16 cases of the epidemic of 1908, 6 cases showed lesions confined to swelling and congestion. Four of these 6 cases were the first to be autopsied in the epidemic, and were taken down July 15, 21, 22, 24, respectively, dying seventeen, six, eight and eight days later. The other 2 cases were mild and even doubtful, 1 was not even included in the general statistics of Ryder and showed at autopsy merely reddening of the jejunal mucosa, and the other never agglutinated either the Shiga or Flexner strains.

The *local distribution* of the intestinal lesions assumes importance both in the matter of determining the atrium and method of infection, "ascending" and "descending" types, and in the matter of the clinical differentiation of "high" and "low" types of which Shiga speaks.

Shiga goes so far as to maintain that the clinical differentiation of these types is in many cases not difficult. He has noted and carefully followed the clinical progress of lesions from ileum and cecum downward in a nurse who later recovered. He believes that in most instances the disease begins in the lower portion of the large intestine (sigmoid flexure and rectum) and extends upward. Nevertheless the rarer "high" and "descending" cases are more apt to be accompanied by symptoms of intoxication. The prognosis in these cases of "entero-dysentery" is always serious.

Fourteen of our 17 ulcerative cases showed ulcerations in the colon (also in some instances in cecum and rectum); 2 cases showed ulceration in both large and small intestine. These 3 "high" cases did not occur in the 1908 epidemic. Eight of the 16 epidemic cases showed ulcerations, but all confined to the large intestine.

The 3 cases of iliac involvement were very severe cases.

Microscopic Analysis of Intestinal Lesions.

Howland, in discussion of the cases of infantile diarrhea coming to autopsy at the Babies' Hospital, New York, in 1903, maintains that cases of Shiga bacillus infection exhibit most diverse pathological anatomy, and remarks that the gross and microscopic changes of the extremes of these cases are so different that at first sight it would seem scarcely probable that they are caused by the same micro-organism. He feels that it is not possible to separate the damage done by the Shiga bacillus and that done by most of the other organisms, and says, "The evidence favors the belief that the primary necrotic lesion is the result of the action of the bacillus of dysentery, the subsequent ulceration being brought about not improbably by the interaction of various micro-organisms and the ordinary processes of demarcating inflammation." Howland in his infantile cases distinguished a group of cases with severe lesions characterized by pseudomembrane with or without ulceration; secondly, a group of cases with lymph follicle hyperplasia and "pitting" over the follicles; thirdly, a group of cases characterized by superficial necroses and ulceration in the mucosa not limited to the follicles, and not accompanied by pseudomembrane. Another group showed few or no lesions. Severe cases were decidedly in the minority.

Howland's work appears to be the most extensive histopathological work on the Shiga infection, though Flexner,[9] and Strong and Musgrave,[10] in Manila, have described severe cases in Manila. The asylum cases which we have considered appear to correspond more closely with the Manila cases than with Howland's.

Our microscopic examination brought out one novel feature which has escaped the attention of previous observers, although occasional details of the process are mentioned by some workers. We wish to lay especial stress upon thrombosis of the small vessels of the mucosa and submucosa of the intestine. We think that this mechanical factor is an essential feature in the ulcerative process. In this respect our results recall those of Mallory in typhoid fever, though the thromboses in bacillary dysentery differ essentially from those demonstrated by Mallory in typhoid fever. They are not due, as in typhoid fever, to endothelial cell proliferation with consequent infarction of small vessels. They are rather due to a direct necrosis of the endothelium, presumably under the influence of dysenteric toxin, which is shed into the lumen of the vessels, giving the picture of a dissecting endarteritis. The picture reminds one of the arterial lesions of the meninges in pneumococcus meningitis.

One of the most striking features of colitis, as previously emphasized by Flexner (to some extent in his Middleton-Goldsmith lecture of 1900,[36] but more definitely in his paper on the "Pathogenesis of Colitis," 1908 [37]) is the occurrence of great thickening of the submucosa, with striking deposits of fibrin underlying a relatively intact mucosa. Flexner and Sweet, in 1906, concluded that "the poison which causes degeneration, necrosis and inflammation of the cecum (in rabbits) acts not first upon the surface of the mucous membrane, but upon the mucous membrane and the submucosa simultaneously." They believe that the toxin of the Shiga bacillus is excreted both in rabbits and probably in man by the intestine, and chiefly probably by the large intestine, which, being injured by the act of elimination, reacts. As is well-known, they go on to develop their hypothesis of the circulation of dysentery toxin and development of intestinal lesions by successive acts of excretion. Flexner and Sweet do not undertake a detailed histology of their experimental lesions in the rabbit.

It is possibly not necessary to explain the remarkable submucous inflammatory lesions underneath a relatively intact mucosa as due to intoxication by blood paths, since striking subcutaneous inflammation may set in after absorption from the relatively intact skin of a severe irritant. Along this line Mallory has called our attention once more to the severe lesions below the skin of the rabbit's ear when inflamed by croton oil.

By whatever path the necrosing agent has arrived, whether by the blood or directly through the intestinal mucosa, it is certain that thrombosis occurs, not merely of lymph vessels and of dilated veins, as found by Flexner and Sweet in their experimental rabbits, but also, and more significantly, in the arteries.

We have found both in injured mucosa and in relatively uninjured mucosa examples of *thrombosed small vessels.* They occur also both in association with extensive deposits of *fibrin* in the submucosa and in areas without such deposit of fibrin. They occur in several degrees up to complete shedding of the vascular endothelium, with the formation of a dense central strand of dying cells in the interior of the vessels. Good examples of *focal endarteritis* with local cell accumulations between endothelium and media are found.

The important question raised by previous literature whether the ulceration is produced by the direct action of Shiga bacillus or by intercurrent organisms of other sorts cannot be definitely settled from these tissues. Nevertheless, we have found accumulations of organisms morphologically resembling bacillus dysenteriæ in foci in the mucosa and submucosa. In other instances may be found clouds of cocci in close spatial relation to bacilli having a Shiga morphology. It seems likely, though it cannot be proved, that the numerous thrombi of the small vessels in the mucosa and submucosa are due to toxin secreted or split off from the bacilli in the intestinal wall. Whatever be the origin of these thrombi, it seems impossible to escape assigning them a function in ulcer formation.

It seems interesting that the process of ulcer formation in dysentery should logically resemble the process of ulcer formation in typhoid fever as observed by Mallory.[31] The details of the process differ from those in typhoid fever essentially. The process in the intestinal mucosa and submucosa in dysentery is probably due to the action of a powerful toxin (more powerful than the toxic products of the typhoid bacillus) acting for a brief period. The steps of the process may be summed up as follows: Invasion with or without superficial necrosis of the mucosa due to direct action of the bacilli or of toxins split off from their bodies; secondly, direct destructive injury of the endothelial cells of many vessels next the point of invasion, accompanied by inflammatory reaction of the submucosa with pouring out of much serum and exudation and deposition of large masses of fibrin; thirdly, a breaking down of tissue due to infarction of numerous vessels, the result of a dissecting endarteritis. The hemorrhages of the oozing type which characterize clinically even the earliest stages of the disease are explainable as a result of the superficial necroses of the mucosa, with laying bare of numerous delicate vessels which may be ruptured mechanically or directly by the Shiga toxin.

This account seems consistent with facts known concerning the course of bacillary dysentery. The duration of the disease is from four to eight days in light cases and from three to four weeks in the serious ones. The average duration under ordinary medicinal treatment is, according to Shiga, forty days.[1] In our cases dying at thirty-three and thirty-five days, ulcers were already advanced in the healing process. In 1 case (1269) of twelve days' duration there was evidence of healing ulceration. In no case of less than seven days' duration were ulcers found, whereas in 2 cases of six days' duration and 2 cases of eight days' duration no ulcers were found. It is possible, then, that the period of active injury to the intestinal wall effected by the Shiga bacillus acting locally is limited to about the second week of the disease. The initial increase of white blood corpuscles in the circulation (see Article V) which falls to the normal limits on the fifth day is possibly related with the intestinal disease. It does not appear, however, that ulcer formation is accompanied by marked alteration of the circulating blood. The proportion of lymphocytes is slightly higher than normal and does not drop with the decrease of the total number of white blood corpuscles on the fifth day, but gradually returns to normal on the tenth day. The absence of leucocytosis in bacillary dysentery may be compared with the absence of leucocytosis in typhoid fever concomitant with the development of numerous ulcers.

Correlation of Clinical Findings with Intestinal Lesions.

It is important, despite the newer conception of dysentery as essentially a toxemia, to attempt a correlation between the clinical course of the disease and the intestinal lesions.

Special attention has been given to the epidemic cases of 1908, and the durations of the cases and their severity have been compared on the basis of attending physicians' notes, attendants' notes,* and notes collected by the laboratory staff on their rounds.†

For the purpose of this correlation we may list the following:

Durations in Fatal Epidemic Cases.

Cases dying	6	days after onset,	2
Case ,,	7	,, ,, ,,	1
Cases ,,	8	,, ,, ,,	4
Case ,,	11	,, ,, ,,	1
,, ,,	12	,, ,, ,,	1
,, ,,	13	,, ,, ,,	1
,, ,,	14	,, ,, ,,	1
Cases ,,	16	,, ,, ,,	2
Case ,,	21	,, ,, ,,	1
,, ,,	33	,, ,, ,,	1
,, ,,	35	,, ,, ,,	1

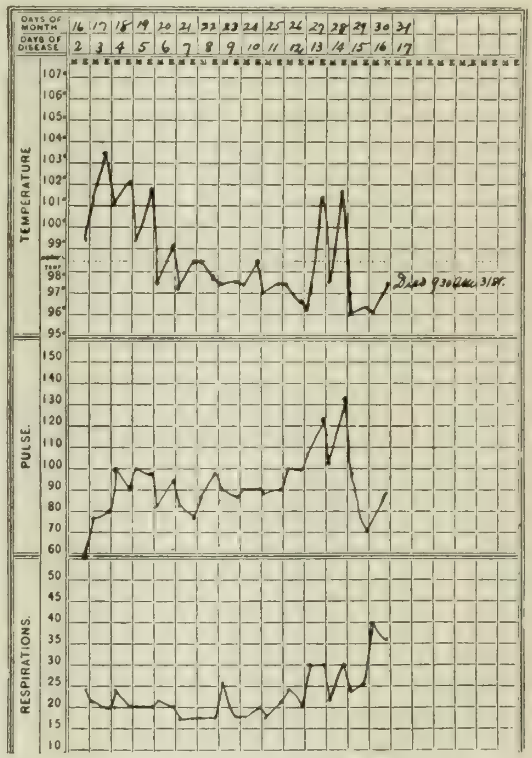
Or, dividing these cases into three groups:

Cases dying from	6 to 8	days after onset,	7
,, ,, ,,	11 ,, 16	,, ,, ,,	6
,, ,, ,,	21 ,, 35	,, ,, ,,	3

The ages of these fatal cases do not appear significant in altering the period of the disease, since the averages for the three groups are much the same (64, 66, 61).

Much more interesting is the relation of duration to the incidence of intestinal lesions. Ulceration is found from the seventh day after onset through the sixteenth, and, in a slight or healing form, in the cases lasting thirty-three and thirty-five days respectively. But only 2 of the 7 cases dying from six to eight days after onset show ulcers (one of seven and one of eight days' duration). One case of sixteen days' duration and 1 case of twenty-one days' duration showed no ulcers.

From these data we might conclude that about a week is necessary for frank ulcer production, that the ulceration is fast declining at the end of five weeks and that fatal issue may be protracted to three weeks in cases without frank ulceration. The temperature, pulse and respiration chart of such a case is here inserted.



Pseudomembrane was found anywhere from eight to fourteen days after onset in the epidemic cases. The average age in the pseudomembrane cases was a little lower than that of the others (57).

A fact of possible significance is brought out by comparing the dates of onset in the ulcerative and non-ulcerative cases. From this comparison it appears that all the non-ulcerative cases (with two exceptions) had their onset during the fortnight July 11 to July 24. (The exceptions are 2 cases of eight and six days' duration, with onset Aug. 15 and Aug. 25 respectively.) The first ulcerative case had its onset July 31, and the others were distributed through August from the 10th to the 29th (3 cases with onset Aug. 19).

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* One of the attendants on the male side was a man with medical training, who plotted reliable charts in cases under his care.

† Some of the female wards were for a part of the summer under the direct control of the laboratory as far as disinfecting precautions were concerned.

Speaking generally, therefore, the toxemic cases were largely produced in the middle of July, whereas the ulcerative cases occurred in August. Supposing for the moment that the whole epidemic has a similar configuration, it would be interesting to inquire whether the type or strain of organism differed in the two groups. The data from agglutinations and cultures are not sufficient for answering this question, but attention may be called to conclusion 5 of Article IV.

VII.

NERVOUS SYSTEM IN BACILLARY DYSENTERY.

BY E. E. SOUTHARD,
AIDED BY
C. G. MC GAFFIN.

Bacillary dysentery is not, as a rule, at any stage a blood infection. The bacilli of dysentery have not been found in the cerebrospinal fluid. Outside the intestine and mesenteric lymph nodes there is little or no evidence that the dysentery toxin in man causes permanent structural effects.

The symptoms of violent toxemia which characterize those cases of dysentery in the ileum, cecum and upper colon are symptoms suggesting intoxication of the central nervous system, or there would be *à priori* little hope of discovering the essential features of this intoxication in dysentery.

By animal experimentation, however, various workers have shown that the bacillus of dysentery effects, in addition to lesions of the intestines, lesion of the spinal cord in the rabbit. The soluble toxin of dysentery is generally stated to consist of two components, a neurotoxin and an enterotoxin. It becomes important to inquire whether changes similar to the hemorrhagic poliomyelitis of rabbits ever occur in man. The spinal cords in all our epidemic cases of dysentery were examined.

From the standpoint of asylum workers, special interest attaches to dysentery. Thus, in a total series of 550 autopsies performed at the Danvers Insane Hospital, 1903–1908, 35 cases showed dysentery, 16 of which died during the epidemic of July, August and September of 1908. This series of 35 cases represents about 6% of the total number of autopsies performed. In the correlation of cell findings with mental disease which is now being carried out in many laboratories it is unsafe to neglect the possible toxemic effects of dysentery (as of many other acute diseases) whose effects are very generally disregarded in analyses of large series of cases of manic-depressive insanity, and of dementia precox. Of about 80 cases of acute mental disease (manic-depressive insanity, dementia precox and similar diseases) coming to autopsy during the years 1903–1908, no less than 17 showed dysentery. It requires no elaboration to show that a brief series of cases of acute insanity investigated for the cytology of the cerebral cortex might readily include numerous instances of dysenteric toxemia.

A third point of interest is the relation of the nervous system to the intestine, especially to its nutrition. The remarkable hypothesis of Claye Shaw may be recalled to the effect that dysenteric ulceration is analogous to decubitus and depends on alterations of intestinal nerves. The nervous systems in 35 cases, 19 sporadic (endemic?) and 16 epidemic cases, are considered in the present analysis. Sixteen of the brains showed no notable alterations of the gyri. In 5 cases the notes are incomplete, and in 14 cases the gyri showed asymmetries, aplasias and focal atrophy. The brain weights run fairly high. There are 7 brains out of 32 in which the weights are recorded which weighed 1,100 gm. or less (1,016, male, age thirty-three, weight 1,100 gm; 1237, female, age eighty-one, weight 1,000 gm; 1259, female, age seventy, weight 1,015 gm; 1262, female, age seventy, weight 950 gm.; 1267, female, age fifty-three, weight 1,005 gm.; 1273, female, age fifty-one, weight 1,075 gm.).

There are no constant features of a chronic character in the brains. Generalized cerebral arteriosclerosis was noted in 2 cases; sclerosis of the primary and secondary arteries of the circle of Willis was noted in 12 cases, but 9 of these 12 showed little beyond sclerosis of the basilar and vertebral arteries. There were 2 instances of cysts of softening (1085, female, age seventy-five, epileptic, cyst in cerebellar white matter; 1278, female, age fifty-eight, cysts of second and third right temporal gyri).

Eight cases out of 32 in which notes are complete showed no sign of gliosis on palpation, although 2 of these showed minor anomalies in sulcation. The other 24 cases all showed more or less evidence of gliosis. The gliosis was diffuse in 8 of the 24 cases, and focal or limited in the others. The only evidence of gliosis in 2 cases was granular ependymitis, in 2 cases induration of the hippocampal gyri. The other lesions were slight and varied in location.

In brief, it appears that the chronic lesions found in the nervous systems of these cases are inconstant and varied and that they cannot be classed with the chronic lesions of the heart wall, the great vessels of the trunk and the kidneys in point of possible relation to the cause of death. It would seem (see also Article VI) that cardiorenal injury is a much more prominent factor in permitting death from dysentery than longstanding injury of the central nervous system.

One of the writers has for some time maintained that important data can be gotten from the condition of reduced consistence when post-mortem changes can be excluded.[38] The brains of these cases are described as of normal or increased consistence in 14 out of 30 cases in which notes are complete. Reduction of consistence is obviously of much greater importance as a possible complication or effect of dysentery. Reduction of consistence was noted in the brains of 16 cases. Possibly the tissues in the epidemic series have been examined more attentively on this point. Nine out of 14 central nervous systems examined and fully recorded in the epidemic of 1908 showed a reduction of consistence.

Several of the cases are of especial interest since freezing and thawing of the brains post-mortem can be quite excluded. Four of the cases were autopsied four hours or less post-mortem. Thus case 1258, male, age sixty-four, brain weight 1,305 gm., autopsied two hours post-mortem, showed a rich sulcation with slight asymmetries, intracranial arteriosclerosis confined to a slight thickening of the vertebral arteries, cerebral gliosis confined to the frontal and prefrontal regions, and marked softening of the tips of the temporal lobes and of the cerebellum, especially the left hemisphere. Case 1259, female, age seventy, brain weight 1,015 gm., autopsied three hours post-mortem, showed slight sclerosis of the white matter of the right hemisphere and hydrocephalus, and a soft cerebellum. Case 1266, autopsied one and a half hours post-mortem, female, age fifty-three, brain weight 1,250 gm., with frontal and occipital atrophy, showed soft cerebral convolutions on both sides. Case 1267, autopsied ten hours post-mortem, female, age ninety-three, brain weight 1,005 gm., showed frontal atrophy (aplasia?), sclerosis of the basal and circle arteries and gliosis of the hippocampal gyri; showed also a cerebrum of generally reduced consistence. Of the 8 cases in which reductions of consistence were found, 1258 showed organisms (staphylococcus pyogenes albus and a questionable bacillus) in the cerebrospinal fluid; 1259, no culture (osteomyelitis, soft hemorrhagic spleen); 1264 showed staphylococcus pyogenes aureus in the cerebrospinal fluid; 1265 showed staphylococcus pyogenes albus and a questionable bacillus in the cerebrospinal fluid; 1266 showed staphylococcus pyogenes albus and a questionable bacillus; 1267 had unidentified cocci; 1268, cerebrospinal fluid was sterile; 1278, cerebrospinal fluid had an unidentified bacillus. It appears, then, that, out of 7 cases in which cultures were made from the cerebrospinal fluid, 6 showed organisms and 3 of these showed an infection of the cerebrospinal fluid with staphylococcus pyogenes albus and a bacillus of as yet undetermined character. Although these data may bear upon the question of reduction of consistence in brain tissue, it is not possible to regard them as giving evidence of the effect of dysentery toxin. Four of the cases which showed reduction in consistence of the nerve tissue showed also ulceration of the intestine, and four failed to do so.

In view of the interest attaching to experimental hemorrhagic poliomyelitis in rabbits following injection of Shiga toxin, it is interesting to inquire whether the spinal cord in man is likewise subject to lesion. The spinal cords in all the epidemic cases were examined with this in mind. Three levels of the spinal cord were chosen and stained first after Zenker's fixation by the eosin and methylene blue method and secondly after formalin fixation by the Marchi method. Most reliance was placed upon the Marchi findings, since, whereas minute post-mortem hemorrhages are somewhat frequent artefacts in the removal of the spinal cord, a definite Marchi degeneration might convincingly demonstrate a reaction of some days' standing. Unfortunately the spinal cords of asylum patients do not afford a pure histological field in which to study changes brought about *de novo* by dysentery toxin. A much more extensive examination involving histological comparison in 100 spinal cords taken at random (work not yet published) has demonstrated how frequently slight changes in the nervous system are found in this class of material. As a matter of fact, no case of this series was quite devoid of fatty change. There was more or less fat in the meshes of the pia mater in all the cases except one, but the fat was very slight in two others and of not remarkable degree in any case except four. These four were all cases in which reduced consistence somewhere in the nervous system was found. Case 1273 (see Article VIII) showed in general an increased consistence of brain substance, but the thoracic part of the spinal cord showed a reduction of consistence noted at autopsy, and this case was one of those which showed a moderate degree of fat in the pia mater. The significance of fat in the pia mater when it is not enclosed in phagocytic cells is doubtful and is in part explained doubtless by unavoidable post-mortem artefacts. Endothelial fat was demonstrable in practically all the cases of the epidemic series, but was slight in 2 cases. The diffuse scattered blackenings so frequently found in the gray and white matter of the spinal cord under all sorts of conditions were not absent from this series, but varied markedly in amount. The most marked cases of this condition were 1255, male, age seventy-two, dysentery six days in duration; 1256, female, age fifty-three, dysentery eight days in duration; 1264, male, age sixty, dysentery twelve days in duration; 1268, male, age eighty, dysentery six days in duration; 1269, male, age fifty-three, dysentery twelve days in duration; 1271, male, age seventy-three, dysentery thirty-five days in duration. It is remarkable that the cases in which ulceration did not take place are, with two exceptions (1269 and 1271), the cases in which this diffuse degeneration, if it can be called such, was most marked. The durations also are (with the above two exceptions) eight days or less. It is an attractive hypothesis that these six brief cases with diffuse scattered blackenings in the gray and white matter of the spinal cord were cases of toxemia, the product of dysentery, together with, in some instances, intercurrent infections.

Flexner and Sweet have pointed out that in rabbits in which the bile duct has been tied or a biliary fistula established, the nervous symptoms may still develop. They believe that the test of reaction to the dysentery bacillus is a lethal result and not necessarily the production of intestinal lesions, which they believe are brought about in the rabbit by successive acts of excretion of the dysentery toxin. However this may be, it appears that the most severe diffuse degenerations of the spinal cord in our series are, remarkably enough, of brief duration (in no case under six days) and in most instances without the development of ulcers. It may be remarked with respect to Cases 1269 and 1271 that the degenerations, although diffuse, are most marked in the direct and crossed pyramidal tracts, so that these cases possibly represent a tendency to motor tract disease of longer duration.

As lesions of special interest may be mentioned thrombi in 2 cases affecting small superficial arteries of the cerebrum: 926, female, age twenty-five, showed in the regions of the right paracentral fissure an area of the size of a quarter of a dollar where the area shows considerable injection with slight diffusion of blood into the tissue. The artery was filled with firm, slightly adherent thrombus. There was a moderate sclerosis of the aorta in this case, but no arteriosclerosis elsewhere. This case was one of manic-depressive insanity and died after three or four days' disease with a slight peritonitis and a single superficial ulcer of the duodenum, with many winding ulcers and a delicate pseudomembrane over the upper half of the ileum. This case does not correspond anatomically with the epidemic cases of 1908. Case 1201, female, age forty-nine, also a case of manic-depressive insanity, died after symptoms lasting a month, and showed an enlargement of the right ascending parietal artery (5 cm. in diameter) and thrombosis for a distance of 5 cm. from the surface of the superior parietal lobule. There was also in the right post-central lobule a softened hemorrhagic area 1 cm. at a point 2 cm. from the surface and 2 cm. from the longitudinal fissure. This case was autopsied Sept. 25, 1907. An unsuccessful attempt was made to cultivate the Shiga bacillus from the intestine, which showed hemorrhagic ulceration of the colon and congestion of the ileum.

It is impossible to say that these two instances of thrombosis of the cerebrum are or are not related to dysentery. No such cases have appeared during the epidemic of 1908.

Conclusions.

1. The brains of reduced consistence in our series can scarcely be regarded as showing effects of dysentery toxin, since in many cases of this group paraneuraxial infection with other organisms (terminal or secondary invader of the cerebrospinal fluid) was established.
2. Organic disease of the central nervous system has no special effect in favoring fatal issue.
3. Severe fatty degeneration, demonstrated by the Marchi method, and indicating lesions probably of several days' standing, was characteristic of the non-ulcerative cases and may point to a differential feature in the organism or toxin of the first phase of the epidemic. (See Articles IV, VI and X.) Or, on the contrary, this finding may point to the importance of secondary infection in dysentery.
4. Hemorrhagic lesions in the anterior horns of the spinal cords were not present.
5. Two cases of thrombosis of superficial cerebral arteries have been noted in cases before the epidemic.

VIII.

ULCERATIVE VAGINITIS IN A CASE OF BACILLARY DYSENTERY.

BY MYRTELLE M. CANAVAN.

One of the cases autopsied in the Danvers State Hospital dysentery epidemic of 1908, C. B. C., No. 14365, presented some unusual symptoms, which, together with certain lesions heretofore undescribed as complicating bacillary dysentery, are here considered separately.

A woman, aged fifty-one, past the menopause, a seamstress, had been a patient at the Danvers State Hospital for four years. Of a neurasthenic temperament, she complained of various vague pains and ailments, but had no marked illnesses, and was a faithful worker up to within the last year, when she "boarded out." Returning to the institution late in June, 1908, she was sure that she was not well or strong. On Aug. 28, she contracted diarrhea and was put in bed on one of the hospital wards. Here she had from eleven to twenty stools in the day, all containing blood and mucus. Temperature normal. On Sept. 2 she was taken to another ward, where she is recorded to have had from four to ten movements, with normal to subnormal temperature and a failing pulse, often imperceptible at the wrist.

The serum treatment [*] was instituted on the seventh day, 20 ccm. being given as an initial dose in the loose abdominal tissues. On the eighth day, 40 ccm. were given with no favorable result. At this time a bloody discharge was observed from the vagina, and this continued with weak pulse, prostration, cold extremities and hiccough, until the afternoon of her death, when, with a sharp hemorrhage from the vagina, she rapidly collapsed and died within an hour, after the fourteenth day of illness.[†]

The autopsy was performed by the writer twenty-four hours post-mortem. Following is the protocol:

Age fifty-one. Body of a white female, 159 cm. long. Nutrition and development good. Post-mortem rigidity present, lividity present. Over lower half of back, minute pinhead pustular eruptions are seen surrounded by small areas of brown discoloration. No edema. No decubitus. Skin around anus and over buttocks excoriated and deeply red. Pupils equal. Teeth in very fair condition.

Ventral section. — Panniculus 5 cm. over abdomen; 3 cm. over thoracic wall. Appendix 8 cm. long. *Mesenteric lymph nodes* enlarged. Intestines deeply injected, especially all of colon.

Thorax. — Lungs small, white-gray in color. Slender adhesions bind right lung to the thoracic wall in localized areas. Left pleuric cavity free.

Heart. — Weight, 295 gm. Fat on anterior epicardial surface, .5–1 cm. thick. Muscle soft, friable and red-brown in color. Measurements: Tricuspid valve, 10 cm.; aortic valve, 7 cm.; left ventricle, 1 cm.; pulmonary valve, 7 cm.; mitral valve, 7.6 cm.; right ventricle, .3 cm.

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[*] See note in Article X.

[†] Another case, A. H., No. 12083, of dysentery in a young woman, aged thirty-three, in the hospital four years, diagnosed dementia præcox, lasted eleven days and was severe from the beginning. Though the temperature did not range above 102°, the prostration was great, and after a few days she also had a bloody discharge from the vagina. This was thought to be her regular period, but a day or so later she was flowing excessively, making a complete change of bedding necessary five or six times in the day. The discharge was described as being "watery yellow," in contrast to her usual menstrual bright blood, and of an offensive odor. This lessened toward the end, but a tense abdomen, cold extremities, pinched features, weak pulse and hiccough persisted. She died on the eleventh day. No autopsy.

The right coronary has two openings in the aortic wall; left as usual. The endocardium is gray-white and thickened. Irregular patches of fibrosis in ventricular endocardium. Valves slightly thickened. Aortic cusps puckered.

Lungs. — Weights: right, 215 gm.; left, 215 gm. Base of lower lobe of left lung is slightly congested; otherwise no lesion in lungs.

Spleen. — Weight, 65 gm. Size, 7 x 9 cm. Nothing of note.

Stomach. — Contains fluid fecal material and undigested food. Wall thin, hemorrhagic extravasations near fundus. Duodenum presents no lesion. Jejunum has some areas of deeply red and swollen mucosa. At ileo-cecal valve the bowel presents an extensive and advanced picture of hemorrhagic exudation, between which areas small notched ulcers occur, with gray bases and heaped-up very red edges. The bowel wall is greatly thickened. The character of inflammation does not change until the sigmoid is reached, when the surface takes on a granular, rough, brown-yellow appearance with ulcers between. The rectum is the seat of a thin bloody clot over the surface. *Mesenteric lymph nodes*, 1 x .5—.5 x .2 cm., in clusters around the ileocecal valve and sigmoid.

Liver. — Weight, 1,285 gm. Normal except for a band, 2 cm. wide and 4 cm. long, on anterior surface of liver, which, on section, shows yellow, soft mottled areas in gland substance. *Gall bladder* presents no changes.

Kidneys. — Embedded in much fat, the kidneys are very small. Weight, 235 gm. Dark red in color. The capsule strips easily, leaving a smooth surface. Section: cortex is .5 cm., irregularly mottled between pyramids, with blue points and stripes of injection at surface. The pyramids are deeply red-blue. Pelves not unusual. A small cyst, 1 x 2 cm., at upper pole of left kidney in the substance of the organ.

Bladder. — Trigone hemorrhagic, otherwise no change.

Vagina. — Is a dull brownish-gray in color and covered with a tenacious hemorrhagic exudate. Clusters of deep-notched winding ulcers are seen at fornices at junction of cervix, extending deeply into the muscularis. Cervix thin, edematous; os admits two fingers. Numerous cysts in cervical canal. Lining membrane of uterus deeply reddened. *Ovaries* fibrous. Cystic organ of Rosenmüller on right. The uterus attached to anterior abdominal wall by ventrosuspension.

Aorta. — Irregular patches of thickening all along aorta. Superficial atheromatous ulcers, 3 x 2 cm., over lumbar region of aorta.

Thyroid. — Very small and thin. Normal in color.

Head. — Hair scant, gray. *Scalp* and periosteum not notable. Calvarium dense but of normal thickness. *Dura* not thickened nor adherent. *Pia* normal. Brain presents no abnormalities, except for the slight increase in consistence, everywhere equal. Brain weight: 1,075 gm. Weight of pons and cerebellum, 130 gm.

Cord. — Slightly softened in lower thoracic region.

Anatomical diagnosis. — Excoriation of buttocks. Pustular eruption. Mesenteric lymph nodes enlarged. Chronic focal pleuritis. Fatty myocarditis. Chronic fibrous endocarditis, ventricular and valvular. Anomaly of left coronary artery. Acute colitis, hemorrhagic and ulcerative. Fatty hepatitis. Acute diffuse nephritis. Cyst of kidney. Acute cystitis. Acute ulcerative vaginitis. Cysts of cervix. Acute endocervicitis. Chronic endometritis. Ovaries fibrous. Sclerosis of aorta with atheromatous ulceration. Calvarium dense. Slight general cerebral gliosis. Slight sclerosis of basal arteries. Brain weight, 1,075 gm.

Additional anatomical diagnosis from the microscopical examination of the sections. — Chronic interstitial myocarditis. Focal acute interstitial myocarditis. Slight and chronic perihepatitis. Slight passive congestion of liver. Moderate interlobular cirrhosis. Slight subcapsular hemorrhage of liver. Pigmentation of liver cells toward center of lobules. Occasional focal necrosis of liver. Slight chronic interstitial pancreatitis. Interacinar hemorrhage in islands of Langerhans. Acute interstitial pancreatitis (?). Chronic fibrous splenitis. Areas of hemolysis in spleen pulp. Hemorrhagic infiltration of the straight tubules of the kidneys. Acute interstitial nephritis. Congestion of lymph nodes. Chronic fibrous thyroiditis. Minute hemorrhages in gray matter of lower thoracic cord.

*Microscopic Examination.**

Heart. — Epicardium not remarkable. The blood vesssels and the capillaries of the epicardial fat are distended with blood. At one point in the epicardium is a minute focus of necrosis with hemorrhage and basic staining material suggesting bacilli. Considerable fragmentation of muscle fibers, diapedetic hemorrhages, pigmentation and foci of cells consisting of lymphocytes, eosinophiles and a few plasma cells, in the connective tissue, especially along and around blood vessels, and in the increased amount of connective tissue among the muscle fibers.

Liver. — In some areas the capsule appears thickened, and a slight subcapsular hemorrhage occurs at one point. The cell columns near the central veins are redder and narrower and the capillaries are fuller of blood. There is considerable pigmentation near central portion of the lobules. There are here occasional areas of focal necrosis, a moderate mononuclear exudation into the portal connective tissues and slight degrees of passive congestion and interlobular cirrhosis.

Pancreas. — The connective tissue is slightly increased around the blood vessels and also between the lobules. In many areas the acini are distended with secretion (?); the lining cells flattened and nuclei faded. Some islands of Langerhans show interacinar hemorrhage. Frequent foci of lymphocytes, plasma cells and eosinophiles occur in the connective tissue and around vessels, not connected in any way with the ducts.

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* For assistance in studying the microscopic sections, I am greatly indebted to Dr. E. E. Southard.

Spleen. — Shows some increase of connective tissue throughout, and some irregular hemorrhage. In places in the spleen pulp, considerable hemolysis is indicated by phagocytic cells; no eosinophiles. In many areas the cell proportions are 20 pulp cells, 20 lymphocytes and 4 eosinophiles.

Kidney. — One large subcapsular cyst surrounded by various smaller ones. Hemorrhagic infiltration of many of the straight tubules. Casts. The glomeruli are free; now and then an acinus will have swollen lining cells with absent or pale nuclei. Here and there occur collections of 100–150 cells as seen in paraffin cross-section, mostly in the connective tissue, particularly between the medulla and pyramids. A few lymphocytes are in these foci, but no polynuclears or eosinophiles. They consist almost entirely of plasma cells.

Mesenteric lymph nodes. — The peripheral sinus is occluded by lymphocytes and phagocytes, and many of the nodules are thinned out. Germinal centers are nowhere differentiated and the blood sinuses are everywhere engorged.

Thyroid. — Prominent overgrowth of interlobular connective tissue, with a few foci of lymphocytes as in other organs.

Pituitary. — Negative except for congestion.

Gasserian ganglia. — Negative.

Spinal cord. — Cervical region and lumbar negative. In thoracic, hemorrhages occur in the gray matter in the central part about two small central vessels as about vessels of gray commissure.

Jejunum. — The muscular layers are not involved, but the submucosa shows evidence of inhibition of fluid. Mucosa fragmented.

Colon. — The muscular coats are thicker than normal and the submucosa is greatly infiltrated by round cells. The mucosa when present has lost all differentiation of its component parts, and presents a homogeneous mass of cells and fibrin, capped by red cells. In some areas the mucosa is absent, and the cell layer above the submucosa itself is filled with small round cell exudate and fibrin. Solitary follicles not enlarged. In one place the entire wall shows striking picture of congested vessels and the lymph cells at the base of the mucous coat so numerous as to suggest a dissemination of the cells of a solitary follicle.

Vagina. — The poorly differentiated vaginal mucosa has irregular areas of disintegration, while the most vascular portion of the underlying connective tissue presents infiltration of degenerate cells and gaping spaces probably due in inhibition of fluid. Other specimens show no remnants of the mucosa and only portions of the submucosa intact.

From the mesenteric lymph nodes, the heart's blood and the intestines a Gram-negative, non-motile, non-gas-forming bacillus was isolated, which liquefies gelatin and peptonizes milk,* while from the stool of the patient before death, the Shiga type (see Table VI, Case 14365 *supra*) was obtained.† The patient's serum also agglutinated the Shiga and Flexner types in dilutions of $\frac{1}{20}$, $\frac{1}{40}$, $\frac{1}{80}$, the tenth day of her illness.

IX.

THE OCCURRENCE OF DYSENTERY IN HOSPITALS AND IN THE COMMUNITY AT LARGE, WITH A SUMMARY OF THE PROPHYLACTIC MEASURES WHICH SHOULD BE EMPLOYED TO CHECK THE DISEASE.

BY C. T. RYDER.

The importance in insane hospitals of dysentery, whether so designated or masquerading as colitis, entero-colitis or acute enteritis, is generally recognized, though as yet in this country no general measures have been undertaken to diminish its frequency. How common and how fatal the disease is in such institutions is well demonstrated by the statistics of the English Commissioners in Lunacy, who have since 1903 required of all the institutions under their control careful records of all cases of dysentery, and of "infectious enteritis" of doubtful cause. The data so secured, which are embodied in the annual reports of the commissioners, show an incidence rate of about twelve per thousand inmates, with a mortality of nearly 25%; these figures are based on the total inmates of all the institutions, and include among the cases only such as were in their clinical manifestations definitely dysentery. The report for 1907, however, recognizes that "epidemic enteritis" is closely allied to dysentery, and perhaps only a milder form of it. The endemicity of the disease at many of the institutions, and the difficulty of eradicating it owing to the presence of chronic and recurrent cases, are noted in the reports; the report for 1905 observes, "That asylum in which it has occurred is always in peril of an epidemic outbreak." [17]

An illustration of the relative frequency of the disease as a cause of death is contained in Sommer's "Index of 1,180 Post-Mortems of the Insane, State Hospital for the Insane, Norristown, Penn." Of these 1,180, 22, or about 2%, showed lesions apparently dysenteric.

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* A bacillus to be specially studied.

†Nine months after isolation of the bacillus dysenteriæ from the stool of this patient 20 minims of a .6% salt solution suspension of a twenty-four-hour agar slant culture of it was given intravenously (ear vein) to a heathy male rabbit. In three hours the animal appeared to move with less elasticity. In twenty-four hours had eaten but little food, but was very thirsty, drinking a pint or more of water. Moved well at this time. In forty-eight hours the animal was irritable; in fifty-two hours, more irritable. In sixty-six hours he was very depressed, refused food and water and progressed only by poorly co-ordinated movements, falling on left side after a short sprawling crawl. Rigors at intervals and slight convulsive movements. In seventy hours animal was lying prone on left side with feeble twitchings of small muscles of right legs. Right side of face immobile. Slight diarrhea, with very foul odor at this time. In eighty hours head held persistently to left, progresses feebly by use of abdominal muscles. Testicles much swollen and red. Body cold. Respirations slow and shallow. Died ninety hours after injection of organism.

Autopsy, twenty minutes after death.

Body of a male rabbit; no rigor mortis. Testes swollen and red. On section, injection of all small intestinal and mesenteric vessels noted. Diffuse hemorrhagic exudate just beneath serosa of colon. Lungs retracted. Liver, heart and spleen negative. Kidneys: Cortex irregularly congested, pyramids paler. Stomach full of fluid and some partially digested vegetables. Wall negative. Small intestinal wall covered with a soapy layer. Contains green mucoid material. *Cecum*, walls edematous, mucosa granular and hemorrhagic. Solitary follicles $\frac{1}{2}$ ccm. in size and deeply blue-red. Colon filled with pasty brown-red feces of foul odor.

Brain: Pia injected. Considerable collection of delicate hemorrhagic adhesions between cerebellum and cerebrum. Cord shows evidence of hemorrhage under dura 5 cm. down from cerebellum on right side. Transverse section shows a granular area of hemorrhage in whole right half of cord at this point.

Even more important than the prevalence of dysentery in institutions is its prevalence in the community at large. Curiously, in spite of the repeated demonstration of the specific organism in cases of severe and fatal diarrhea, in spite of the knowledge, which has now been available for more than five years, that it is responsible for the terribly destructive summer epidemics of "cholera infantum," and for the "terminal diarrhea" of chronic nephritis, the public, and even its officers of public health, are still inclined to ignore the specific infectious nature of the disease, and the consequent duty of adopting the same stringent preventive measures which are practiced in other infectious and preventable diseases. Dysentery, the proper designation for the majority of the cases now miscellaneously entered on the death records as colitis, entero-colitis, acute enteritis, cholera morbus, cholera infantum and diarrhea, is not even included at present in the list of diseases which physicians are required to report to boards of health.

The disease has had in Massachusetts in the last five years a mortality about one third that of diphtheria, three fourths that of scarlet fever, one third that of typhoid, two thirds that of cerebrospinal meningitis. If we include cholera infantum, as the results of many investigations compel us to do, though with a reservation pending further investigation on the subject, the mortality is nearly twice as great as the sum of the mortalities of these four diseases, and more than half as great as that of pneumonia, the greatest single cause of death. The Census Bureau's statistics [39] for the entire registration area of the United States in the years 1901–1905 (Connecticut, Indiana, Maine, Massachusetts, Michigan, New Hampshire, New Jersey, New York, Rhode Island, Vermont) give the following data.

TABLE XII.

	Annual average mortality.	Annual average mortality per 100,000 population.
Dysentery,	2,810	8.6
Cholera nostras,	460	1.4
Diarrhea and enteritis (under two years),	29,094	89.4
Diarrhea and enteritis (two years and over),	6,610	20.3
Total,	38,974	119.7
Deaths from all causes,	529,630	1,628.3
Tuberculosis, all forms,	62,835	193.2
Pneumonia, all forms,	51,811	159.3

Surely, when we are confronted by an infectious disease so enormously destructive, whose etiology and possible modes of conveyance are known, we are forced in self-defense to undertake all possible means of prophylaxis against it.

A Summary of the Prophylactic Measures which should be Employed to Check the Disease.

The prophylactic measures suggested by the investigation of this and other epidemics rest upon the following facts:

1. The disease is infectious and caused by the introduction into the gastro-intestinal tract of members of a specific group of micro-organisms.

2. The specific organisms are present in great numbers and in a virulent state in the stools of persons suffering from the disease. They always persist in the stools for some time after recovery; usually two to three weeks,[14],[1] but certainly sometimes for months, and perhaps for years,[14] as in typhoid.

3. Organisms may be transmitted by any vehicle, for example, the hands of attendants and the feet and bodies of flies, from the stools of the sick to food and water; upon the ingestion of such specifically contaminated food and water any person, whatever his physical or mental state, may contract the disease and may die of it. Infants and the aged and debilitated are, however, much more likely to succumb.

From these facts it is evident that in all cases of dysentery, whether in institutions or elsewhere, the following precautions should be observed:

1. Isolation and special attendants, who have no duties in connection with any person not suffering from dysentery, and who do not handle the food intended for other persons. Isolation should, if possible, be continued after recovery until the organisms are absent from the excreta. For the present, however, in the absence of simple and practicable tests to prove the absence of the bacilli, the duration of quarantine must be arbitrarily determined. Three weeks would be a reasonable period, as the organisms have disappeared by that time in most cases. With the advance of knowledge of the subject, positive methods of determing their absence and methods of hastening their departure may be discovered; such discoveries would greatly assist the rational prophylaxis of the disease.

2. Thorough and immediate disinfection of all excreta and soiled linen, continued throughout the period of quarantine.

3. Efficient screening of the sick-room.

For the practical enforcement of these measures, compulsory notification is, of course, absolutely essential. Furthermore, for the continuous protection of the community against the disease, looking toward its ultimate elimination, other more far-reaching measures need to be undertaken.

4. Thorough screening of all kitchens and dining-rooms throughout the fly season, with official inspection of all public eating places to prevent the exposure of food to flies.[17]

5. Removal of the common breeding-places of flies, as advocated by Dr. Howard; this involves doing away with all exposed rubbish heaps and open privies, and building special closed receptacles for manure and garbage.[17,18] To quote from Dr. Howard's last paper, "That a creature born in indescribable filth and absolutely swarming with disease germs should practically be invited to multiply unchecked, even in great centers of population, is surely nothing less than criminal." [17]

6. Greater care in the feeding of infants in the

summer. Wherever bottle feeding must be practised, unless unusual sanitary facilities exist, the milk should be pasteurized in the summer months, and everything connected with the baby's feeding should be absolutely protected from flies.

In institutions there are special points which should be observed:

7. The transfer of "carrier" patients from one institution to another is a possible method of starting epidemics and of transplanting the disease from hospitals where it is endemic to others previously free from it, and greater caution should be exercised in this practice. The transfer of a patient with dysentery from one ward into another within the hospital doubtless involves danger also, just as in typhoid; but since the disease is contracted by ingestion, and may be fly-borne, the presence of the dysenteric individual is a menace to the rest of the institution.

8. Screening of all departments, and especially of kitchens and dining-rooms, is particularly important, since with insane patients good sick-room hygiene is especially difficult, at least with the present economic facilities.

9. The importance of the disease should be made absolutely clear, and its prevention be made a point of pride by some such system of reports as that already noted as now in force in England, where the records of incidence and mortality of dysentery, as well as of tuberculosis, form a part of each institution's annual report.

For the perfection of the prophylaxis of dysentery, as observed by Candler,[6] there is need of further research upon the biology of the organism. It is desirable to know its ability to survive unfavorable conditions of temperature and moisture and absence of nutrient material, and the extent to which it can multiply in water, milk and other articles of diet at various temperatures. It still remains to determine precisely how long it usually does, and how long it may, persist in the colon after recovery, and whether chronic cases do, or, as Shiga[1] states, do not, necessarily have the specific bacilli present in the intestine. In the pathology of the disease there are also other important points to be settled; for example, the frequency of relapses and the duration of immunity, upon which there is considerable diversity of opinion.

Finally, it is to be hoped that scientific medicine may make great additions to the prophylaxis of the disease by means of artificial immunization, as Shiga[1] has reported very encouraging results from a process tried by him in Japan.

X.

CONCLUSIONS FROM WORK ON THE DANVERS DYSENTERY EPIDEMIC OF 1908.

BY E. E. SOUTHARD.

Shiga's discovery of bacillus dysenteriæ in the endemic acute dysentery of Japan in 1898[7,8] served to concentrate attention on the problem of infectious diarrheas throughout the world. In 1900 Flexner[9] and Strong[10] were each able to confirm Shiga's results by cultivation of closely similar organisms in the tropical (non-amebic) dysentery found in Manila. Kruse in 1900–1901[11,12] drew like conclusions from cases of epidemic institutional dysentery in Germany. In 1901 Vedder and Duval[13] cultivated organisms of this group from sporadic cases and from cases of epidemic institutional dysentery in Pennsylvania and Connecticut and went far to controvert the opinion of Kruse that institutional dysenteries were to be separately classed as "pseudo-dysenteries." In 1902 Duval and Bassett[40] were able to demonstrate an association between bacillus dysenteriæ and summer diarrhea in infants. In the four years 1898–1902, therefore, it appeared that numerous types of acute dysentery, endemic, epidemic and sporadic, tropical and non-tropical, adult and infantile, were proved to be related with organisms all more or less resembling bacillus dysenteriæ of Shiga.

Institutional dysentery is the type in which the greatest advances in epidemiology and in prophylaxis may be hoped. In the early rush of etiological work these features had perforce to be neglected. In England, however, where institutional dysentery reached frightful proportions, Mott published, in 1901–1902 and in 1903, a careful analysis of the epidemiological conditions of dysentery in the London County Asylums. Mott emphasized the preventability of the disease and offered diagrams showing the probability of contact infection. Eyre, in 1904,[19] was the first in England to isolate organisms of the Shiga group from cases of asylum dysentery.

Meantime Diefendorf and Fisher, in 1903–1904, had been investigating asylum dysentery in the Connecticut Hospital for the Insane, Middletown, Conn. They reported evidence of contact infection in 1903[41] and of food infection in 1904.[42] They agreed with Mott concerning the importance of recurrent diarrheal cases. They recovered several varieties of bacillus dysenteriæ, but in no case the Shiga type.

Knobel's work on dysentery in English and Welsh asylums, 1906,[4] was a special plea for subsoil disturbances as epidemiological factors in dysentery, and contributed nothing to the bacteriology.

Haenisch has, 1908, contributed a special paper on dysentery in institutions for the insane.[5] Haenisch concludes that asylum dysentery is not a specific single disease, but that there are three forms, (1) the epidemic form due to the bacillus dysenteriæ, "Shiga-Kruse"; (2) "pseudo-dysentery," due to various mutually related bacteria, and (3) a probable endemic form, due to amebæ and frequently complicated by liver abscess. Haenisch has published notes of asylum dysentery drawn from about 80 asylum reports, largely from 1896–1906, and as a rule from German, Austrian or Swiss institutions. Positively identified "Shiga-Kruse" dysenteries occurred in the Grafenberg Asylum (65 cases in recent years with mortality of 35%). Most of the reports examined by Haenisch gave insufficient data.

It develops, therefore, that, although asylum dysentery is a familiar bugbear in all parts of the world, and although some of the earliest bacteriological work was done with institutional cases, the subject has been done scant justice in epidemiological directions. The bacteriology, especially the differentiation of mannite-fermenting and non-mannite-fermenting strains, has also been worked on to some extent, with the result that the mannite-fermenting strains have been found most frequently in cases of institutional dysentery (Fisher and coworkers).

English observations vary as to the type of Shiga bacillus obtained. Eyre obtained the Shiga type from the stools of 4 out of 5 acute cases tested, and from the material of 2 out of 4 autopsied cases. It is since reported that Eyre also grew the Flexner type from 6 of the above 9 cases and also in 15 out of 35 chronic cases.[20] It does not appear that Eyre's observations have yet appeared in full. The Flexner type exclusively was cultivated by Aveline, Boycott and Macdonald [20] from what appears to have been an epidemic of dysentery in the Somerset and Bath Asylum at Cotford, near Taunton, England. These observers found the Flexner type in 17 out of 19 stools of clinical dysentery. In 18 cases examined from one week to fourteen months after recovery from dysentery, the bacillus was found but once (three weeks after recovery). In 26 non-dysenteric cases (possible ward contacts) the bacillus was not obtained.

Shiga found the original or "Shiga" type of bacillus dysenteriæ in Korea, in the Japanese army in Manchuria, in the Russian troops at Port Arthur, and in the captured Russian war-vessels. On the contrary, in epidemic dysentery in Tokio the "Shiga" type occurred in few cases, whereas the other types were frequently cultivated.

In Kobe, in the early months of 1907, Amako [15] found exclusively mannite fermenters. But in June the "Shiga" type appeared. In July occurred an epidemic in which both mannite fermenters and non-fermenters appeared. By November the "Shiga" type had quite disappeared. This work of Amako's upon seasonal distribution of bacillary types requires confirmation for institutions.

Recent work indicates that the Y type of Hiss and Russell [23] is an important factor in some institutional dysenteries. Lentz [43] has accumulated some of the data on this point with especial reference to the work of Liefmann and Nieter,[44] 1906; Lucksch,[45] 1906, and Kruse.[46]

Plan of the Danvers Work, 1908.

Work on the Danvers Hospital epidemic of 1908 was planned:

1. To yield a detailed epidemiological picture of the disease, not merely the morbidity and mortality of Danvers dysentery in 1908, but also as many data as could be collected bearing on (1*a*) such *possible sources of infection* as water, milk and food and on (1*b*) such *probable sources of infection* as transferred acute dysenteric patients, transferred bacillus-carriers and intramural bacillus-carriers, as well as on (2) such *causes of epidemic spread* as direct contagion, clothes-infection and flies.
2. To throw light on the incidence of dysentery inside and outside the hospital by the utilization (1) of available mortality records (infantile and adult) in adjacent towns and (2) of available autopsy records in certain of the larger Massachusetts hospitals, and to seek by annual, seasonal and certain other comparisons to establish the main external features of the disease.
3. To identify bacteriologically the cause of the epidemic, laying especial stress on different *strains of bacillus dysenteriæ found.*
4. To study comparatively the *distribution of agglutinins* (Shiga and Flexner) in the epidemic cases from a diagnostic standpoint and, in view of the probable significance of bacillus-carriers in the disease, to study more particularly the persistence, disappearance and possible reappearance of agglutinins in *sera tested serially* at intervals of several months.
5. To confirm and offer some detailed evidence as to the asserted absence of *leucocytosis in dysentery*, as well as, if possible, to explain the blood cell picture.
6. To describe more particularly the *lesions* of asylum dysentery, laying especial stress on the non-intestinal lesions, in order to bring the disease into line with those thoroughly studied by Councilman and his associates.
7. To study particularly the *nervous system* in dysentery, first, by reason of the frequency of dysentery (as a forgotten complication) in many cases whose cortices are being thoroughly studied on the psychiatric side and, secondly, by reason of the so-called neurotoxic component found in dysentery toxin.
8. To give a complete picture of a strikingly severe case of dysentery complicated by *acute interstitial nephritis* and *acute vaginitis.*
9. To offer what *prophylactic suggestions* might be possible.

Conduct of the Laboratory Work at the Danvers Hospital.

With the approval of the Superintendent, Dr. C. W. Page, the laboratory staff of three workers (Drs. Southard, Peabody and Canavan) turned its attention for a time from more strictly neuropathological problems to the question of dysentery. In addition to these workers, we were enabled, through the courtesy of the trustees and superintendent, to profit by the work of two men not on the regular staff, Dr. E. T. F. Richards and Mr. C. T. Ryder, who resided at the hospital. Moreover, Dr. C. G. McGaffin, of the Taunton State Hospital, has aided, during the first quarter of 1909, in analysis of some of the material, particularly on the neurological side.

Thus we enjoyed a dysentery staff of at most six workers. It does not appear that any of these were superfluous. Flexner, for his extensive "Bacteriological and Clinical Studies of the Diarrheal Diseases of Infancy," 1903,[24] had a quota of 22 workers. Good epidemiological work cannot be done without many workers. Insane hospitals, all over the world, if they face the dysentery situation seriously, must evidently look to the condition of their laboratories. The trustees of the Danvers State Hospital first appointed a special bacteriologist to the hospital, Dr. F. P. Gay, in 1906–1907. During his stay the work was systematized along lines which have been maintained since then by Drs. E. T. F. Richards, Anna H. Peabody and Myrtelle M. Canavan. Without the appointment and maintenance of special laboratory officers, it is doubtful whether insane hospitals can do their duty to their patients and the public. From our Danvers experience, at least, it seems that in the not distant future insane hospitals will consider bacteriological diagnosis as at least as essential as urine and blood diagnosis and will, therefore, maintain special laboratories for the purpose. The establishment of such laboratories will tremendously aid in the problems of human epidemiology, since the conditions of human epidemics are nowhere else as scientifically controllable as in insane hospitals.

Economic Considerations.

As the patients who are ill but recover outnumber the patients who succumb to dysentery often by more than three to one, it is obvious that the occurrence of dysentery in a hospital adds greatly to the nursing expenses of the hospital. The patients who die of dysentery are frequently old and infirm (of 30 bed patients contracting dysentery, 19 died; but of 109 patients not in bed who contracted dysentery, only 17 died).

But these arguments are insignificant beside the great offense to modern hygiene residing in the mere fact of the maintenance of foci of infection in the community. Although economists might consider it no great matter that the old, the infirm and the insane should die a bit prematurely, the incidence of the disease in about the same percentage in the medical, nursing and attendant service is evidently a menace to the community, since those affected may after recovery remain for undetermined periods bacillus-carriers. Although dysentery-carriers are not so dangerous as typhoid-carriers, since the bacillus of dysentery is not found in the urine, yet the danger from dejecta is great. Pure and practically pure cultures of bacillus dysenteriæ are sometimes recovered from the feces of dysenterics, as also in this epidemic (Case 13058).

General Statistical Data of the Report.

Epidemic of 1908.

Danvers Insane Hospital population (approximate, summer of 1908),	1,592
Cases of dysentery,	156
Percentage morbidity,	9.8
Fatal cases of dysentery,	36
Percentage mortality in dysentery cases,	23.1

Distribution by Sex.

Male patients in hospital, approximate,	600
Male cases of dysentery,	71
Percentage morbidity in male dysentery,	11.8
Fatal male cases of dysentery,	20
Percentage mortality, male patients,	28.2

Distribution by Sex.

Female patients in hospital, approximate,	800
Female cases of dysentery,	73
Percentage morbidity,	9.1
Fatal female cases of dysentery,	16
Percentage mortality, female cases,	21.9

Distribution by Age.

Average age of 144 patients at onset of dysentery,	48
Average age of 71 male patients at onset of dysentery,	49
Average age of 73 female patients at onset of dysentery,	47
Average age at onset in fatal cases, both male and female,	58

Onset by decades of life.	Male.	Female.	
Second,	0	2 (0 fatal)	
Third,	12 (2 fatal)	5 (0 ,,)	
Fourth,	11 (1 ,,)	20 (4* ,,)	3
Fifth,	13 (1 ,,)	16 (3† ,,)	1
Sixth,	17 (7 ,,)	15 (4 ,,)	
Seventh,	8 (5 ,,)	8 (3‡ ,,)	2
Eighth,	9 (4 ,,)	5 (3 ,,)	
Ninth,	1 (1 ,,)	1 (1 ,,)	
Tenth,	0	1 (1 ,,)	

Male cases over 50 at onset,	35 (17 fatal)
Male cases under 50 at onset,	36 (4 ,,)
Female cases over 50 at onset,	30 (11 ,,)
Female cases under 50 at onset,	43 (4 ,,)

(Analysis of 36 cases, Ryder's table.)

Distribution by Mental Disease.

General paresis,	10 (3 fatal)
Alcoholic insanity,	12 (1 ,,)
Senile and organic dementia,	21 (13 ,,)
Dementia præcox,	49 (7 ,,)
Manic-depressive insanity,	26 (7 ,,)
Imbecility,	12 (12 ,,)
Other cases,	16 (3 ,,)

Fatal Dysentery Cases under 50 Years of Age.

General paresis,	1
Dementia præcox,	3
Manic-depressive insanity,	3
Unclassified,	1

Danvers Dysentery Epidemic, 1908.

Bacteriological Data.

Cultivations from stools,		17
Isolations of bacillus dysenteriæ,		14
Shiga type,	13§	
Mannite fermenting,	1	
Cultivations from autopsies,		3
Acute dysentery, Shiga type,	1	
Healing dysentery (both negative),	2	
Cultivations from cerebrospinal fluid, negative,		3
Cultivations from blood, negative,		3

Agglutination Tests (Macroscopic $\frac{1}{20}, \frac{1}{40}, \frac{1}{80}$*).*

Tests of stock strains of Shiga and Flexner-Harris types with patients' sera,		115
Positive, Flexner-Harris,	37	
Positive, Shiga,	32	
Positive, both types,	24	
Negative, both types,	22	

Tests According to Duration of Disease.

	Cases.	Positive. Per cent.		Flexner-Harris. Per cent.	Shiga. Per cent.	Both. Per cent.		Negative. Per cent.
First fortnight,	32	69	=	25	6	38	and	31
Second,	19	100	=	42	32	26	,,	0
Third,	16	88	=	31	44	13	,,	12
Fourth,	26	73	=	3	35	35	,,	30
Fifth,	14	98	=	0	36	57	,,	7
Eleventh week,	9	66	=	0	22	44	,,	34

* One case not included in Ryder's tables.

† Two cases not included in Ryder's tables.

‡ One case not included in Ryder's tables.

§ See reservations in Article III.

Earliest positive test (Shiga), first day of disease.

Earliest positive test (Flexner-Harris), third day of disease.

Earliest positive test (both strains), second day of disease.

Positive in first week (19 cases), 53%.

Serial or " Spaced " Agglutination Tests.

Control sera from cases without history of dysentery,		10
Positive (Flexner-Harris $\frac{1}{80}$),	1	
Negative,	9	
Patients' sera,		38
Positive in disease or later,	37	
Negative in three " spaced " tests,	1	
Positive in three " spaced " tests,		13
Persistently Shiga,	8	
Persistently Flexner-Harris,	3	
Shifting Shiga to Flexner-Harris,	2	
Shifting vice versa,	0	
Persistently double,	0	
Positive in disease and after six months (February), negative after seven (March) (" fading' "),		4
Shiga or Flexner-Harris, each,	1	
Shifting Shiga to Flexner-Harris,	2	
Shifting vice versa,	0	
Positive in disease, negative February and March (" limited "),		3
Shiga ($\frac{1}{80}$),	2	
Double ($\frac{1}{80}$),	1	
Positive in disease, negative February, positive March (" recurrent "),		5
Double ($\frac{1}{80}$) and recurrent double ($\frac{1}{80}$),	1	
Double ($\frac{1}{80}$) and recurrent Shiga ($\frac{1}{20}$),	1	
Double ($\frac{1}{80}$) and recurrent Flexner-Harris ($\frac{1}{40}$),	1	
Shiga ($\frac{1}{40}$) and recurrent Shiga ($\frac{1}{40}$),	1	
Shiga ($\frac{1}{80}$) and recurrent Flexner-Harris ($\frac{1}{20}$),	1	
Negative in disease, positive later,		7
Negative in disease and after six months (February), positive after seven (March) (immunized *de novo*),		5
De novo, Flexner-Harris,	4	
De novo, Shiga ($\frac{1}{40}$ feeble),	1	
Negative in disease, positive after six and after seven months, Shiga ($\frac{1}{40}$, feeble),		1
Negative in disease, positive after six months (February), negative after seven (March), (transient), Flexner-Harris ($\frac{1}{80}$),		1

Leucocytosis.

Initial total leucocytosis and fall to normal,	5th day.
Slight lymphocytosis falling to normal,	10th day.

Pathological Anatomy.

Epidemic cases considered,	16
Nutrition good,	8
Nutrition poor,	8
Decubitus,	6
Septicemia (non-dysenteric),	7
Paraneuraxial infection (non-dysenteric),	6
Septicemia and paraneuraxial infection,	5

Intestinal Lesions.

Ulceration,	8 (11?)
Pseudomembrane,	5 (6?)
Ulceration and pseudomembrane (ulcers confined to large intestine),	4
Swelling and congestion,	6
Gross lesions of heart,	15
Gross lesions of vessels,	15
Gross lesions of kidneys,	11
Gross (or microscopic) lesions of liver,	8
Abscesses of liver,	0
Cholelithiasis (in 14 cases with complete notes),	8
Bronchopneumonia	6
Abscesses of lungs,	0

Clinical and Anatomical Correlations.

Epidemic cases considered,		16
Dead from 6 to 8 days after onset,	7	
Dead from 11 to 16 days after onset,	6	
Dead from 21 to 35 days after onset,	3	

Minimum time of ulcer production, 7 days.

Ulcers lacking in 2 cases, 16 and 21 days in duration respectively.

Healing and healed ulcers in cases lasting 33 and 35 days.

Healing ulcers found in cases after 12 days' symptoms.

GENERAL CONCLUSIONS.

Etiology.

The writers have studied an extensive epidemic of dysentery in a large state hospital for the insane. The micro-organism of this epidemic, as of several other epidemics of institutional dysentery studied by other investigators elsewhere, has proved to be *bacillus dysenteriæ* of Shiga.

Contrary to the almost constant experience of workers in institutional dysentery, viz., that various types of mannite-fermenting organisms predominate, our own epidemic has proved to be mainly due to the original Shiga or non-mannite fermenting type of *bacillus dysenteriæ.*

Epidemiology.

Our data enable us to exclude (for this epidemic) several factors, viz., *primary* infection of water, milk and (very probably) food supplies, as well as subsoil disturbances.

We can point to the first case in the epidemic as an introduced probable carrier of dysentery bacilli, but we hold to the belief that bacillary dysentery is endemic in our institution and that intramural carriers, already present, would amply account for the initiation of the epidemic.

We are of opinion that, whereas the endemic occasional cases depend mainly upon contact infection with the products of intramural carriers, the huge proportions of our epidemic were in large measure due to flies. Our incrimination of the flies is circumstantial rather than absolute. But we regard efficient screening of sick wards, kitchens and eating-places as an indispensable safeguard against the epidemic spread of dysentery.

How to combat endemic bacillary dysentery is another and unsolved problem.

Bacteriology.

Beyond adequate identification of the bacillary cause of the epidemic, we have not undertaken extended bacteriological studies.

Minor results are (*a*) a preference for a slightly alkaline medium rather than an acid medium for growing the bacillus dysenteriæ and (*b*) the conclusion that, *as a single test,* in the presence of others, agglutination by specific antisera is more convincing than the so-called typical litmus-milk reaction. We believe many workers would agree with this latter point.

Immunity.

Therapeutically, we have nothing of importance to report, since a potent antiserum was not available.*

Diagnostically, we have found a surprisingly early development of agglutinins in the sera of some patients (even the first day of symptoms).

We have further shown an unexpected persistence of agglutinins (seven months or more) in some cases.†

This persistence of agglutinins over the winter may serve to alter the interpretation of some of our positive early tests as indicating recent agglutinin formation. But it is obvious that even such persistence of agglutinins may be a diagnostic aid. The percentage of positive tests rises from about 1 in 2 in the first week to 100% in the third and fourth week, and then gradually declines.

Biologically, we regard our serial agglutination tests as of great interest, since they demonstrate (1) at some stage over 97% positive agglutinations, (2) numerous types of occurrence ("limited," "fading," "recurrent," "*immunizing de novo*," "transient"). Of these types the most interesting are the latter three, which suggest control work with other stock strains and *bacillus coli communis*. The transient and recurrent agglutinations and the suspected fresh agglutinin formation are almost constantly *with the non-mannite-fermenting group* (as represented by Flexner-Harris) and *practically never with the Shiga type*.

These results afford color to the now growing view that the Shiga type is the truly parasitic type of dysentery bacillus, whereas the non-mannite-fermenting group may represent inhabitants of a relatively normal intestinal tract.

Hematology.

The blood picture of bacillary dysentery (not heretofore thoroughly examined?) places the disease logically with typhoid fever in respect to the absence of polynuclear leucocytosis. There is a slight lymphocytosis falling to normal by the tenth day in the ordinary case.

Pathogenesis.

Some seven days of symptoms seem required for the production of intestinal ulceration. Intestinal ulceration is by no means essential even to cases of fatal dysentery. Blood is found in the feces of patients that never show frank intestinal ulceration. The characteristic blood in the dejecta of these cases is due to capillary oozing through minute lesions of the mucosa.

We have what we believe a novel hypothesis as to the genesis of dysenteric ulcers. This hypothesis recalls the mechanical simplicity of Mallory's conception of the manner in which typhoid ulcers are produced. But the mechanism is different therefrom, as it consists of infarctions due to endarteritis and endothelial stripping rather than the typhoidal infarction by over-proliferation of endothelial cells.

We conceive that the dysentery toxin works more powerfully but for a shorter period than the toxic products of bacillus typhosus.

We conceive that the dysentery toxin has a special tendency to attack foci in the intestinal mucosa and thence gains ready access to the endothelium of the regionary capillaries, arterioles and venules which are frequently thrombosed. The possibility that these thrombi are produced, not by bacillus dysenteriæ, but by streptococci,[47] or other organisms, must be confronted.

Thrombosis elsewhere is not the rule in dysentery, though we have two non-epidemic cases of dysentery in which extensive thrombosis of superficial cerebral veins occurred. The propensity of Shiga toxin to attack vessels in the anterior horns of the spinal cord in the rabbit may be mentioned in this connection.

Neuropathology.

Long-standing injury of the nervous system has no special influence in favoring the occurrence or the fatal issue of bacillary dysentery. Age is a more important factor, and this probably resolves logically into cardiorenal injury.

A great proportion of brains in our series were softer than normal. This is possibly due to the terminal infection with non-dysentery organisms, which we frequently demonstrated.

The most severe fatty degenerations of diffuse (non-systemic) type were found in cases that died *after brief illnesses and, as a rule, without ulcer production*. (It is an attractive hypothesis that the neurotoxic component in these cases was more powerful than in others.)

Signs of lesion in the cells of the sympathetic plexuses of the intestine were sometimes found. They are regarded as effects of the disease rather than as playing much part in its mechanism.

The Cause of Death.

Non-dysenteric septicemia and paraneuraxial infection are frequent complications of fatal dysentery cases. The great majority of the fatal cases are at the start seriously damaged cardiorenal subjects.

Epidemic and Endemic Conditions.

If the differential agglutination tests are a guide, the Shiga type of organism gained effective entrance in the fifth and sixth weeks of our epidemic, that is, simultaneously with the highest elevation of morbidity. Thereafter, also, the disease became anatomically much more severe; that is, whereas theretofore the autopsies rarely showed intestinal ulceration, afterward they rarely failed to show ulceration. This fact, taken in connection with the severer neuropathological changes found in the non-ulcerative cases, suggests obvious epidemiological lines of attack and the importance of getting more light on the prevalence of bacillary types at different seasons and their relation to the course and outcome of dysentery cases.

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* The serum employed failed to reduce mortality or shorten or otherwise abate the disease, and it shortly transpired that the serum used had lost the greater part of its agglutinative power. We hope for more reliable sera, should they again be in demand.

† We have recently had under observation a patient (forty-two years old) who has had diarrhea in summer for twenty-two years (a morphinist as result of therapeutic attempts), whose serum agglutinates stock Shiga $\frac{1}{200}$, stock Flexner-Harris $\frac{1}{300}$. Organisms not recovered.

Hence, a study of endemic conditions is indicated.

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Original Articles.

VACCINE TREATMENT OF LOBAR PNEUMONIA.

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THE PROBLEM.

THE pneumococcus was demonstrated to be the almost universal cause of lobar pneumonia by Fraenkel in 1885, and by Weichselbaum, in 1886. In spite of this demonstration, the mortality of the disease has not been modified.

There have been published, in this country, several large series of clinical observations on the disease. Foreign statistics on the subject are unsatisfactory.

1. Townsend and Coolidge,[1] in a statistical study of 1,000 cases of pneumonia at the Massachusetts General Hospital for the years 1822 to 1889, reached the following conclusions:

" Treatment which was heroic before 1850, transitional between 1850 and 1860, and expectant and sustaining since 1860, has not, therefore, influenced the mortality rate." " Treatment has not influenced the duration of the disease or its convalescence." The mortality in this series of cases was 25%.

Sears and Larrabee,[2] in " An Analysis of Nine Hundred and Forty-nine Cases of Pneumonia " from the Boston City Hospital during the years 1895 to 1900 inclusive, found a mortalityof 35.9%. These cases included, however, all cases entering the hospital moribund and eliminated many mild cases of doubtful diagnosis, so that the percentage of mortality is high even for hospital cases. They agreed with Townsend and Coolidge in concluding that pneumonia is " uninfluenced by treatment."

Ashton and Landis,[3] in an analysis of 991 cases occurring in the Philadelphia General Hospital from May 1, 1897, to Oct. 1, 1904, found a mortality of 53+%. This hospital, according to the authors, draws from the " riffraff of society " and receives many aged paupers, so that the death-rate is extraordinarily high. They conclude that " the course of these cases has been practically uninfluenced by treatment."

Norris,[4] in a study of 445 cases at the Philadelphia General Hospital from Feb. 1, 1905, to

Dec. 23, 1907, which were given fresh-air treatment, records the lowering of the mortality from 53% to 47%.

These four series include solely hospital cases in which the mortality is necessarily higher than in private practice. Unfortunately, no equally reliable statistics are obtainable from cases handled in private practice. "In the United States census of 1900, pneumonia makes practically 10% of all deaths, i. e., it is the cause of about 10% of the serious illnesess."[5] Reynolds,[6] commissioner of health for Chicago, says, "Since the census year of 1900, pneumonia has claimed more than one eighth of all the victims of the Grisly Reaper in Chicago, one third more than consumption and 44% more than all the other contagious and infectious diseases combined, including diphtheria, erysipelas, influenza, measles, puerperal fever, scarlet fever, smallpox, typhoid fever and whooping cough, — the total of whose deaths was 4,489, as compared with a total of 6,560 deaths from pneumonia."

Chicago showed an apparent increase of deaths from pneumonia from 4.40 per 10,000 of population in 1860 to 19.79 per 10,000 of population in 1900. Klebs [7] has shown that the increase is due, at least in part, to the increased incidence of respiratory diseases in infants and in the aged, and that in any mortality statistics the recording of broncho and other pneumonias under the general heading of "pneumonia" invalidates those statistics to a considerable degree. Wells [8] has collected from the literature 465,400 cases of pneumonia, with 94,826 deaths, a mortality of 20.4%.

Musser and Norris [9] among 43,455 cases found a mortality of 21.06%.

An appreciation by the New York City Board of Health of the growing importance of acute respiratory diseases led to the establishment of a medical commission, national in character, to investigate the great prevalence of the acute respiratory diseases in that city, with the hope that some means could be devised for reducing the excessive morbidity and mortality from this cause.

Their investigations showed that the death-rate of New York and other cities for all of the principal causes of death had fallen 10 to 35%, excepting in four groups of diseases, in which there had been an increase. These four are:

1. Acute respiratory diseases.
2. Cancer.
3. Diseases of the circulatory apparatus.
4. Diseases of the kidney.

The death-rate from acute respiratory diseases had increased 10 to 15%, and pneumonia played the most important part in the increase.[10]

Osler says, "Pneumonia is the most fatal of all acute diseases, killing more than diphtheria, and outranking even consumption as the chief cause of death." [11]

Musser [12] says, "It may be conservatively stated that the frequency of pneumonia is at least not diminishing and that the number of deaths caused by the disease is appalling."

Pneumonia has become in the last two years the chief cause of death in Boston and Massachusetts.[13]

From the above data and the opinion of medical men generally, it can be accepted that, apart from the possible influence of fresh-air treatment, which at most has only slightly influenced the death-rate, the mortality of the disease has remained unchanged by modifications of treatment for the past one hundred years. Pneumonia remains practically the only infectious process whose incidence and mortality continue unvarying in spite of a knowledge of its cause and in spite of the education of the masses in hygiene, which has so profoundly influenced other diseases such as typhoid and tuberculosis.

Any treatment, therefore, which gives promise of lowering in any way the *appalling mortality*, as Musser puts it, should be given a thorough trial.

BASIS FOR THE PRESENT WORK.

Three years' experience in the use of vaccines and their application to both acute and chronic processes led to an effort during the winter 1908–9 to determine the value of vaccines in pneumonia. It was recognized that the small number of cases which could be treated would lead to inconclusive results unless malignant types of the disease were selected.

It is generally recognized that alcoholic pneumonia furnishes a much higher mortality than other types of the disease. Townsend and Coolidge give 41% as the mortality among the intemperate in their series. Sears and Larrabee found a mortality of 45.5% in the hard drinkers included in their series. Ashton and Landis attribute the high mortality of their series to the fact that almost one ninth of their cases were alcoholic.

It was thought that data obtained from the treatment of cases of alcoholic pneumonia would be at least suggestive. An appeal was, therefore, made to several medical groups whom the writer addressed to test the value of vaccine on the alcoholic and extreme cases. Pneumococcus vaccine was furnished for the treatment of 34 cases of this type, of whom 6 died (17.7%). In a larger series of cases of ordinary pneumonia (49), 15% came to crisis in three days, and but 2 deaths were reported. The total deaths for the series of 83 cases were 8, or 9.7%.

It was noted by most observers that rapid relief of toxemic conditions, which were present in serious cases, followed the use of vaccine, and in cases of uncontrollable delirium an abatement of the delirium was prompt.

We are not attempting to draw definite conclusions from this series because we recognize the futility of deductions from so small a number of cases of a self-limited disease in which sudden critical changes in the clinical picture are frequent.

The results are encouraging enough, however, to justify the wider application of this treatment.

MODIFICATIONS OF WRIGHT'S RULE FOR THE USE OF VACCINES.

We believe the results obtained in our series of cases to be in part due to modifications in the usual rules for the application of vaccines in acute infections.

Wright's rules for the use of vaccine are essentially these:

1. That the dosage and interval between doses be determined by the observations of the opsonic index.

2. That injections be made at intervals of two to three days or more.

3. That vaccines shall be prepared by heating suspensions of bacteria in sealed tubes for one hour at 60° C.

Our experience in the use of vaccines, which now extends over four years, has led to a demonstration that each of these rules is fallacious when applied to *acute* conditions.

1. The opsonic index. Our experience has led to the conclusion that the opsonic index, while useful in obscure infections for diagnostic purposes, has little value for controlling treatment of acute infections, and among these more particularly general infections.

2. The interval between doses. In chronic diseases, especially tuberculosis, it is possible to demonstrate that the injection of vaccine in considerable doses is followed by a temporary lowering of the patient's resistance — a frankly negative phase which may persist for some time. Further use of vaccine during this period is at least not desirable and may be harmful. In acute conditions, however, with proper dosage of vaccines the negative phase is either ephemeral or absent.

This first came to our notice in acute staphylococcus infections. One injection of vaccine is usually followed by relief of pain, by an improvement in the local condition, by a feeling of well-being and by a drop in temperature, if fever is present, which lasts for twenty-four hours or thereabouts. Then ensues a return of pain and temperature, with a loss of the feeling of well-being. Repetition of vaccination at twenty-four-hour intervals does away with this, and the usual reaction of cases is progressively upward.

In acute general infection we have shortened the time between injections, using smaller doses, to four to eight-hour intervals, with a progressive improvement in our results.

3. The time of exposure of suspensions of bacteria to heat for the purpose of killing. It is recognized that the reaction to vaccines is a specific one; thus staphylococcus vaccine is of value only in the treatment of staphylococcus processes. Its use gives rise to an increase in the resistance of the individual to the staphylococcus alone, or, if it raises the resistance to other organisms, it does so secondarily and to a minor degree. Much more is this true of the streptococcus pyogenes. One quickly realizes clinically that, although there are only minor or indistinguishable morphological and cultural differences between strains of streptococci, yet the use of an autogenous vaccine, one prepared from the strain obtained in cultures direct from the lesions, will furnish results not obtainable by the use of other individual strains or of mixtures of these.

The specificity of a bacterium is a property residing in its albumens, and biological tests demonstrate that albumens which are exposed to excessive temperatures, or for long periods to temperatures which are not ordinarily excessive, usually lose their specific characteristics.

In our early work with streptococcus general infections we followed Wright's rule of exposure to 60° C. for one hour. Our clinical results from the use of such vaccines were unsatisfactory. Progressive shortening of the time of exposure brought us ultimately to fifteen minutes as the time limit giving the most desirable results. At the end of this exposure positive cultures of the streptococcus may be obtained from the suspension. Vaccines are made by diluting such suspensions to the desired strength with $\frac{1}{4}\%$ carbolic acid. This small amount of carbolic is almost inactive but results in the killing or further attenuation of the organism, so that infection is not possible.

We have now used such vaccines on several hundred cases without any infections and with results markedly superior to those obtained when Wright's rule was followed.

As an indication of the value of vaccines in acute infection, our experience with the streptococcus is suggestive. In 47 cases of puerperal sepsis in which autogenous vaccines were used during the past twenty months, 4 cases died. Most of these cases came to us as a last resort after all clinical expedients had been exhausted. Two of these cases were moribund and died within forty-eight hours of the injection of vaccine. (See reacting ability.) The third was anemic and showed progressive increase of sepsis in spite of vaccines, as did the fourth.

OBJECTIONS TO THE USE OF VACCINES.

New methods of treatment are approached with proper caution by careful members of the medical profession. Objections have been made that the use of vaccines, which are frankly suspensions of endotoxins (killed bacteria), should be attended by danger of intoxication. Theoretical considerations of this sort must yield to the facts of experience. The following observations, which cover all the harmful results observed in the treatment of several thousand cases, would seem to indicate that these vaccines in ordinary doses are harmless. We have had opportunity to see the results of large doses of vaccine given at one time, and repeated doses of vaccine over a long period.

1. *Large doses.* — In two cases, through an error in reading directions, the physicians repeatedly filled their hypodermic syringes until they had emptied a whole bottle of staphylococcus aureus vaccine containing ten billion bacteria into the patient at one dose. In one case, a patient seriously sick with a septic finger, no harmful results appeared. In the second, a business man in the suburbs, the patient came to Boston in the morning, immediately after the injection. About two hours later he felt tired and decided to go home as his business day (Saturday) was about over. He collapsed on the train, and on removal

to his house was found to have a pulse of 50 and a temperature of 96°. Stimulation by strychnia subcutaneously and hot water bottles brought about immediate reaction and patient was practically well in fifteen minutes. It should be remembered that these patients were given *forty times the initial dose of staphylococcus vaccine.*

Bacillus coli vaccine in doses of 100 to 200 million will rarely cause in very sick patients a critical drop in temperature to subnormal with temporary collapse, but with rapid response to stimulation. Smaller doses are unattended by harmful reaction.

We have never seen either immediate or delayed harmful results follow the use of streptococcus or pneumococcus vaccine.

2. *Long-continued use.* — In several cases, notably chronic conditions, such as acne, vaccines have been used over periods of months without evidence of injury. In one case of carbuncle of the lip with x-ray burn in which patient had produced multiple infections of his hard palate by bacteria carried into the mouth by the tongue, and in whom there was later an osteomyelitis of the vomer, prolonged treatment was necessary, over 200 million staphylococci being injected. This patient, who was sixty-three years of age, showed a large trace of albumen in his urine when treatment was initiated. Examination at the end of treatment showed no albumen present. In general, the appearance of this patient justifies his statement that he feels five years younger than he did before vaccination was begun.

Staphylococcus vaccine for the treatment of furunculosis, boils, etc., has established itself firmly in the medical community as the standard method of treating such conditions. The prophylactic use of typhoid vaccines in armies and hospitals has commended itself to the judgment of the most conservative critics. Osler[14] recommends its use, the Medical Department of the United States Army is introducing the practice, following the lines laid down by the medical services of foreign armies, and Richardson has established its use locally.

NECESSITY OF USING VACCINES WHILE PATIENTS HAVE SOME REACTING ABILITY.

Diphtheria antitoxin acts immediately to neutralize toxins with which it comes in contact in the bodies of patients into whom it is injected. It calls upon the patient for no assistance in overcoming the poisons of the bacteria. He is a passive agent. Vaccines, on the other hand, are in themselves incapable of directly influencing bacteria or their poisons. Their function is to stimulate the immunizing machinery of the individual to react and to produce substances (opsonins) which will influence the bacteria. The patient, then, plays an active part in the process, and if success is to be obtained must have sufficient resisting ability to react under the stimulation of the vaccine. Vaccines in moribund patients are, therefore, useless. We have never hesitated, however, to use them under such circumstances, for sometimes the *apparently* moribund patient has exhibited remarkable powers of responding to stimulation, but for best results treatment should be initiated the moment that a diagnosis is established.

We believe that we are justified in concluding from our experience:

1. That vaccines used in ordinary doses are harmless.
2. That a wider application of vaccine treatment in lobar pneumonia is indicated.

For the purpose of obtaining data from a sufficient number of cases to furnish material for definite conclusions, a fund has been established, through the munificence of public-spirited citizens, by means of which we will furnish without cost pneumococcus vaccine for the treatment of lobar pneumonia.

A circular stating these facts will be sent to every registered physician in Massachusetts. On application from him there will be sent to his address, special delivery, a case containing a bottle of stock pneumococcus vaccine, a sterile sputum jar and a chart for data. The vaccine should be used according to the following directions, a copy of which will accompany each bottle of vaccine:

Vaccines are furnished in 10 ccm. bottles covered with a rubber cap. *This cap should not be removed.* Pour 5% carbolic on surface of cap or cover it with a wad of absorbent cotton soaked with alcohol (95%) and allow to stand for a few minutes. Sterilize hypodermic syringe by boiling. Shake bottle of vaccine, thrust hypodermic needle through cap, invert bottle if necessary, and remove dose. The cap will reseal itself.

The skin of patient should be prepared by scrubbing it with alcohol. Vaccine should be injected deeply by direct thrust of needle at right angles to skin. If placed subcutaneously, as in drug administration, the resulting local reaction (swelling and redness) will be greater than if placed deeply.

The local reaction is temporary — will dissappear in a few days. It is most marked following the first injection of a vaccine and is progressively less with succeeding doses.

Vaccine. — Dose, 8 minims; repeated at four- to eight-hour intervals.

Vaccine should be kept in a cool place.

Treatment should be started without delay on receipt of vaccine.

As soon as possible a characteristic specimen of sputum (single expectoration) should be received in the sputum jar, which should be replaced in the mailing case and sent *immediately* by *special delivery* to the laboratory. There should accompany it a short statement as to patient's condition. In very sick cases, especially if alcoholic, an autogenous vaccine will be made from the sputum, where possible, and sent to the physician to replace the stock vaccine. An autogenous vaccine can usually be prepared within twenty-four hours.

The chart which the physician agrees to prepare, if he applies for vaccine, is extremely simple and calls only for data which are readily observable in every case and which do not require special skill to obtain or record.

It is our intention on completion of the work to request The Massachusetts Medical Society to appoint a committee to consider the data obtained and furnish conclusions as to the value of this method of treatment.

Our readiness to supply pneumococcus vaccine on demand will be indicated by the receipt by physicians of the circular stating the above facts.

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[1] The Mortality of Acute Lobar Pneumonia. Trans. Am. Climat. Asso., June, 1889.

[2] St. Paul Med. Jour., 1902.

[3] Am. Jour. Med. Sc., vol. cxxix, 1905.

[4] *Ibid.*, vol. cxxxvi, 1908.

[5] Preble: Pneumonia. P. 21. Head, Chicago, 1905.

[6] Teachers' Sanitary Bulletin, State Board of Health of Michigan, January, 1903. Reprint No. 587.

[7] Am. Med., vol. v, no. 24, December, 1903.

[8] Jour. Am. Med. Asso., vol. xliii, p. 866, 1904.

[9] Osler's Modern Medicine, vol. ii. Lea, Philadelphia, 1907.

[10] Report of Medical Commission for Investigation of Acute Respiratory Diseases. Department of Health of City of New York, 19.

[11] Practice of Medicine, Appleton, New York, 1909.

[12] *Loc. cit.*

[13] Boston Board of Health (personal communication).

[14] *Loc. cit.*, p. 99.

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THE IMMEDIATE RESULTS AND SURGICAL COMPLICATIONS OF GASTRO-ENTEROSTOMY.[*]

BY FRED T. MURPHY, M.D., BOSTON.

Successful surgery in any region depends upon three factors: knowledge of the pathological condition to be relieved, a full understanding of the physiological effect that will be produced by the operation, and perfect technic. This is a trite observation, yet in considering any phase of gastro-enterostomy I think it is necessary to insist upon these fundamentals, else we are led at once into a maze of complications which are bewildering and terrifying.

With a " blocked " pylorus and a properly performed gastro-enterostomy, a side track is formed for the passage of the stomach contents into the jejunum which causes no symptoms. Under these circumstances the presence of bile and pancreatic juice in the stomach is tolerated without ill-effect. Serious disturbances in metabolism do not follow. This is a simple mechanical problem solved by definite mechanical procedure.

With a patent pylorus the stomach contents will pass, for the most part, through the natural opening before they leave the stomach via the gastro-enterostomy opening, wherever the opening may be placed. This principle, established first by the experiments of Kelling, and Cannon and Blake, is fundamental. I must confess that even so late as last summer I felt some doubt about these findings, and to satisfy myself I performed gastro-enterostomies upon a series of cats, placing the anastomosis in every conceivable part of the stomach. The results confirmed the above-mentioned original observations. In one case the food did leave the stomach first through the gastro-enterostomy opening, but I was not able to duplicate this result, and I attribute it to some chance formation of a valve of mucous menbrane.

As the one certainly definite indication for gastro-enterostomy we have, then, some obstruction to the passage of the food from the stomach to the small intestine. As a possible indication for gastro-enterostomy there remains the effect of the operation upon the gastric secretion. Analysis of the stomach secretions after gastro-enterostomy show that the acidity is diminished either by the neutralization from the alkaline secretion pouring in from the duodenum or by some reflex carried by the blood stream. Surgical opinion is undivided as to the wisdom of the operation when the simple mechanical problem is to be solved. When the benefit to be derived from the operation must depend upon the modification of the reaction of the stomach contents produced by the gastro-enterostomy, surgical opinion is divided as to the wisdom of the operation. Experience is driving us more and more to attack these non-obstructive lesions direct by excision or infolding. The keynote of recent symposiums on the surgery of the stomach has been, " Operate only when some actual lesion of the stomach or duodenum can be demonstrated." Gastro-enterostomy for undemonstrable lesions of the stomach or duodenum has been a failure. As proof of this, note the cases which are not infrequently re-operated and the gastro-enterostomy opening closed.

The following case which I operated upon last summer at the Massachusetts General Hospital, through the courtesy of Dr. Balch, is a good example of the ill-advised operations which only a few years ago were being done upon the stomach. This woman, L. L., some five years ago had a gastro-enterostomy with long loop performed. At the time of operation no lesion of the stomach or duodenum was demonstrable. After the operation, she continued to vomit as before. Then an entero-enterostomy was performed. Still the vomiting continued. Later, a third operation was done to break up adhesions. At one of these operations it is probable that a " Finney " was also done, as the pylorus at the time of my operation showed scars of sutures placed as they would be for that operation, but in questioning the previous operators I could get no definite statement as to this. I closed the gastro-enterostomy opening; then, on account of adhesions, was forced to resect the loop of the jejunum, including the entero-enterostomy. In the end, the patient was left with a normal gastro-enteric tract, minus about twelve inches of small intestine and with an abdominal cavity matted with adhesions. The post-operative history has not been brilliant, but from being a confirmed invalid, she is now able to do light work and to enjoy restricted diet.

To-day such a case would mean poor surgery. When the operation was done it represented the radical surgical opinion of the time. It was one of the necessary steps in the development of our present knowledge. I feel personally that in the future gastro-enterostomy will be performed only in the cases in which there is mechanical obstruction to the passage of food to the duodenum, and very rarely in the cases in which the actual lesion is non-obstructive, but which cannot be attacked directly.

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[*] Read at annual meeting of the American Gastro-Enterological Association, June 8, 1909.

The question may be asked, What about the brilliant results which have been reported in which gastro-enterostomy has been done for acute hemorrhage of the stomach or duodenum, for duodenal ulcer without obstruction, and for perforation? I should feel that generally in these successful cases the operation of gastro-enterostomy had been a negative factor, or that the operator had cured the condition by a direct attack upon the lesion in addition to the gastro-enterostomy, or by his operation had transformed a non-obstructive condition into the class of mechanical obstructions. Dr. Mayo and Mr. Moynihan, two surgeons of perhaps the greatest experience in this work, emphasize the necessity of infolding the ulcers of the duodenum and ligating the vessels which supply any bleeding ulcer. Has not this direct attack been the vital operation and the gastro-enterostomy simply the necessary or unnecessary companion, dependent upon whether or not obstruction to the passage of food from the stomach existed?

In perforation of the stomach or duodenum, gastro-enterostomy was a few years ago a universal procedure. It is now advised only when the closure of the ulcer may cause obstruction. The operation upon the ulcer itself, either by infolding or excision, is the essential. So much in regard to the proper use of gastro-enterostomy, because, in my opinion, the immediate results and complications depend so vitally upon it.

The technic of the operation is no less important in considering results and complications. The development has seen many phases. The complicated Y and the double operation of gastro-enterostomy with an entero-enterostomy have passed. The anterior operation remains only as one of necessity. The innumerable mechanical devices which have been brought forward to meet the supposed technical difficulties are now used only as routine by their enthusiastic originators or by surgeons of little experience. As the universally accepted operation, we have the no-loop posterior gastro-enterostomy done with suture and with clamps. In the interpretation of the no-loop, a great difference still exists. Some do the no-loop operation with two to four inches of jejunum free beyond the peritoneal reflection. As I understand this procedure, a no-loop operation means the cutting of the peritoneal fold of Treitz if necessary, so that when the stomach lies in position the duodenum opens practically directly into it and the jejunum passes off smoothly on the distal side of the anastomosis, the direction being slightly to the right or vertical, depending upon the individual case. The details, such as the selection of the suture, may vary with the preference of the individual. Possible mechanical obstruction, such as prolapse of the mesentery of the transverse colon, will, of course, be prevented by proper suture. This technic is insisted upon because by it very vital complications are practically prevented. Exposure of the jejunum to the acid gastric juices is reduced to the minimum. The proximal loop of the duodenum is afforded free access to the stomach and the distal loop given unobstructed exit. The proper use of clamps makes the field of operation extraperitoneal and reduces the shock of operation as well as controls immediate infection.

The complications which have been dreaded are infection, vicious circle, hemorrhage, peptic perforation, pneumonia, obstruction due either to adhesions or the infolding of the mucous membrane, contraction of the anastomosis, and hernia through the slit in the mesentery of the transverse colon. They are, for the most part, ghosts of the past. Peptic perforation remains as a very rare, but apparently unpreventable, complication. It is so rare that it is almost a surgical curiosity, yet it does remain.

The vomiting of the so-called vicious circle, once a most distressing and very universal complication, may be considered now as evidence of some obstruction of the passage of the stomach contents into the jejunum. As a rule, with only partial obstruction, the case is relieved by stomach lavage.

The risk of hemorrhage from suture line is the same risk that is met when large vessels are ligated elsewhere. With improper suturing or suture material, post-operative hemorrhage will occur, and in the rare case it will occur just as it does when any ligature slips.

The field in which the operation is performed is, from a surgical standpoint, ideal; that is, the stomach and intestinal walls are thick and well supplied with blood. The gastro-intestinal tract at this level is more nearly sterile than at any other. In a patient much reduced by an acute process or by malignant disease there may be a failure of union of the approximated peritoneal surfaces. Infection ordinarily means some technical error.

The contraction of the opening may be questioned. If there is a tendency to contract, the mechanism is self-regulated. So long as the pylorus is blocked the opening surely will not contract, and with the pylorus patent the anastomosis is without effect. With a proper suture and a sufficiently large anastomosis, the mucous membrane will not obstruct the opening.

The danger of obstruction from post-operative adhesions is the same which exists with any abdominal operation.

In considering the immediate mortality, the benign and malignant cases must, of course, be separated. In the benign cases, gastro-enterostomy for uncomplicated ulcer of the stomach has shown in the hands of men with the greatest experience a mortality of 1% or less. In the complicated cases the mortality must vary within wide limits, depending upon the condition of the patient at the time of operation. In cancer the mortality also must depend in a great measure upon the general condition of the patient. This mortality is independent of the operation of gastro-enterostomy and dependent upon the general condition of the patient.

The immediate relief from symptoms is dramatic. These patients, in my limited experience, are generally more comfortable the day following a gastro-enterostomy than even after an interval appendectomy. There is rarely pain from traction on the stomach. Gas pains are the exception. The desire for food returns. While in some cases with an active process it is necessary to supervise the diet for a time, a majority of the cases eat what they will without distress. The improvement in the general condition is comparable to the change wrought in a starving man who is given food and drink.

In the operation of gastro-enterostomy we have a technical procedure adapted to definite pathological conditions, and only suitable for these.

The results of imperfect technic we have all known in the not remote past. The results of unwise interpretation of the pathological condition and the physiological effect of the operation we still see not infrequently as the result of ill-advised operations. Our fair judgment of the value of the operation must be drawn from the results of men so trained that these avoidable errors of technic and judgment are reduced to the minimum. If we allow ourselves to form our judgment from the poor results of men not so trained, we deprive patients with mechanical obstruction of a definite means of relief and subject them not only to discomfort, but to the risk of a higher mortality than 1%.

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THE PHYSIOLOGICAL ASPECTS OF GASTRO-ENTEROSTOMY.*

BY W. B. CANNON, M.D., BOSTON,
George Higginson Professor of Physiology, Harvard Medical School.

THE purpose of performing the operation of gastro-enterostomy is to render the emptying of the stomach into the small intestine possible if the pylorus is closed, or more rapid if there is delay in the passage of food from the stomach. In either case, it is assumed that there is a change in the course which the food takes in going from the stomach into the bowel. Two questions of physiological interest might arise with regard to the effect of an artificial opening between the stomach and the small intestine: Under what conditions does this new opening induce an alteration in the normal course of the food? If the normal course of the food is changed, what are the results of that change?

In the surgical literature on gastro-enterostomy, until within the past few years, the operation was mentioned as a drainage operation. As pointed out in a paper by Dr. Blake and myself,[1] drainage is too mechanical a conception of the way in which food is carried through the alimentary tract. A little consideration will show that the pressure on any part of the passive alimentary tract depends upon the weight of the overlying abdominal organs. The abdominal organs have, however, approximately the specific gravity of water; the food, likewise, has approximately the specific gravity of water. If the stomach is inactive, therefore, the food in the stomach lies as if surrounded by water, and gravity drainage is impossible. Indeed, as Kelling [2] has pointed out, water introduced into a gastro-enterostomized stomach in a cadaver does not run out, even with the subject in the upright position, because the hydrostatic relation in the abdomen does not permit gravity to have any effect. The only force which can carry food forward from one part of the alimentary canal to another is a greater pressure behind the food than exists in front. This pressure is ordinarily exerted by the peristaltic waves.

In the stomach, during an ordinary meal, peristalstic waves are continuously passing from about midway of the length of the organ to the pyloric end. As the waves approach the pyloric end they become deeper and deeper until they almost obliterate the lumen. Two results follow from this peristalstic activity. The waves which force the food repeatedly against a closed pyloric sphincter churn this food into fluid chyme. The first effect of the waves, therefore, is to render the contents of the pyloric end of the stomach more liquid and, therefore, more freely movable than the contents of the cardiac end. The second effect of the gradually deepening waves of constriction is that the pressure within the stomach is greater near the pylorus than anywhere else. Von Pfungen measured intragastric pressure in a boy with gastric fistula and found the pressure directly in front of the pylorus more than eight times as high as it was near the fistula.[3] Moritz [4] has observed similar differences in pressure between the two ends of the stomach in studies on a normal individual.

The result that follows from greater fluidity of food near the pylorus and greater pressure on the food at that point is that the chyme takes its normal passage through the pylorus, if the pylorus is patent, rather than through any artificial opening. This fact was first determined by Kelling,[5] who performed gastro-enterostomies by all the methods known to surgery — the anterior and posterior, Roux's procedure, high attachment of the jejunum, low attachment of the jejunum, and union with the ileum at any part — and at the same time made a duodenal fistula. He observed that nothing left the stomach by the new opening; all food, whether solid or liquid, emerged by way of the pylorus, as could be determined through the duodenal fistula. This observation was confirmed in x-ray studies by Dr. Blake and myself. We found that with openings between the stomach and the intestine of various sizes and at various positions the food, even when fluid, was pushed through the pylorus rather than through the stoma. The only exception which we observed to this rule was in a case in which the stoma was near the pylorus and the food was fluid. These observations have been further confirmed by Tuffier [6] and Delbet.[7] They have likewise been supported in observations by Maury, who traced the course of food by means of strings tied to little bags containing lead shot. As the heavy weight, however, must tend to carry the bags to the lowest point, the occasional exit of the string through the stoma, rather than through the pylorus, in Maury's experiments, should not be wholly unexpected. The possibility of the anastomotic opening rather than the pylorus being at times the path of election cannot, however, be gainsaid; observations by Dr. Murphy and myself during the past year have shown that occasionally food will take the artificial before it will take the natural course. But there is no doubt, from the wide range of evidence above cited, that in experimental animals the natural exit of the food is through the pylorus and not through the artificial opening, when both ways are offered.

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* Read at annual meeting of the American Gastro-Enterological Association, June 8, 1909.

[1] Cannon and Blake: Ann. Surg., May, 1905.

[2] Arch. für Verdauungskr., 1900, vi, pp. 455–456.

[3] v. Pfungen: Centralbl. für Phys., 1887, i, pp. 220 and 275.

[4] Moritz: Zeitschr. für Biol., 1895, xxxii, pp. 356–358.

[5] Arch. für klin. Chir., 1900, lxx p. 259.

[6] Tuffier: La Semaine Méd., 1907, ii, p. 513.

[7] Delbet: Bull. et Mém. de la Soc. de Chir., 1907, xxxiii, p. 1250.

It may be objected that these observations, which were made on animals, do not apply to conditions in human beings where the stomach and intestine are larger structures, permitting larger openings to be made. On this point the experience of Berg may be taken. About two years ago he reported two cases of human beings, each with an accidentally established duodenal fistula, who were losing a large amount of food through the unnatural opening.[8] Berg made a gastro-enterostomy in each of these cases with the supposition that the food would, of course, go through the new connection between the stomach and intestine and thus nourish the patient. The food, however, still continued passing out through the duodenal fistula. These observations on human beings exactly correspond to Kelling's observations on dogs and the studies by Delbet mentioned above. The conclusion may, therefore, be justly drawn that if the pylorus is patent, the gastric contents are forced out through the pylorus rather than through the anastomotic opening.

On the basis of considerations above presented, Moynihan has concluded that gastro-enterostomy is most efficient only when gross mechanical obstruction exists, and that under no circumstances, and in compliance with no persuasion, however insistent, is the operation to be done in the absence of demonstrable organic disease.

In x-ray observations on animals with gastro-enterostomy food was repeatedly observed to circulate from the stomach through the pylorus to the duodenum and back to the stomach again through the anastomosis. Of course, such a circulation must carry into the stomach the bile and the pancreatic juice which are poured out into the duodenum. The clinical symptoms of a "vicious circle" were not noted under these circumstances — an observation harmonizing with the observations of Boldireff and others that the presence of these intestinal juices in the stomach does not necessarily result in any important disturbance of gastric function. It is of interest that the circulation of the food was observed most frequently when the stomach was quite full. The explanation of this observation possibly lies in the fact that filling the stomach separates the lips of the stoma and draws the intestinal wall into line with the gastric wall. Thus the openings into the intestine at the stoma become slits and act like valves, permitting the entrance, but preventing the exit, of food through the new opening.

In experimental animals studied by Dr. Blake and myself, the clinical symptoms of the "vicious circle" were observed only when a kink of the intestine developed just distal to the anastomosis. If a kink forms at this point, there is no force at hand to straighten it. Peristaltic activity is abolished in the intestine proximal to the kink because the circular fibers are cut to form the nearby stoma. Kinks of this character can be obviated by attaching to the stomach a narrow band of the distal gut for several centimeters beyond the stoma. Thus the intestine is kept straight throughout the distance which would permit peristalsis to become an effective force.

If gastro-enterostomy is performed when the pylorus is entirely obliterated, the new opening presents the only outlet from the stomach. Under these circumstances an important mechanism operating normally in the duodenum may become, to some extent, impaired. The effect of acid chyme in causing a flow of pancreatic juice and bile is now a well-known physiological fact. Bayliss and Starling[9] found that the action of acid in causing a flow of pancreatic juice and bile is not confined to the duodenum, but was effective in approximately the upper two feet of the dog's intestine. It is probable, therefore, that secretin is produced at least through the duodenum and jejunum of man. If the anastomosis is made between the stomach and the uppermost part of the small intestine, the mechanism for the flow of these important digestive juices would be retained.

With the pylorus closed and the stoma as the only exit, one might suppose at first thought that the admixture of the chyme with pancreatic juice and bile would be largely abolished. But that need not necessarily be the case. It is altogether probable that a certain amount of the pancreatic juice and bile is carried into the jejunum and ileum and there mixed with the food. Furthermore, in x-ray observations on experimental animals the food has been repeatedly seen passing from the stoma into the proximal loop. No sooner did it thus pass toward the pylorus than a peristaltic wave was started which swept the food at once into the stoma again. As the circular fibers were not complete at the stoma, the food was not pressed past the opening into the distal gut, but was forced into the stomach. No sooner had the wave gone by than the food was pressed again into the proximal loop. Thereupon a new peristaltic wave once more pushed the food toward the anastomotic opening; back it was pressed again, however, when the wave reached the cut fibers. This process, repeatedly observed, must at least mix some of the food very thoroughly

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[8] Berg: Ann. Surg., May, 1907.

[9] Bayliss and Starling: Jour. Phys., 1902, xxviii, p. 325.

with the digestive secretions poured into the duodenum. Kelling[10] has recorded a surgical case in which he observed through a fistula a similar passage of some of the food into the duodenum from a gastro-enterostomy opening. It is probable, however, that only a relatively small part of the food can be treated in this manner, and at best this to-and-fro shifting is a poor substitute for the segmenting process which normally mixes the juices and the chyme.

In this connection the occasional occurence of jejunal ulcers opposite the stoma may be indicative of the influence of gastric juice when poured into a region in which inorganic acid is not normally found, and in which the alkaline secretions (bile and pancreatic juice) are not present promptly to neutralize the acid.

Of the principal enzymes contained in the pancreatic juice, the one that is not well duplicated elsewhere is the fat-splitting enzyme, steapsin. This enzyme, furthermore, is one which is easily destroyed by the hydrochloric acid of the gastric juice. In case the pancreatic juice is carried into the stomach while gastric digestion is in process, in all probability the steapsin is largely destroyed. If, on the other hand, the food passes through the new opening into the distal loop without being well mixed with pancreatic juice, some of the fat may not be split and, therefore, not absorbed. Thus Joslin reports one patient with pylorectomy and gastro-enterostomy in whom 18.7% of the ingested fat was lost, and another patient with gastro-enterostomy with 31.2% of the fat lost.[11] The nitrogen absorbed from the food was diminished in this case to a less extent. Other observations have revealed a disturbance, but not so great a disturbance, of digestion and absorption. Thus Paterson reports nine observations in which the average diminution in nitrogen absorption was 1.7%, and the average diminution of fat absorption 1.9%.[12] Paterson's observations, however, were made mainly on patients with pylorus patent, and the food, therefore, in all probability took the normal course and underwent normal digestion. It is possible that the wide variations in the amounts of the different foodstuffs, particularly fats, which have been reported as not absorbed after gastro-enterostomy, may be explained by the degree of deviation of the chyme from the normal course because of the varying patency of the pylorus.

CONCLUSIONS.

According to physiological observations, there is no alteration of peristalsis because of a new opening being made midway in the stomach. The notion which has been expressed by some surgeons that such an opening gives the part of the stomach beyond it rest from activity is quite erroneous. If the pylorus is not obstructed, this continued peristalsis results in forcing food through the normal exit at the pylorus. The physiologist has difficulty in seeing any advantage gained by this operation under these circumstances unless the passage of bile and pancreatic juice into the stomach reduces hyperacidity; and experienced surgeons now counsel against the operation unless pyloric obstruction is present. If obstruction is present, food leaves the stomach through the artificial opening, and, though the acid chyme doubtless causes a flow of pancreatic juice and bile, it may not receive a proper admixture of these juices. As a consequence, a considerable amount of the fat and the protein of the food may pass through the alimentary canal without being absorbed.

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[10] Kelling: Deut. Zeitschr. für Chir., 1901, lx, p. 157.

[11] Joslin and Goodall: BOSTON MED. AND SURG. JOUR., 1907, clvi, p. 506.

[12] Paterson: Jour. Am. Med. Asso., 1908, xlix, p. 659.

Book Reviews.

Practical Gynecology. A Manual for Nurses and Students. By NETTA STEWART, Sister in the Gynecological Wards of the Royal Infirmary, Edinburgh; and JAMES YOUNG, M.B., F.R.C. S.E., Clinical Tutor in Surgery and Late Resident Gynecologist, Royal Infirmary; Physician to Lauriston Pre-maternity Home, Edinburgh. Numerous illustrations and plates. New York: William Wood & Co. 1909.

This is the second and enlarged edition of "Gynecological Nursing" by Netta Stewart, a review of which appeared in these columns April 28, 1904. The book is still a small one, containing with the index only 327 small-sized pages. The nursing portion is excellent and much improved over the first edition. The diagnosis, treatment and operative technic are rather scantily treated for an authoritative textbook, but in spite of this the little volume contains many useful, practical suggestions.

Short Talks with Young Mothers on the Management of Infants and Young Children. By CHARLES GILMORE KERLEY, M.D., Professor of Diseases of Children, New York Polyclinic Medical School and Hospital; Attending Physician to the New York Infant Asylum; Assistant Attending Physician to the Babies' Hospital, New York, etc. Second edition, revised and enlarged. Illustrated. Pp. 327. New York and London: G. P. Putnam's Sons. The Knickerbocker Press. 1909.

This, the second, is a decided improvement over the first edition. The little book is full of sound advice and cannot fail to be of great use to young mothers. In fact, it would not hurt many physicians to read it carefully. We commend especially the chapters on Maternal Nursing and The Delicate Child. We regret very much that the author favors routine circumcision of male infants, and are surprised that a man of his experience and good judgment does not appreciate the difference between physiological and pathological conditions. We are pleased to see that he thinks that children who spend the summer inland do better on the average than those who spend it at the seashore, and agree with him that a weight-chart is anything but an unmixed blessing.

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RESULTS OF THE PELLAGRA CONFERENCE.

The first national conference on pellagra in the United States was held at Columbia, S. C., Nov. 3–4, 1909, and was attended by over three hundred delegates from all parts of the country, as well as by representatives from Yucatan, the West Indies, Paris and Egypt. Over forty interesting papers were presented and there was much valuable discussion.

Dr. J. W. Babcock read an address, written by Dr. F. M. Sandwith, of London, in which was suggested the desirability of establishing compulsory notification of pellagra cases by physicians and the addition of pellagra to the list of diseases for which immigrants shall be excluded. Dr. Sandwith states that compulsory notification of pellagra was instituted in Italy in 1888, since which time the annual mortality from the disease in that country has been reduced, by this and other preventive measures, from 3,483 to 1,635. It seemed to be the general opinion of the assembly that, though predisposing causes are of importance, the chief factor in the production of pellagra is the use of spoiled corn and of spirits distilled therefrom, and rigorous government inspection of all corn and corn products was emphatically recommended.

The convention also passed a resolution, introduced by Dr. J. H. Way, of the North Carolina Board of Health, urging the national government "to bring its resources to bear upon the questions of the cause, prevention and control of the disease." It further resolved "that the work of the conference be brought to the attention of the state and territorial boards of health, and that they be urged specially to investigate the disease and to establish proper inspection of corn products sold for food in the various states."

At the close of the session the National Association for the Study and Prevention of Pellagra was organized, with Dr. J. W. Babcock, of Columbia, S. C., as president; Dr. William A. White, of Washington, D. C., as vice-president, and Dr. George A. Zeller, of Peoria, Ill., as secretary and treasurer. A vice-president for each state will later be appointed. The next pellagra congress is to be held at Peoria in June, 1910.

The results of this first conference seem satisfactory. An organization has been effected for the study of pellagra, and general interest in the subject has been still further aroused. One of the interesting points in connection with the problem is the close identity of the geographical distribution of pellagra with that of uncinariasis, and the probable frequent coincidence of the two diseases in the same patient. Opinions apparently differ as to their relative seriousness. According to a recent report by Dr. Lavinder, of the Public Health and Marine-Hospital Service, pellagra is not as grave a national menace as has been made out. He believes that it has already existed in this country for over thirty years, that there are at present not over five thousand cases in the United States, that with proper treatment the mortality need not be exceedingly great, that the disease is not infectious, and that, therefore, its rapid spread is not to be expected and its control and prevention should be possible by inspection of the corn supply. Whether or no Dr. Lavinder is unduly sanguine, his official opinion is reassuring and encouraging.

Of interest in this connection is an article by Dr. Howard D. King, of New Orleans, in the *Journal of the American Medical Association* for Nov. 6, 1909, summarizing the history of pellagra, ancient and modern, and the investigations thus far made upon it in this country. Further active study of the disease is now to be prosecuted and may confidently be expected to lead to the adoption of efficient measures for its eradication.

◆

OXYGEN GENERATORS.

In an editorial entitled "Oxygen and High Altitudes," we described last week the experiments of Prof. W. S. Anderson, of Yale, in the use of oxygen as a preventive of mountain sickness from the exertion of climbing to great heights in a rarified atmosphere. Of allied interest and purport are the experiments made during the past summer by M. Taffanel, director of the colliery testing station at Liévin, France, relative to the use of oxygen by those engaged in fighting fires or in life-saving expeditions in mines.

Three principal types of oxygen generators have been devised for this purpose, the Tissot, the Draeger and the Securitas, and the experiments consisted in careful observation of the pulse and respiration and analyses of the expired air in a series of men using these different generators while doing a measured amount of arduous work. All three forms of apparatus were concluded to be efficacious, though each has peculiar advantages which the others do not possess. The Draeger type is said to afford the most perfect regeneration of the expired carbon dioxide, the Securitas the least. The Tissot, which differs from the others in allowing only nose-breathing, yields oxygen at a pressure of 150 atmospheres, and regenerates the expired air by passing it through a concentrated potash solution.

The comparative study of these and other forms of apparatus is of importance in view of the increasing number of industrial and medical uses to which oxygen may be put, since by this means will be determined the most efficient methods of administration and the limits of safety within which it may be applied.

◆

PURE FOOD DECISIONS.

At the recent session of the pure food congress in Paris, which was attended by two thousand representatives from all the principal nations of the world, a number of important decisions were made, after due discussion, relative to processes permissible in handling and preparing various foodstuffs. " Wines may be fortified for export with alcohol derived from malt. Cocoas may be treated with alkalies. Chicory and coffee blended cannot be considered a pure product. Boron preservatives, without declaration of use, may be used in butter. Sulphate of copper, to the extent of 120 mgm. per kilo, is permissible as a preservative of the color of peas." Twenty of the aniline dyes are recognized to be harmless as coloring agents for various foods and confectioneries. These decisions, of course, merely represent the opinion of the congress and are in no way binding, unless adopted by the proper authorities of the several governments.

Of interest, also, in this connection is a recent decision in this country adding to the list of precedents under which reports of adulterated or decomposed foods may be made directly to collectors of customs at ports where government laboratories are maintained " wormy figs, products containing sulphur dioxide without proper label, and alleged cognac bearing the label 'Marque Déposé — A Cognac.' The government holds that true cognac can be imported only from the Cognac district, and that all labeling as cognac of brandies produced elsewhere is a violation of the pure food law." This decision will simplify and facilitate the prosecution of violators under the precedents specified.

◆

INFANT MORTALITY IN 1908.

According to the compilation of vital statistics for 1908, recently published by the United States Census Bureau, nearly 200,000 children died during that year in this country from preventable disease. In a registration area representing about a half of the national population, 691,574 deaths were reported in 1908. Of these, nearly a fifth were infants under one year, and over a quarter were children less than five years.

The inferences as to the economic waste and human suffering involved are obvious. It may, of course, be argued that this high infant mortality represents a desirable early weeding out of the unfit. In medicine, however, such arguments are not admissible, and the great percentage of infant deaths remains a standing reproach to the profession and to civilization.

In face of the declining birth-rate in nearly all civilized countries, which has defied all attempts at explanation or control, the reduction of infant mortality is the most effective means of counterbalancing the apparently inevitable decline in reproduction, and earnest, concerted study and application of means to check the incidence of preventable infantile disease becomes the duty of physicians to society as well as to humanity.

◆

MEDICAL NOTES.

Cholera in Germany. — Asiatic cholera is still to some extent prevalent in Prussia. Report states that between July 19 and Nov. 3 there were 33 cases and 12 deaths. Most of these cases occurred in the region of Danzig, near the mouth of the river Vistula, which descends across the frontier from the lumbar districts of Poland.

College of Physicians, Philadelphia. — The new hall of the College of Physicians of Philadelphia was dedicated Wednesday, Nov. 10, with appropriate and interesting ceremonies in the presence of a considerable concourse of officers, fellows, guests and delegates. The Boston Medical Library at its annual meeting, held Tuesday evening, Nov. 9, passed a vote expressive of interest and good wishes on the occasion. This vote was delivered to the College of Physicians, Wednesday, by the Librarian, Dr. Farlow.

The Government Pellagra Commission. — Following close upon the termination of the pellagra conference held last week at Columbia, S. C., comes announcement by Surgeon-General Wyman, of the Public Health and Marine-Hospital Service, of the appointment of a government commission to investigate and report upon the nature and treatment of pellagra. This commission is composed as follows:

Chairman, Dr. John S. Anderson, Director of the United States Hygienic Laboratory at Washington; *Secretary*, Dr. Charles H. Lavinder, of the Public Health and Marine-Hospital Service; Dr. Reid Hunt, Chief of the Division of Pharmacology of the Hygienic Laboratory at Washington; Dr. J. D. Long, of the Public Health and Marine-Hospital Service; Dr. William A. White, Superintendent of the United States Hospital for the Insane at Washington; Dr. Nicholas Achucarro, Pathologist at the United States Hospital for the Insane; Dr. M. J. Rosenau, Professor of Preventive Medicine and Hygiene at the Harvard Medical School.

The Eradication of Hookworm Disease. — Work by the Rockefeller Commission for the Eradication of Hookworm Disease has already begun. Careful estimates indicate that the cost of treating and curing each individual case will probably average 67 cents, but it is hoped that under an efficient system and administration this cost may be reduced to 50 cents.

A definite campaign of education is to be undertaken, not only among the patients themselves, but among the physicians who are to treat the disease, and among the landlords and employers who must provide proper sanitary facilities for their tenants and workmen. Suitable enactments requiring such provision will be framed for introduction into the legislatures of the several southern states. Meantime, report from San Francisco states that uncinariasis has also become established in California, having been brought there supposedly by laborers from Hawaii and the West Indies and soldiers and others returning from the Philippines. A local crusade against the disease has already been started, and it is to be desired that the labors of the Rockefeller Commission may be similarly supplemented in other regions where the hookworm may hereafter be discovered.

Relation of Physical Defects to School Progress. — At a recent meeting in Providence of the Rhode Island Institute of Instruction, Mr. Leonard P. Ayres reported the results of an investigation which he has made, under the Russell Sage Foundation, on the relation of physical defects to school progress. From examination of 40,000 public school children in New York City, he finds that 60% have seriously decayed teeth, 25% enlarged tonsils, 12½% adenoids, and that such children require respectively 8.5, 8.7 and 9.1 years to complete the eight elementary grades, which the average healthy child finishes in eight years. Hence it appears that these common physical defects are responsible for a loss of about 9% of the total time spent in school by children of these grades, and a corresponding waste of the money required for their education. The remedy of such defects should cost less than this expense excess, besides leaving the children in fitter condition for their future training and for life.

Other preventable or curable ailments Mr. Ayres finds to have similar effect on school progress, demonstrating that in children, as in adults, the attainment and maintenance of health means economy as well as efficiency and happiness.

BOSTON AND NEW ENGLAND.

Acute Infectious Diseases in Boston. — For the week ending at noon, Nov. 9, 1909, there were reported to the Board of Health of Boston the following cases of acute infectious diseases: Diphtheria 62, scarlatina 28, typhoid fever 15, measles 63, smallpox 1 at quarantine, tuberculosis 74.

The death-rate of the reported deaths for the week ending Nov. 9, 1909, was 16.49.

Boston Mortality Statistics. — The total number of deaths reported to the Board of Health for the week ending Saturday, noon, Nov. 6, 1909, was 216, against 170 the corresponding week of last year, showing an increase of 46 deaths and making the death-rate for the week 18.08. Of this number 108 were males and 108 were females; 204 were white and 12 colored; 130 were born in the United States, 80 in foreign countries and 6 unknown; 43 were of American parentage, 142 of foreign parentage and 31 unknown. The number of cases and deaths from infectious diseases reported this week is as follows: Diphtheria, 59 cases and 3 deaths; scarlatina, 33 cases and 1 death; typhoid fever, 18 cases and 0 deaths; measles, 44 cases and 2 deaths; tuberculosis, 75 cases and 31 deaths; smallpox, 0 cases and 0 deaths. The deaths from pneumonia were 28, whooping cough 1, heart disease 25, bronchitis 5 and marasmus 2. There were 16 deaths from violent causes. The number of children who died under one year was 35; the number under five years 46. The number of persons who died over sixty years of age was 54. The deaths in public institutions were 79.

Cerebrospinal meningitis, 2 cases.

Of the above infectious diseases the following were non-residents: Consumption: 1 case and 2 deaths. Diphtheria: 1 case and 1 death.

Deducting deaths of non-residents, the total is 198 and the death-rate is then 16.57.

THE HARTFORD (CONN.) COUNTY MEDICAL ASSOCIATION. — The semi-annual meeting of this society was held Tuesday, Oct. 26. The address was delivered by Dr. Charles S. Minot, of the Harvard Medical School, on the " Development of the Blood in the Embryo and Adult."

NEW YORK.

NEW CORONERS. — Of the four coroners elected in the Borough of Manhattan on Nov. 2, two are physicians, one an undertaker, and one a maker of tombstones. This certainly ought to constitute a very accommodating board.

NIGHT TREATMENT FOR THE TUBERCULOUS. — The new department at the New York Throat, Nose and Lung Hospital, on East 57th Street, for the treatment of tuberculosis at night was opened for inspection on Nov. 2, and on the following evening commenced its regular service. It is designed for patients in the earlier stages of the disease who are unable to leave the city and have to work in the daytime. A building adjoining the hospital has been secured for the purpose and especially remodeled in such a way as to constitute practically an open-air camp, and the dormitory is to be known as the Emma Calvé ward of the hospital. Among the medical men especially interested in the project are Drs. H. Holbrook Curtis, E. J. Bermingham and E. A. Miller.

Current Literature.

MEDICAL RECORD.

OCT. 2, 1909.

1. BULL, C. S. *The Adverse Influence of Diabetes in Certain Operations on the Eye.*
2. *ELY, L. W. *Joint Tuberculosis, with Special Reference to Its Pathology.* (Preliminary study of forty-five cases.)
3. *KARO, W. *Tuberculin for the Diagnosis of Renal Tuberculosis.*
4. WILLIAMS, T. A. *The Traumatic Neurosis and Babinski's Conception of Hysteria.*
5. WALSH, J. J. *The First American Hospital.*
6. FISHER, J. W. *A Note on the Staining of Blood Films.*
7. SQUIER, J. B. *Stenosis of the Vesical Outlet following Prostatectomy.*

2. Ely brings out in his paper several points of special interest. First, the possibility of error of diagnosis even under the best conditions. He discusses in a general way the pathology of the condition, the wisdom of imitating nature in our treatment, the necessity of adapting the operation to the individual case and of removing only enough tissue to secure anchylosis.

3. The author reports a number of cases of renal tuberculosis treated with good effect by tuberculin. [W. B. R.]

OCT. 9, 1909.

1. FRIEDENWALD, J. *On the Development of Gastro-enterology in America.*
2. EINHORN, M. *A New Method of Catheterizing the Pylorus and Duodenum.*
3. BETTMAN, H. W., AND WHITE, F. W. *The Clinical Results of Gastro-Enterostomy.* (Preliminary report.)
4. ADLER, H. *Gastric Symptoms and Gall Bladder Disease.*
5. MARSHALL, V. E. *Cesarean Section in Placenta Previa, with Report of a Case.*
6. BUKA, A. J. *Chronic Varicose Ulcer of the Leg.*
7. DOBSON, L. *A Case of Trichinosis.*
8. FONTAINE, B. W. *Permanent Blood Pressure Records.*

NEW YORK MEDICAL JOURNAL.

OCT. 30, 1909.

1. JACOBI, A. *Gastric Ulcer in the Young.*
2. STOCKTON, C. G. *The Etiology and Symptomatology of Peptic Ulcer.*
3. DUEL, A. B., AND WRIGHT, J. *The Clinical and Pathological Significance of Bacteriemia in Suppurative Otitis.*
4. GUITERAS, R. *The Combined Direct and Indirect Teaching Cystoscope.*
5. *BERNART, W. F. *Intravenous Injections of Mercury. A Report of 9,838 Injections Given for their Antisyphilitic Action.*
6. CONDON, A. P. *The Diagnosis of Renal Tuberculosis.*
7. *HEYM, A. *A New Treatment of Locomotor Ataxia Based on a New Theory of This Disease.*
8. MARKOE, J. W. *Observations and Statistics on Sixty Thousand Labors Occurring in the Service of the Society of the Lying-In Hospital of the City of New York.*
9. OLIVER, C. A. *Clinical Report of a Case of Herpes Zoster Ophthalmicus Involving the First Division of the Left Fifth Nerve.*
10. ASHMEAD, A. S. *Some Observations on Certain Pathological Questions Concerning the Mutilations Represented on the Anthropomorphous Huacos Pottery of Old Peru.*

5. Bernart gives his experience with intravenous injections of mercury in 422 cases of syphilis. The bichloride was used in the great majority of instances; the largest single dose given was gr. 7-10; the smallest, gr. 1-20. Untoward effects after injection were phlebitis, gingivitis, tenesmus and diarrhea (sometimes bloody). In nearly one thousand injections there was no case of embolism, and the writer considers the fear of this unfounded. He considers his treatment valuable in any stage of active syphilis and in many cases presenting incipient parasyphilitic affections.

7. Heym believes that in tabes the cerebrospinal fluid is more toxic than the other body fluids and that it is, therefore, the destructive element in this disease. By subarachnoid injections of arsenic in the form of the cacodylate of soda, he hoped to neutralize this toxicity. In twelve cases there followed marked relief from intestinal and other crises. The injections were not preceded by lumbar puncture. [L. D. C.]

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION.

OCT. 30, 1909.

1. *FLEXNER, S. *The Present Status of the Serum Treatment of Epidemic Cerebrospinal Meningitis.*
2. DALAND, J. *Indicanuria and Its Significance.*

3. *Forchheimer, F. *Cardiac and Vascular Complications in Pneumonia, with Special Reference to Treatment.*
4. *Heineberg, A., and Bachmann, G. *Action of Intestinal Antiseptics on Peptic Digestion.*
5. Hunt, J. R. *The Paralytic Complications of Herpes Zoster of the Cephalic Extremity.*
6. *Montgomery, D. W., and Alderson, H. E. *Lichen Planus: A Consideration of Its Etiology as Illustrated by an Acute Case.*
7. Porter, A. *Brown-Tail Moth Dermatitis. Report of a Case.*
8. Gottheil, W. S. *Iododerma Bullosum Hemorrhagicum.*
9. Parker, C. A. *The Wet Dressing in Surgery.*
10. *Loeb, L. *Experimental Production of the Maternal Placenta.*
11. *Bloodgood, J. C. *Cancer Cysts of the Breasts and Their Relation to Non-Malignant Cysts.*
12. Johnstone, O. P., and Canning, C. H. *Hemolysis in the Diagnosis of Malignant Neoplasms.*

1. Flexner gives a most careful and conservative review of the present status of the serum therapy of cerebrospinal meningitis. The third age period of children from five to ten years old gave the lowest mortality, namely, 15.9%. Flexner emphasizes the importance of early injections of the serum. He finds that older persons, ranging from fifteen to twenty or twenty-five years, are less subject to the beneficial action of the serum. Cases treated with the serum before meningeal irritation has set in almost always terminate abruptly or run a very mild course.

3. Forchheimer treats of the vascular complications in pneumonia and quotes Pässler, who claims that the toxic albuminoid which is produced during metabolic activity of the pneumococcus paralyzes the vasomotor center in the medulla oblongata and is the most common cause of death as far as the circulatory apparatus is concerned. Forchheimer adds to this by saying that the first evidences are rapidity of heart and sinking of blood pressure; shortly there comes tympanites, the patient looks exsanguinated and beginning collapse sets in and later death. He is opposed to Fraenkel's treatment with increasing doses of digitalis, and has seen great harm from its cumulative effect, but advises heartily the use of caffein in its place, as it is safe in all organic heart lesions and does exactly what Fraenkel claims for digitalis without its bad effects. He gives 1 to 5 gr. every four hours, together with fresh air, control of sleeplessness, and baths to reduce temperature in selected cases. Another method used is by adrenalin, to contract the blood vessels of the splanchnic area, hypodermolysis or venous transfusion with large quantities of normal saline solution, ice bags on the abdomen to reduce the pulse by stimulating the splanchnic reflex; three or four saline infusions with adrenalin and four doses of caffein a day are given. He fears large doses of strychnia.

4. Heineberg and Bachmann state that *in vitro* intestinal antiseptics interfere with peptic digestion. Betanaphthol, salicylic acid, sodium sulphite and thymol are the most active in retarding digestion. Boric acid and resorcinol are the least active. The uniformity in their experimental results would seem to warrant the inference that intestinal antiseptics interfere with digestion in the stomach and probably in the intestine.

6. Montgomery and Alderson, from observation of an acute case, strongly favor the theory that lichen planus is a disease or toxemia produced by some ferment in the alimentary canal.

10. Loeb's paper is a vivid description of a remarkable piece of experimental work on the generative organs. He feels that he now can ascribe a definite function to the corpus luteum, namely, that of supplying a sensitizing substance to the uterus which prepares the latter to respond with the production of the maternal placenta if an external stimulus of a mechanical nature is added. The uterus is sensitized only approximately from the second to the ninth day after copulation. If the stimulus is applied after the ninth day the uterus does not usually respond. Three factors are primarily concerned in the experimental production of the maternal placenta: (1) The sensitizing substance of the corpus luteum; (2) the mechanical stimulus exerted directly on the uterine mucosa; (3) the character of the body fluids. The mechanical stimulus is the least specific, as its place can be taken merely by the insertion of the ovum. The sensitizing substance is probably carried to the uterus through the circulation and not by the nerves.

11. Bloodgood considers that the surgeon should be so familiar with gross pathology that he need not rely on frozen sections before he makes his diagnosis or completes his operation. He also thinks that the safest method is to expose the diseased tissue directly and make a diagnosis at once or from a rapid frozen section and act accordingly. He opposes the method of cutting the tissue out locally, cutting into it and then diagnosing from frozen section. Cancerous cysts generally have a hemorrhagic or granular content and are not easily mistaken for benign cysts. He believes that a more rapid and certain diagnosis can be made from the contents than from a rapid frozen section of the wall. There are benign simple cysts in elderly women which are better treated conservatively provided the diagnosis is positive. These have thin walls and clear or only slightly cloudy fluid, never hemorrhagic or granular. [E. H. R.]

Annals of Surgery.

October, 1909.

1. *Phelps, C. *An Analytical and Statistical Review of One Thousand Cases of Head Injury.*
2. *Johnson, A. B. *Injuries of the Kidney.*
3. *Smith, C. N. *The Surgical Conception of Pancreatitis.*
4. *Dowd, C. N. *The Advantage of Simplicity in Operations for Appendicitis.*
5. Pedersen, V. C. *An Irrigating Sound of the Standard and Beniqué Type.*
6. Hitzrot, J. M. *Intravenous Local Anesthesia.*
7. Bernheim, B. M. *A Modification of the Crile Transfusion Canula.*
8. Newman, S. E. *The "Open-Seat" Pelvic Binder.*
9. Lewis, J. S. *Note on Silver Foil in Surgery.*

1. Phelps presents the final article of his exhaustive review of one thousand cases of head injury. He considers the pupils, loss of rectal and vesical control (including urinary retention), minor symptoms (chill, vomiting, perspiration, headache, vertigo), muscular disorders (convulsions, convulsive movements, rigidity, paralyses), focal symptoms (cranial nerves), mental derangement and aphasia. He finds that any pupillary change, or none at all, and loss of either rectal or vesical control, both or neither, may be associated with every form of intracranial injury, limited or diffuse, single or multiple, or implicating any cerebral area. He is of the opinion that pupillary derangements and loss of rectal and vesical control are dependent upon an interruption of harmony of function between the cerebral and sympathetic systems resulting from direct injury of any part of the brain or its membranes. Vomiting, chill, perspiration, headache and vertigo are not especially characteristic, except vertigo dependent upon injury to the eighth nerve. Convulsions occurred in a fraction over 10% of the cases, were usually epileptiform, were uncommon in infancy, childhood and womanhood, but when occurring in childhood the mortality was high (70%). In most cases of paralyses there was unmistakable, probable or possible compression of motor area or laceration of motor tract. In some cases, however, there was no apparent focal lesion, but general cerebral contusion. In such cases there is a primary anemia followed by hyperemia, from which result nutritive changes indicated by edema and cellular degeneration. The probable explanation of paralysis of a single extremity associated with uniform subarachnoid effusion over the whole motor area is localized cellular degeneration dependent upon irregular circulatory derangement. Phelps found that disturbance of reflexes (increase, absence or asymmetry) was apparently independent of the nature of attendant lesions, mental state or general muscular condition. Mental decadence always attended lesion of the left or both prefrontal regions and never attended lesion of the right prefrontal region. The statistical prognosis of traumatic aphasia is good. Phelps states there is a structural change in the cellular elements in every class of intracranial injury, that lacerations and hemorrhage are

accidental, not essential, and "that whatever influences these lesions may have in determining the more intimate pathological condition, they are but a part of a general contusion which may equally occur in their absence."

2. Johnson has had six cases of kidney injury requiring operation. He refers to the work of Küster, Keen, Elder, and Shede on this subject and shows the frequency of subcutaneous injury as contrasted with incised and stab wounds and gunshot wounds. He then considers symptoms and diagnosis of each of these classes, with special reference to hematuria. His indications for operation in the subcutaneous variety are symptoms of rapid hemorrhage (progressive anemia, quickly developing tumor), repeated hemorrhage of severe grade (suggesting arterial hematoma), boggy, tender tumor in loin or ruptured peritoneum (to avert local or peritoneal infection from urinary contamination).

3. Smith, in considering the anatomy of the pancreas, emphasizes two relations of the common bile duct to the substance of the gland and the various modes of termination of this duct and those of the pancreas in order to demonstrate in the first place the effect of malignant or inflammatory enlargement of the head of the gland on the flow of bile and in the second place the effect of stone on the flow of bile and pancreatic juice. These relations must be understood to appreciate the rôle played by gallstones in the production of pancreatitis. The histology and present status of pathology and etiology of pancreatitis are then presented. The symptoms and differential diagnosis of pancreatitis and cancer of the pancreas are considered. The author believes that Cammidge's reaction and the absence of stercobilin in the feces indicate cancer. Attention is called to the frequency of hemorrhage in pancreatic disease either into the substance of the gland or extra-glandular (retroperitoneal, into lesser peritoneal cavity, petechiæ, melena). The treatment of acute pancreatitis is provision for "rapid, continuous and abundant drainage"; that of chronic pancreatitis is removal of all stones from the gall bladder and ducts, with temporary drainage, or, in the absence of stones, permanent drainage, preferably cholecystoduodenostomy.

4. Dowd presents one hundred and ten cases of operation for appendicitis without mortality. He regularly disregards sero-pus, although often in great amount, considers it but slightly infective and drains only the site of the appendix. He is convinced that extensive exposure, wiping, irrigating, dissecting, and the search for appendices of difficult access in acute cases are severe, traumatic and "infection-spreading procedures."

[T. W. H.]

THE LANCET.

OCT. 2, 1909.

1. **MURRAY, G. R.** *An Address on Medical Education.*
2. **EDRIDGE-GREEN, F. W.** *The Theory of Vision.*
3. ***GOADBY, K. W., AND GOODBODY, F. W.** *A Note on the Pathology of Lead Poisoning.*
4. ***GRAY, H. T.** *A Study of Spinal Anesthesia in Children and Infants.*

3. Goadby and Goodbody, as a result of a series of experiments on animals poisoned by lead, conclude that the essential and primary action of lead intoxication is the production of microscopic hemorrhages in various parts of the body, including the nervous system. The clinical symptoms of lead palsy and its good prognosis when treated early are due to the presence of minute hemorrhages in the peripheral nerves.

4. Gray presents his results and conclusions from the use of spinal anesthesia in two hundred children. Surgical shock is done away with, thus allowing a far wider range of operation. Anesthesia can be strictly localized to a part of the body, i. e., the abdomen can be anesthetized with the thorax not so, thus avoiding pneumonia. To the surgeon this method has great advantages in that he need not consider the depth of anesthesia nor dangers from ether or chloroform; in addition, there is perfect relaxation. With one exception he has lost no case of intussusception under this method of anesthesia. Vomiting is done away with and pain is greatly lessened. Children can be given food from the start. [J. B. H.]

OCT. 9, 1909.

1. **MOULTON, F.** *Some Thoughts on Causation in Health and Disease.*
2. **MIERS, H. A., ALLBUTT, T. C., OWEN, I., TWEEDY, J. S.** *Introductory Addresses delivered at the Medical Schools at the Opening of the Session, 1909–10.*
3. **TIRARD, N.** *The Clinical Significance of Albuminuria.*
4. ***PANTON, P. N., AND ADAMS, J. E.** *An Investigation into the Etiology of Erysipelas and Allied Infections.*
5. **DARDENNE, H.** *A Case of Syphilitic "Reinfection" Nine Years After, with Some Remarks on Syphilitic "Immunity" and a Note on Treatment.*
6. **GLUCKIE, N. G.** *A Corneo-Conjunctival Bridge: A New Method of Cataract Extraction.*
7. **HOLDER, W.** *The Poor-Law Medical Service: Coming Legislation.*
8. **CANE, L. B.** *The Vaccination Acts and the Growth of "Conscientious Objection."*
9. **HIRSCH, C. T. W.** *Motoring Notes.*

4. Panton and Adams define erysipelas as an acute inflammation of the epidermis due to the presence of one of the organisms of the streptococcus class, of which the streptococcus pyogenes is the most frequent example. Cellulitis is a strictly comparable inflammation of cellular tissues. Erysipelas is not truly a specific disease as it may be caused by various types of organisms. This study is based on a careful investigation of 38 cases of the disease.

[J. B. H.]

BRITISH MEDICAL JOURNAL.

OCT. 2, 1909.

1. **OSLER, W.** *Remarks on the Medical Library in Post-Graduate Work.*
2. **SAINSBURY, H.** *A Plea for a More Living Pathology.*
3. **DONALDSON, R.** *Notes on Double Cervical Rib, with an Illustrative Case.*
4. **STEWARD, F. J.** *A Note on Formaline Iodine Catgut.*
5. **ADAM, J.** *Chronic Edema of the Face and Mucous Membranes.*
6. **MALLANAH, S.** *Suppuration Treated by Vaccines.*
7. ***ELLIS, W. G.** *Uncured Rice as a Cause of Beri-beri.*

THE BRITISH MEDICAL ASSOCIATION.

Section of Surgery.

8. **SINCLAIR, T.** *Introductory Remarks.*
9. ***MOYNIHAN, B. G. A.** *The Operative Treatment of Obstructive Jaundice and the Proper Selection of Cases.*
10. **NEWBOLT, G. P.** *Some Cases of Resection of Intestine*
11. **MITCHELL, A. B.** *Perforative Duodenal Ulcer.*
12. ***MACEWEN, W.** *Modern Methods in the Treatment of Tuberculous Disease of Joints.*
13. **SYME, G. A.** *Some Unusual Cases of Echinococcus (Hydatid) Cyst, with Remarks on Diagnosis and Treatment.*
14. **BIRD, F. D.** *Operations for Liver and Lung Hydatids.*
15. **BLAYNEY, A.** *Notes on Four Cases of Removal of the Gasserian Ganglion.*
16. ***LEEDHAM-GREEN, G.** *On the Scopolamin-Morphine Narcosis.*
17. ***FREYER, P. J.** *A Recent Series of Two Hundred and Twelve Cases of Total Enucleation of the Prostate, with Special Reference to Octogenarians.*
18. ***HORT, E. C.** *Diagnosis of Cancer by Examination of the Blood.*
19. **EDINGTON, G. H.** *Some Cases of Intestinal Anastomosis*

Section of Ophthalmology.

20. **COLLINS, E. T.** *Diseases of the Lymphoid Tissue of the Conjunctiva.*
21. **HINSHELWOOD, J.** *A Case of Sarcoma of the Choroid.*
22. **POLLOCK, W. B. I.** *The Visual Acuity of School Children.*
23. **STEPHENSON, S.** *Ophthalmia Neonatorum.*
24. **FUCHS, E.** *Malformed Cornea in Inherited Syphilis.*
25. **FERGUS, F.** *Treatment of Glaucoma by Trephining.*
26. **FLEMING, A.** *The Serum Diagnosis of Syphilis.*
27. **HARMAN, N. B.** *The Diaphragm Test for Binocular Vision and its Disorders.*

28. **Tomlinson, J. H.** *A Sectomagraph with Binocular Fixation.*

7. Ellis presents figures showing the great decrease in the prevalence and mortality from beri-beri since the use of uncured rice was given up. From 189 cases with a mortality of 59.26% in 1897 in the Beri-beri Hospital, Singapore, the number fell to 18 cases with 3.07% of deaths.

9. Moynihan discusses the operative treatment of obstructive jaundice under the following headings: (1) Clinical history; (2) physical signs; (3) examination urine and feces; (4) selection of cases for operation; and (5) the operative procedures. Under this last heading he speaks of operation for (*a*) removal of the obstruction; (*b*) short circuiting operation; (*c*) drainage operation.

12. Macewen and others discuss the subject of methods of treating tuberculous joints. Macewen dwells particularly on the various operative procedures and the use of iodoform emulsion and bismuth paste. He dwells only slightly on general hygiene and tuberculin. Jones, in addition to local treatment, emphasizes the very great need of fresh air, hygiene and tuberculin. He says that children " do infinitely better lying out of doors *in a slum* than indoors in even the *most sanitary* of town hospitals." He speaks briefly on bismuth paste, tuberculin and Bier's treatment as aids in treatment.

16. Leedham-Green is much in favor of scopolamine-morphine narcosis. He has had 1 death out of 4,762 operations in which he used this method. He considers it not only the most humane, but the safest of general anesthetics.

17. Freyer gives his results of the removal of the prostate in 212 cases. In his series there were 48 men of from eighty to eighty-nine years old, and 9, who were seventy-nine years old, with 6 deaths. The average age was sixty-nine years. The mortality was 6.05%, gradually declining in the last 200 operations to 4.24%.

18. Hort believes that the reaction of cancerous blood serum in inhibiting ferment activity of the pancreatic secretions is of special value in differentiating chronic mastitis, simple hypertrophy of the prostate and gastric ulcer from cancer. He presents numerous tables and statistics to support this view. [J. B. H.]

Oct. 9, 1909.

1. **Tweedy, J.** *An Address on Experimental Research and Medical Progress.*
2. ***Flashman, J. F., and Butler, A. G.** *Remarks on Complement Fixation as a Method of Diagnosis Applied to Syphilis and General Paralysis: the Wassermann Reaction.*
3. **Bury, J. S.** *Note on Alcohol in Relation to Multiple Neuritis.*
4. **Turner, A. C.** *Paroxysmal Tachycardia Disappearing after an Attack of Herpes Zoster.*
5. **Radcliffe, F.** *Traumatic Rupture of the Small Intestine: Suture and Appendicostomy; Recovery.*

Section of Obstetrics and Gynecology.

6. **Tweedy, E. H.** *Discussion on the Treatment of Endometritis.*
7. **Savage, S.** *An Ovarian Tumor, Clinically Malignant, Arising from the Overgrowth of Lutein Cells.*
8. **Fehling.** *Treatment of Contracted Pelvis.*
9. **Cameron, M.** *Dystocia Due to Ventrifixation of the Uterus.*
10. **McIlroy, A. L.** *Development of the Epithelial Elements in the Ovary.*
11. ***Wilson, T.** *Discussion on the Treatment of the Graver Forms of Puerperal Sepsis.*
12. **Austin, J. A.-J.** *Midwifery in Private Practice.*
13. **Lockyer, C.** *Uterine Cancer Complicating Pregnancy.*

Section of Hematology and Vaccine Therapy.

14. ***Smith, M.** *The Inoculation Treatment of Tuberculous Arthritis.*
15. **Carmalt-Jones, D. W.** *The Treatment of Bronchial Asthma by a Vaccine.*
16. ***Willcox, W. H., and Morgan, W. P.** *The Treatment of Pneumonia by Inoculation.*
17. ***Paterson, M. S.** *Auto-Inoculation in Pulmonary Tuberculosis.*
18. ***Houston, T.** *On Typhoid Carriers.*
19. **Golla, F. L.** *The Antitryptic Index.*
20. **Sanfelice.** *Genesis and Treatment of Malignant Tumors.*
21. **Bordet.** *The Microbe of Whooping Cough.*

Section of Diseases of Children.

22. ***Jones, R.** *Discussion on the Treatment of Club Foot.*

2. Flashman and Butler give their results of trying the Wassermann test on a large series of cases, syphilitic and non-syphilitic. They present their technic in detail, somewhat modified, and, they believe, simplified, from the original. They discuss at length the reliability of this test for diagnosis and believe that its negative value is very great indeed. They discuss various theoretical considerations, among them the relation of general paralysis to syphilis. There is an extensive bibliography.

11. Wilson discusses the treatment of the graver forms of puerperal sepsis. For the benefit of the patients, as well as for the further study of this condition, he advises segregation of all such cases. He describes the initial treatment, douches, the general management of the case in regard to drugs, the use of immune serum (with which he has had little success), vaccines (which have acted fairly well), and last goes into the question of the surgery of puerperal infection. He goes over briefly the various methods of treatment, incision and drainage, hysterectomy, the surgery of infected uterine appendages and the ligature and excision of veins.

14. Smith gives in tabular form his results from the use of tuberculin in joint tuberculosis. He finds difficulty in estimating the exact good done by the tuberculin alone, as the surgical treatment was necessarily a factor and often the patient was not inoculated until it was seen that surgery could do no more. On the whole his results are favorable.

16. Willcox and Morgan give their results of treating 24 cases of pneumonia with an autogenous vaccine. In every case the organism was the pneumococcus. They procured the infecting organism by aspiration of the pleural cavity or superficial parts of the lung; this method they considered superior to either isolation from sputum or blood culture. They give the details of their method. They give a dose of 20,000,000 to 30,000,000. Out of their 24 cases, 2 died. They believe the inoculation had a marked beneficial effect. The duration of the disease was shortened in many instances. In protracted cases the vaccine had a markedly beneficial effect, especially if commenced early in the disease.

17. Paterson defines auto-inoculation as the effect of exercise on the blood as shown by general health, temperature and the increase or decrease of sputum. He describes the development of the " work treatment " of his patients at Frimley. Owing to the good results with this method he has been able to accommodate 50% more patients since he has put his patients on this treatment. Absolute rest is necessary at first to bring the temperature to normal. By " rest " he means such rest as a very sick typhoid patient takes. Not even are any chest examinations allowed during this period. Usually the temperature becomes normal in three to four days of this treatment. To obtain this absolute rest all cough must be checked, using morphine if necessary. He summarizes sanatorium treatment as follows:

1. Placing patients under ideal hygienic conditions and keeping them at rest.
2. Artificial inoculation of tuberculin in addition to the above.
3. Prevention of excessive auto-inoculation.
4. Inducing proper auto-inoculation by graduated exercise or work.

18. Houston believes that typhoid carriers can be cured by inoculation with an autogenous vaccine if this is done comparatively early in the course of the disease. Chronic cases he finds extremely resistant to all treatment. He reports three cases in detail.

22. Jones believes that the treatment of club foot should begin at birth and should not end until the patient walks; such early treatment should assure recovery without any operation on bone. Relapse is due to inefficient correction, lengthened extensor tendons and to erroneous deflection of body weight during walking. [J. B. H.]

RECORD OF MORTALITY

For the Week ending Saturday, Oct. 30, 1909.

Cities.	Reported deaths in each.	Deaths under five years.	Cities.	Reported deaths in each.	Deaths under five years.
New York	—	—	Waltham	4	1
Chicago	586	147	Pittsfield	6	1
Philadelphia	—	—	Brookline	5	—
St. Louis	—	—	Gloucester	4	—
Baltimore	194	46	North Adams	8	2
Cleveland	—	—	Northampton	10	3
Buffalo	—	—	Chicopee	8	4
Pittsburg	—	—	Medford	4	2
Cincinnati	—	—	Beverly	5	—
Milwaukee	—	—	Leominster	1	—
Washington	—	—	Hyde Park	6	—
Providence	—	—	Melrose	4	1
Boston	197	39	Newburyport	5	—
Worcester	34	—	Revere	5	1
Fall River	35	17	Westfield	3	2
Cambridge	25	5	Woburn	3	0
Lowell	32	10	Peabody	—	—
New Bedford	25	11	Marlboro	3	1
Lynn	18	3	Attleboro	3	2
Springfield	21	8	Adams	1	—
Lawrence	18	10	Clinton	7	1
Somerville	16	5	Gardner	5	2
Brockton	8	2	Milford	6	1
Holyoke	26	6	Watertown	3	0
Malden	8	1	Plymouth	—	—
Chelsea	10	0	Southbridge	2	1
Newton	6	—	Weymouth	2	1
Salem	16	3	Framingham	3	1
Haverhill	14	2	Wakefield	—	—
Fitchburg	10	3	Webster	—	—
Everett	6	1	Arlington	3	1
Quincy	9	2	Greenfield	4	—
Taunton	16	5			

LIST OF CHANGES OF STATIONS AND DUTIES OF COMMISSIONED AND OTHER OFFICERS OF THE PUBLIC HEALTH AND MARINE-HOSPITAL SERVICE FOR THE SEVEN DAYS ENDED OCT. 27, 1909.

Carter, H. R., surgeon. Directed to proceed to Fort Wayne, Ind., upon special temporary duty. Oct. 23, 1909.

Wasdin, Eugene, surgeon. Granted one month's leave of absence from Oct. 22, 1909, on account of sickness.

Nydegger, J. A., surgeon. Leave of absence granted for one month and seven days from Sept. 10, 1909, amended to read one month and five days from Sept. 10, 1909.

Sprague, E. K., surgeon. Leave of absence granted for sixteen days from Oct. 8, 1909, amended to read seven days from Oct. 8, 1909.

Lumsden, L. L., passed assistant surgeon. Detailed to represent the service at the Annual Conference of Sanitary Officers of the State of New York, to be held in Rochester, N. Y., Nov. 10-12, 1909. Oct. 25, 1909.

Parker, H. B., passed assistant surgeon. Granted three days' leave of absence from Oct. 20, 1909, on account of sickness.

Anderson, John F., passed assistant surgeon. Directed to proceed to Marietta and Philadelphia, Pa., and New York, N. Y., upon special temporary duty. Oct. 23, 1909.

Amesse, J. W., passed assistant surgeon. Granted two months' leave of absence from Nov. 1, 1909.

Long, J. D., passed assistant surgeon. Relieved from duty at San Francisco, Cal., and directed to proceed to Washington, D. C., and report to the Director of the Hygienic Laboratory for duty, stopping en route at Columbia, S. C. Oct. 23, 1909.

Foster, M. H., passed assistant surgeon. Granted fifteen days' leave of absence en route home.

Wollenberg, R. A. C., assistant surgeon. Directed to report to the medical officer in temporary charge at Detroit, Mich., for temporary duty. Oct. 25, 1909.

Simpson, Friench, assistant surgeon. Relieved from duty on the revenue cutter "Perry" and directed to proceed to San Francisco, Cal., and report to Surgeon Rupert Blue for duty. Oct. 26, 1909.

Hasseltine, H. E., assistant surgeon. Granted seven days' leave of absence from Oct. 25, 1909, under paragraph 191, Service Regulations.

Bailey, C. A., acting assistant surgeon. Granted three days' leave of absence from Oct. 19, 1909.

Jackson, James M., Jr., acting assistant surgeon. Granted twenty days' leave of absence from Nov. 8, 1909.

Miranda, R. U. Lange, acting assistant surgeon. Granted one month's leave of absence from Oct. 8, 1909, without pay.

Spohn, A. E., acting assistant surgeon. Leave of absence granted for two months from Sept. 1, 1909, without pay, amended to read one month from Sept. 1, 1909, without pay.

Thompson, W. R. P., acting assistant surgeon. Granted ten days' leave of absence from Nov. 1, 1909.

BOARD CONVENED.

Board of medical officers convened to meet at the Marine Hospital, Stapleton, N. Y., Nov. 8, 1909, for the purpose of making a physical examination of two officers of the Revenue-Cutter Service. Detail for the Board: Passed Assistant Surgeon C. W. Vogel, chairman; Passed Assistant Surgeon G. L. Collins, recorder. Oct. 25, 1909.

ERRATUM.

On page 676 of the issue of Nov. 4, 1909, for "Typhoid and the Crustacea" read "Typhoid and the Mollusca."

SOCIETY NOTICES.

Suffolk District Medical Society. — Adjourned meeting, Thursday, Nov. 18, 1909, at 5 p.m., John Ware Hall, Medical Library. The meeting will be devoted to the election of a nominating committee and such other business as may properly come up for consideration. It is expected that the meeting will be short.

George H. Monks, M.D., *President*. **David D. Scannell, M.D.**, *Secretary*.

New England Association for Physical Therapeutics. — A regular meeting of the Association will be held in the auditorium of the Edison Building, 39 Boylston St., Friday evening, Nov. 12, 1909, at 8 o'clock. "Presentation of Experiments in Electrical Resuscitation and Anæsthesia," Dr. Louise G. Robinovitch, New York. "Demonstration of Electrical Sleep by the Use of the Pulsating Current," Frederic K. Vreeland, New York.

W. T. Patch, M.D., *Secretary*.

RECENT DEATH.

Dr. William G. Terwilliger, of Brooklyn, N. Y., was killed in an automobile accident at a crossing of the Long Island Railroad on Oct. 31. Of his two companions in the car one was also killed instantly and the other, Gilbert Rhoads, a medical student, seriously if not fatally injured. Dr. Terwilliger, who was a well-known practitioner, was graduated from the College of Physicians and Surgeons, New York, in 1894.

BOOKS AND PAMPHLETS RECEIVED.

Atlas of External Diseases of the Eye. By Dr. Richard Greeff. Only authorized English translation by P. W. Shedd, M.D. Illustrated. New York: Rebman Co. 1909.

Practical Points in the Use of X-Ray and High-Frequency Currents. By Aspinwall Judd, M.D. New York: Rebman Co. 1909.

University of California Publications in Physiology. The Proteins. By T. Brailsford Robertson.

Influence of the Eye on the Ear under Normal and Pathological Conditions. By Dr. Marcel Rollet. Reprint.

The Tragedy of the Gonococcus. By James C. Wood, A.M., M.D. Reprint.

Principles of Meteorology and Climatology. Lecture 1. By Guy Hinsdale, M.D.

Report of the Committee on Ophthalmia Neonatorum. Presented to the House of Delegates of the American Medical Association at the Session held at Atlantic City, N. J., June 7-11, 1909. Reprint.

The Diagnostics of Internal Medicine. By Glentworth Reeve Butler, M.D., Sc.D., LL.D. Third revised edition. Illustrated. New York and London: D. Appleton & Co. 1909.

Tenth Annual Report of the State Board of Insanity of the Commonwealth of Massachusetts for the Year ending Nov. 30, 1908. Boston. 1909.

Treasury Department. Public Health and Marine-Hospital Service of the United States. Notes on the Prognosis and Treatment of Pellagra. By C. H. Lavinder. Washington. 1909.

Treasury Department. Public Health and Marine-Hospital Service of the United States. Bulletin No. 51. Chemical Tests for Blood. By J. H. Hastie. Washington. 1909.

Original Articles.

A REVIEW OF RECENT EXPERIMENTAL WORK ON HEMORRHAGIC CONDITIONS.*

BY WILLIAM PALMER LUCAS, M.D., BOSTON.

In discussing the problem of hemorrhagic diseases in children it is in place first of all to go into the theories underlying these conditions. Of prime importance is the question of what changes are to be found in such conditions, and whether the changes are in the tissues in general, in the blood vessels or in the blood itself. Secondly, has experimental work given any clue to etiology or to treatment, and, if so, do these fit in with the clinical pictures as seen by the general practitioner?

In considering the blood we are at present chiefly interested in its power of coagulation when taken into a suitable vessel. For it has been shown that, if blood is drawn off through a canula coated with a smooth layer of paraffin into a vessel also lined with this substance, the blood will not coagulate; it will remain for hours in the same liquid condition in which it is found in the blood vessels. Now, if a glass bead or rod is dropped into the blood, it will take but a few minutes before it has changed its form entirely and become coagulated. The factors necessary for this coagulation must all have been present before, though unable to act. The exact steps in this complex are a combination, first, of the three precursors of fibrin ferment, the prothrombin, the thrombokinase and the calcium salts, uniting to form the true thrombin which does not exist in the circulating blood except potentially in the form of its precursors. The thrombin thus formed unites with the fibrinogen which is present as such in the circulating blood to form the fibrin in the blood clot. When the substances are present in their proper proportions then we have a normal firm clot, but with the absence of any one of these, the form of the clot is either materially changed or the blood remains fluid, being unable to clot. If, for instance, the salts are diminished, then the prothrombin uniting with the thrombokinase forms a clot that has a greatly delayed coagulation time. If the salts are present and the prothrombin is absent, then the time element is not changed, but the form of the clot is materially altered, and, instead of getting a firm fibrin clot which in a short time contracts and becomes surrounded by a clear serum, we get a homogeneous gelatinous coagulum; in other words, with the loss of the prothrombin, the contractility of the clot is almost lost without affecting the coagulation time. If, now, we suppose the thrombokinase to be lacking, then both the time element and the form of the clot are changed, the blood in these instances acting very much like the blood drawn into the paraffin dish.

The possible changes in the blood vessels that might lead to hemorrhage are, first, friability, a condition most prone to occur at the two extremes of life; and, second, some change in the lining of the blood vessels conducive to a more easy escape of blood so that osmosis might be freer than normal; or a change in the size of the vessels of such extent that osmosis is brought about by the increased blood pressure. That some of these conditions do occur we shall see in discussing the clinical forms. Lastly, change in the body cells that might chemically alter the normal processes of coagulation by either adding an incompatible substance or by the withdrawal of some substance that is needed in the process of the normal coagulation.

Before bringing forward the experimental work it will be well to look into the accepted etiological theories concerning hemorrhagic conditions. Hemorrhage of the new-born occurring very soon after birth, often in the most robust of infants, comes on without any apparent focus of infection. From analogy, however, we know that some of the severest types of septicemia or toxemia have no visible focus of infection, and as these hemorrhages usually resemble an acute infection in their sudden onset, with restlessness, loss of appetite and temperature (often only in the early stages), we have come clinically to believe in the infectious origin of this condition. In support of this there are on record a few positive blood cultures, but from this standpoint it has neither been studied carefully enough nor in a sufficiently large number of cases under the best conditions to be able to assert anything very definite. There can be no question that certain of these cases are the result of direct trauma, for at this period the blood vessels are in a most friable state, but, disregarding these few, the great number, certainly, from our clinical knowledge of the process must be considered as infectious, and to uphold this theory we have many known infections that do cause more or less hemorrhage in one stage or another of their invasion to use as analogies. The hemorrhage that occurs a little later during the appearance of idiopathic jaundice has an entirely different explanation. As this jaundice is a physiological process, so the hemorrhages found in combination with it are chemico-physiological in their occurrence. And as the one subsides, the other disappears for the same reason. There will be an attempt later to show the part the liver plays in these hemorrhagic conditions. Suffice it to say here that, as is well known, in the presence of jaundice the tendency to bleed is often manifest and the stopping of these hemorrhages is quite a difficult process, not uncommonly impossible.

Still later we find a much larger group of cases which are at present unadvisedly found under several headings with the common prefix "purpura." That this is one condition with different manifestations is far more probable than the current idea of supposing each manifestation an entity, with hemorrhages as a symptom. It is perfectly true that we find this hemorrhagic condition appears as a secondary process, but even so, there is no reason to suppose that etiologically it is identical with true purpura. For instance, there is certainly no connection between the hemorrhages that occur in epidemic cerebrospinal meningitis and those found in what is termed purpura hemorrhagica, one being a purely toxic condition, while the other, though perhaps toxic in origin, yet has a definite blood picture, which accounts for the hemorrhages. Taking into account all purpuras, those found in conjunction with some definitely known disease, such as scarlet fever, smallpox, measles, diphtheria, etc., or secondary purpuras as they are called, really form a very small class compared to the primary purpuras which have the same etiological basis though having a variety of manifestations, sometimes all the manifestations appearing in a case, sometimes only one. Just what the primary causal factor in these conditions is, no one is at present ready to state, but it has been ascertained by very careful investigation that in these primary conditions there is a marked diminution in one of the cellular elements of the blood, namely, the platelets, and we shall see later in discussing the experimental work the importance of this finding.

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* Read before the New England Pediatric Society, at Providence, R. I., May 8, 1909.

In considering the congenital or hereditary conditions in which spontaneous hemorrhages occur, the alterations are found to be materially different from those in primary hemorrhagic conditions. The term " hemophilia " has been applied to these congenital or hereditary hemorrhagic states, and there are a number of theories as to their origin. Immerman's theory of a congenital disproportion between the volume of blood and the size of blood vessels leading to increased blood pressure cannot be upheld under the light of experimental evidence, which has shown that the blood pressure in a majority of cases is below normal. Sahli has suggested the theory that there is a chemical alteration in the walls of the blood vessels producing a functional disturbance rather than any morphological change, and according to this theory hemorrhages would be due to increased osmosis rather than to any change in the factors involved in coagulation. The coagulation time in these conditions is at present under dispute. In conjunction with Sahli's theory, it is claimed further that there is a diminution in some cases amounting to total absence of one of the precursors of thrombin, namely, thrombokinase. This alteration is supposed to be a functional one in the body cells, transmitted in a hereditary line through the germ plasm. This theory seems to be the one which answers best the changes which we find in this congenital condition and gives a clue to why treatment has been only of very temporary value.

The hemorrhages that appear in the course of certain infections or those which are due to an infectious origin primarily, as is the hemorrhage of the newborn in certain cases, are due not to the presence of the organism, but to the production of toxins within the body which act chemically either as inhibitory agents on coagulation or by locking up in a loose chemical union the available normal factors that enter into coagulation. These toxins chemically are complex proteid substances, such as peptone and albumoses. Experimentally it is possible to reproduce conditions similar to these infectious hemorrhages by the intravenous injection of these same toxins or by other peptones or albumoses, as can be done by the injection of hirudin or leech extract. The toxic element of snake venom is composed of this same form of chemical poison, though the action of the venom is much more rapid, and more toxic, and goes on to a further degree to active hemolysis or laking of the blood. We are all more or less familiar with the rapidly fatal cases of measles and diphtheria, popularly termed black measles and black diphtheria. In these conditions a similar process takes place and the toxic agents belong to the same group of albumoses. These changes in the blood make it more fluid and so allow osmosis to take place more readily. Further, these poisons act on the endothelium of the blood vessels, making them more permeable. This condition of endotheliolysis has been described and pointed out pathologically as well as experimentally. We can see from this description why most specific treatment has been useless, for the rôle that a specific would have to play would be to enter into a more stable union with the toxin than the elements of the blood were able to, or in some way to intercept or neutralize the effect of the toxin, or to aid in the rapid elimination or destruction of the toxin. We can understand why the general supportive or eliminative lines of treatment have always held such an important place in these conditions, for if the organism is supported long enough, it has the power within itself of producing substances which overcome or neutralize these toxic substances and also of inducing the elimination of them. In this we find the most promising field for the production experimentally of specific neutralizing or immunizing substances, as has been done in the antiserum for snake venom.

In the primary purpuras we find, as has been stated, a diminution of one of the precursors of thrombin, the prothrombin. It has been proved both clinically and experimentally that prothrombin is derived from the blood platelets. In these purpuras we find a very marked diminution of the platelets, as low as 7,000 when the normal count averages 500,000 to the cubic millimeter. So with this definite and constant blood picture, it is fair to assume that to their absence the hemorrhagic condition is due. It has been shown that when the platelets are removed, or, in other words, when the prothrombin is absent, the coagulation time is not affected, but only the contractility of the clot, so that instead of getting a firm, normal clot with the serum separating, we get a gelatinous homogeneous mass with little or no separation of fibrin and serum. This is exactly the condition we find in purpura. The coagulation time is within normal limits. Very often a short coagulation time is found, but the form of the clot is materially changed and, instead of a firm clot with the separation of serum, we get a gelatinous one with little or no tendency for the serum to separate. Just what causes the diminution of the platelets is still under consideration.

The French school, which is practically the only school which has done any work along this line, think that two factors are necessary for the production of this condition. They claim to have produced conditions exactly similar to purpura by first causing certain changes in the liver, which consist mainly in a form of slow necrosis. When this is accomplished, the central nervous system is intoxicated by the intradural injection of certain toxic substances, such as blood serum from grave hemorrhagic cases or by diphtheria toxin. Apparently there is little doubt that they have and are able to produce hemorrhagic conditions by these means, but whether they are exactly similar to primary purpura has not been as clearly demonstrated, for they have not shown that in this way they can diminish the number or affect the output of the platelets.

From a clinical standpoint, however, these experiments are most suggestive and explain the appearance of hemorrhagic conditions which occur during the course of certain liver changes or affections. The tendency to bleed in jaundice has already been referred to, and we are not surprised to learn that experimental intravenous injection of bile or the introduction of bile salts, the taurocholate or glycocholate of soda, is capable of producing a condition of incoagulability of the blood. In liver necrosis from chloroform poisoning this same condition of incoagulability of the blood is found. Whether this is a chemical combination of the bile salts and the calcium of the blood has not yet been ascertained, but this seems the most likely explanation. If so, then the work of the French school could be explained on this ground rather than on the supposition that a true purpura is produced.

I would offer this explanation for a certain number of cases of hemorrhage of the newborn, for it is well known how often liver lesions are found in infants and how easily liver lesions are produced in infants; also how unstable their central nervous systems are; so that such a combination of disturbances, if the former alone does not offer sufficient reason, would give certainly a very plausible explanation for these early hemorrhages, especially when infections can be definitely ruled out, as appears to be the case in a certain proportion. This explanation, I believe, has never been offered, but I can see no objection to its validity.

In the congenital or hereditary cases we are still further in the dark. What has been already said about the absence of the tissue coagulin in these conditions is about the limit of our knowledge. That this change is a functional one on the part of all the body cells which normally have a part in the production of this tissue coagulin, and not a chemically or pathologically demonstrable one, is pretty generally accepted. Because of its being a functional alteration of all the cells, it is the most unapproachable, both from an experimental and from a rational therapeutic standpoint. The most that can be hoped for from treatment is the temporary furnishing of the deficiency in tissue coagulin.

Therapeutic measures viewed in the light of experimental evidence must supply the deficiency in each case, or correct faulty performances of normal processes, or act as stimulants for the production of such substances by the body cells. At least they must act as temporary aids to bridge over periods when certain factors are reduced in amount which in time would become normal if protected during the presence of certain foreign substances.

One of the most used means in such conditions is the administration of salts, principally calcium, either by mouth or subcutaneously. From test-tube experiments it can be easily demonstrated that the addition of calcium to blood plasma rendered incoagulable by various means does increase the coagulability, but when we come to testing its value when given to a patient, it has been very clearly shown that though the ionizable calcium salts of the blood, and this is the only form of calcium that enters into the coagulation of the blood, can be slightly increased, yet the possible increase is so slight that the coagulability is not affected in the least. This is tested by precipitating out all the ionizable calcium crystals and counting them with the ordinary Thoma-Zeiss apparatus used for blood counts and comparing the coagulation time before and after giving the calcium. It has been found that the ingestion of 125 gm. of calcium does not raise the coagulability of the blood in the least, so that no matter what doses of calcium we give, in reality we are not accomplishing the purpose for which we intended this remedial agent, that is, increasing the coagulability of the blood.

The use of gelatin is entirely empirical, and, as far as I can learn, it is inert in its power to increase the coagulability of the blood either *in vitro* or *in vivo*.

Adrenalin as usually given is also inert, for adrenalin solution given subcutaneously does not get into the circulation before it has lost its power. This can be very easily demonstrated experimentally by watching the difference in effect on the blood pressure of subcutaneous and intravenous injections. Subcutaneously there is no effect on the blood pressure, or it is too slight to be of any value. Locally it is of value as a styptic and, if given intravenously and in sufficient amount and strength, it has been shown to have a marked temporary effect which, however, wears off very readily, so that its value is limited to such cases as call for only a temporary measure to tide over some critical period that will be of very short duration. In the intravenous injection of adrenalin, we get an increased blood pressure which is, of itself, not to be desired, and which might increase rather than decrease the hemorrhagic condition for which the adrenalin has been administered. Its action is entirely a mechanical one on the blood vessels, making osmosis more difficult by increasing the contractile tone of the blood vessels, more especially the peripheral vessels and capillaries.

In the past few years, since the revival under improved technic of blood transfusion, we have really gained the most rational means of combating these conditions, for by supplying fresh blood we supply all the elements necessary for the actual increase in the coagulability of the blood. We supply all the factors that enter into coagulation from a perfectly normal subject. The process, however, is not an easy one to accomplish, and is one that requires very careful and especial technic. The men that have been most successful in this procedure are the men who have done the most experimental operating, as time and familiarity with each step in the procedure are most important. The procedure has some dangers aside from the surgical risks, the main danger lying in the possibility that the donor's blood may cause hemolysis or laking of the recipient's or patient's blood. Tests for this should be made in all cases where this is feared. This danger is minimized if the blood is taken from a member of the patient's family.

However, not all cases are severe enough to indicate or warrant such radical measures, and though unquestionably the best and most satisfactory method in severe cases, a substitite for the less severe cases and ones which do not really endanger the lives of the patients is very desirable. In this connection the injection of fresh animal serum which contains all the ferments and salts that are found in the blood itself — in fact, there is more ferment both in amount and in potency than in the blood before it has clotted — has been tried. Experimentally almost every known serum has been used, and the ones found most efficacious are horse serum, rabbit serum and human serum. Horse serum is the least capable of producing the desired changes. Rabbit serum is appreciably more potent, and human serum is, of course, the best when it can be procured, which is seldom.

I have been carrying on some experimental work along these lines, comparing the reactivating power of different animal sera, and have found, as might be supposed, that this power varies somewhat with the different sera. This power of reactivating, or, in other words, the ability to cause coagulation by adding a small amount of serum to a blood that has artificially been made incoagulable, resides in a substance which is thermolabile and can be destroyed by heating to 56° C. Therefore, most probably it is the fibrin ferment of the thrombin that is the real factor and plays the important rôle in producing these changes. The power of reactivation is not lost for a considerable period, for I have found sera as active at the end of forty days as when first drawn, though at the end of one hundred days, in one instance, it had disappeared. Rabbit serum is very easily procured by tapping the heart directly with an ordinary needle and syringe and drawing off some 5 to 10 ccm. of blood from each rabbit. Rabbits can be kept for quite a period, bleeding them about every ten days or two weeks.

The carotids may be tapped by means of the Pasteur canula test-tube, which can be blown as desired. This is the way in which I have found it most convenient to procure the serum. The advantages of this are that a sufficient amount of serum can be procured from one rabbit, that in any one dose there is no admixture of different sera, and that the asepsis can be more carefully carried out. I have often obtained as high as 100 ccm. of blood from a single rabbit, and this furnishes about 50 ccm. of serum. The dose of this serum runs from 10 or 15 ccm. in a mild case or a very young infant to 30 or 50 ccm. in a more severe case or an older child. In severe cases this dose can be repeated at four to six-hour intervals; in less severe cases it is given once a day for several days or until no new hemorrhages have appeared for about twenty-four hours; sometimes only one or two doses are necessary to control quite severe bleeding.

The cases in which it is most indicated, of course, are those deficient in some one of the fibrin ferment precursors or in conditions in which these are unable to act, that is, in primary purpura where the prothrombin is absent, in jaundice where the proferments are not able to act, and to a markedly less degree it is of value in the hemophiliac cases of the congenital type where there is a functional change. In these cases the serum is able to furnish only temporarily a deficiency for a period of a few days or weeks, in some cases lasting even one or two years, but it cannot be permanent, for the primary functional derangement still continues, and when the power of the serum is spent, or the effect of its stimulation worn off, then the condition recurs, while in the two first-mentioned conditions its effect is permanent if successful, for the trouble is only a temporary one, and by the time the ferment supplied has disappeared, the original condition that called for its use has also disappeared.

I have had opportunity of trying this method in only a few cases during the past year and a half at the Children's Hospital, with results which I think are quite favorable to its further use. I have tried it in three cases of purpura simplex, two cases of purpura hemorrhagica, one case of hemorrhage in the newborn and in two cases of congenital hemophilia.

The treatment in these cases was successful in all but one, which, as the autopsy report showed, was probably not a true purpura, but a secondary purpura in acute miliary tuberculosis, and although the hemorrhages in this case were controlled for a sufficient time before death to show the value of the treatment, yet the primary trouble, of course, was not stayed.

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THE TREATMENT OF SUMMER DIARRHEA AS INFLUENCED BY ETIOLOGY.

BY CHARLES HUNTER DUNN, M.D.,

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Additions to the knowledge of diseased conditions are constantly being made, and such additional knowledge, especially on the etiologic side, usually carries with it suggestions for bettering our methods of treating these conditions. These suggestions should be promptly taken advantage of, and to this end the clinician keeps his eyes constantly fixed on the work of the scientific investigator, ready to seize upon anything let fall by the latter which shall be of value in the practical treatment of disease. The treatment of the diarrheal diseases prevalent in the summer time has to a great extent become a matter of routine. This routine is very generally known and practiced and its results have in general been so satisfactory that there is a certain amount of danger that recent advances in the knowledge of these diseases be overlooked and unaccompanied by their corresponding modifications of treatment.

This routine treatment is partly symptomatic and partly based on facts long known as to etiology and pathologic lesions. In general, its basis is correct. It takes no heed, however, of recently discovered or recently codified facts as to etiology and of the correspondence of varying clinical forms of summer diarrhea with a varying etiology. What these diseased conditions actually represent is now rapidly becoming better understood. It has been possible to reclassify these diseases on an etiologic basis. Such a classification, based on a varying etiology, suggests the possibility of ultimately arriving at a specific treatment for each of the recognized forms of summer diarrhea.

In general, the routine treatment of the acute diarrheal diseases of infancy consists, first, in emptying the bowel; second, in resting the bowel by the temporary withholding of food; third, in resuming feeding in such a way, with food of such a character, as not to overburden the disturbed organ. No fault can be found with this routine. It is based on sound common sense. Moreover, the possible advantages of certain additional measures, such as bismuth, irrigation of the colon and a change of climate, and the disadvantages of others, such as opium, have long been recognized. The value of some of these measures has always provided subjects for discussion. Examples of some of these open questions are the following: How long should food be withheld? With what food should we begin after the initial starvation? What is the danger of feeding with cow's milk, and when and how should it be used? What is the value of and indications for bismuth? When should irrigations be employed? Is opium ever indicated?

The purpose of the present paper is first to present the writer's conclusions as to some of these questions, as to the value and indication for some of the routine measures; second, to point out any new measures which have been added to our stock of weapons by recent achievement in research; and, third, to point out to what extent our treatment should be specific for various forms of summer diarrheal disease. The basis of the present paper is a mass of records and statistics gathered during six years' service in the Out-Patient Department of the Infants' Hospital during the months of July, August, September and, in some years, October. They include over two thousand cases of diarrhea. During this time an attempt was made at the systematic investigation of many of the open questions outlined above. The method used was the comparison of results as to mortality, relief of symptoms, gain or loss in weight, in cases occurring in the same months of different years and in different series of cases occurring simultaneously. Comparisons were made between series of cases treated with different routine feedings, different periods of withholding food, treated with and without bismuth, with and without irrigations, and with and without the newer methods of treatment to be presently described. It is recognized that the disease is of such a character that statistics of this kind afford no definite or final proof of the value or lack of value of any particular method of treatment. The variation in the type of the disease is too great, the number of factors influencing results is too great, and there is too little finally known as to ultimate etiology. Nevertheless, as near an approach as possible was made to experimental conditions, and the end in view was the arriving at some conclusions which, while of no scientific value as matters of fact, might yet be, from the large number of cases on which they are based, of some interest as matters of experience. They are now presented for what they are worth.

The most important conclusion reached from this study was that the value of and indications for different therapeutic measures vary with the form or type of the diarrheal disease treated. In short, the writer believes that the treatment of these diseases should be specific and in each instance dependent on the kind of case treated. The routine treatment of emptying the bowel and temporary starvation is good and indicated in all forms. As to the means employed to empty the bowel, I believe castor oil is best to be used in all cases where it is possible; that is, whenever it is not vomited. In cases where there is vomiting, calomel should be substituted. I believe also that in all cases of diarrheal disease occurring during the hot months, all milk mixtures used should be pasteurized. The advantage in these cases of change of surroundings and removal to a cooler climate must also, for the sake of completeness, be mentioned here. The answers to the questions as to how long food should be withheld, as to when milk may be given, as to what foods should be used, and as to the value of irrigations, vary according to the type of the disease. As to the value of bismuth, there were numerous individual cases which appeared to do well under its use, but the mass of the figures gave a rather unexpected result. The statistics of the large number of cases in which bismuth was used as a routine were no better than those of the equally large number in which it was not used. I was forced, rather against my inclination, to the conclusion that bismuth is of no especial value as a routine measure, but is of value as an additional resource, to be tried in any case which does not do well.

To make clear the remaining conclusions as to the treatment of these diseases necessitates a brief description of the classification employed. This classification represents an attempt to place the summer diarrheas of infancy as far as possible upon an etiologic basis and to get rid of an unnecessarily confusing terminology. It has been adopted by the Pediatric Department of Harvard University. I will not here describe the research work underlying it, nor the reasons for its adoption, nor its finer details, referring you to the published literature on the subject. I will merely present it in outline.

Under this classification four types are recognized as constituting the sum of the cases of summer diarrheal disease. The first is the nervous type or acute nervous diarrhea. In this type the heat of the weather disturbs the nervous mechanism governing the bowel, producing increased peristalsis. The same thing may be produced by cold, as in a sudden chilling. It is characterized clinically by the absence of persistent fever and the presence of movements which are frequent and loose, but of normal color and odor. The movements show evidences neither of indigestion nor of fermentation.

The second and third types are grouped together under the term "acute intestinal indigestion." Both are due in the first instance to a lack of balance between the digestive power and the food given. The prevalence of this disease in hot weather is due to the fact that the heat of the weather plays a dual rôle, in that it lowers the baby's digestive power, inhibiting the secretion of antiseptic and digestive substances, and allows increased opportunity for the contamination and spoiling of the milk supply. In one or both of these ways the balance is disturbed, and the food fails of digestion in the intestine. In the second type the process stops here and the undigested food acts as an irritant, causing diarrhea. This is the type of deficient secretion, or irritative diarrhea. It is characterized clinically by the absence of persistent fever, and by movements which contain curds, or undigested masses, but which are not green or foul. In the third type the process goes further and bacterial fermentation takes place in the insufficiently digested intestinal contents, with a varying amount of toxin formation and absorption. The organisms concerned in this fermentation do not enter the tissues as parasites, but flourish in the food residue as saprophytes. This type of fermentation, or fermental diarrhea, is characterized clinically by the absence of persistent fever, though the temperature may be high in the first twenty-four hours, and by movements which are not only undigested, but green, often very watery, foul and sometimes frothy. There is also a varying amount of nervous disturbance which may be marked enough to point to a very severe toxemia with dangerous prostration or collapse. Loss of weight is apt to be more rapid than in the first two types. In both types of intestinal indigestion the amount of mucus present is more or less dependent on the length of time the disease has existed. Blood may be present late in prolonged cases.

In the fourth type there is true infection of the tissues by parasites and a corresponding specific reaction of the body. The heat of the weather produces indigestion, as described under the last two types, and at the same time it diminishes the general resistance against infection. The local resistance is diminished by the irritation or injury to the intestinal wall from the undigested or fermenting food. If at such a time the proper pathogenic organisms are present in, or are introduced into, the intestine, all the opportunities for infection of the tissues are present and infection occurs, at once causing lesions, various forms of ileocolitis. Research has shown that a great variety of pathogenic organisms may cause this condition, but that the very great majority of all cases are caused by the various types of the dysentery bacillus. Clinically, this so-called infectious diarrhea is characterized by persistent fever and by the early appearance of excessive mucus or blood and mucus in the movements. In addition, the stools may show evidences of indigestion or of fermentation, an admixture of the other types, but the persistence of fever is the main diagnostic sign.

This division has been found very convenient and practical. Few cases occur which cannot at once be placed under one of these four headings. The distinction between the two types in which bacteria are concerned, the fermentation, caused by saprophytes, and the infectious, caused by parasites, is of especial value when considering specific treatment.

The treatment of acute nervous diarrhea is the simplest. After the initial emptying of the bowel with castor oil or calomel, boiled water only should be given for twelve hours, and barley water for the second twelve hours, and then milk feeding may be resumed. The intervals between feedings should be somewhat lengthened at first. In breast-fed babies, for the first twenty-four hours the length of time at the breast should be shortened. In bottle-fed babies, the food should be diluted for the first twenty-four hours, and then feeding may be resumed with the food on which the child has previously done well. In older children, who are on a mixed diet, diluted milk only should be used for the first twenty-four hours after feeding is resumed. After this, full-strength milk may be given and the other articles of diet added.

When, as will happen in rare cases, this treatment fails to bring about a normal condition, if diarrhea continues without the appearance in the movements of evidences of indigestion or fermentation, opium not only may be used, but is indicated. In such cases a few drops of paregoric given every three or four hours will usually check the diarrhea without any harmful effects. A similar condition, one which is really nervous diarrhea, occurs as a sequela to one of the other types. After evidences of fermentation or indigestion have disappeared, a diarrhea at times continues which is due to an irritable condition of the intestine. In these cases the mere taking of food into the stomach sets up sufficient peristalsis to produce a movement of the bowels. The mother's story is that the baby has a movement after every feeding. The mother's description of the movements should never be relied on, but the physician should assure himself that neither indigestion nor fermentation is present. Then paregoric should be used, and it is very effective. These two conditions of nervous diarrhea are the only forms of summer diarrhea in which it is safe to use opium. Its use in the other forms is attended with very grave danger.

In the second type, that of deficient secretion, or irritative diarrhea, the treatment is begun by emptying the bowel. This should be followed by twenty-four hours of nothing but boiled water. While it is true that in many cases of this type a dilute milk modification may be given after twenty-four hours, it is safer to withhold milk for another day and to use something else for the second twenty-four hours. As to what is used, we have our choice among such things as barley water, solutions of lactose, maltose or other carbohydrates, whey, albumen, water and beef juice. My preference is for barley water. Theoretically, in a pure case of this type, any one of these foods would not throw too great a burden upon the impaired digestion, and, therefore, could safely be used. But it is difficult to be certain that the element of fermentation is not present to some slight extent, and, if it is present, all proteid- or albumen-containing foods, such as whey, albumen water or beef juice, are contra-indicated, for reasons to be presently set forth. Solutions of other carbohydrates are unobjectionable, but the ideal treatment would be continued starvation, and barley water as ordinarily made is the nearest approach to starvation, being a very weak carbohydrate solution, yet it suffices to satisfy the mother and sustains the child.

After forty-eight hours in this type, milk feeding should be resumed. My figures show that the average loss of weight is less, and beginning gain in weight is more prompt, in the series in which milk feeding was resumed after twenty-four hours than in the series in which it was postponed for longer periods. Also there were no purely irritative cases in which its resumption was attended with danger. Breast-fed babies may be put back on the breast, with lengthened intervals, and shorter nursing at first. It is also well to dilute the breast milk by giving a little boiled water, or water and lime water, immediately before each nursing. I usually give a teaspoonful each of boiled water and lime water. In artificially-fed babies, the milk modification should be low in fat and casein, especially in casein. I do not believe in using barley water as a diluent in children under six months, as bad results frequently follow the prolonged use of starch-containing foods at this age. Increased caloric value, without increased burden on digestion, can best be obtained by the use of the split proteid, and in the first six months I use some such formula as: Fat, 2%; lactose, 5%; whey proteid, 50%; casein, 25%. If this is not digested, the fat and casein must be further lowered or temporarily removed by the use of whey. If it is well borne, the strength of the mixture may be gradually increased until a satisfactory gain in weight is obtained. In cases in the second six months I start with: Fat, 2%; lactose, 5%; proteid, .25%, and sufficient barley water to give .75% starch and increase the strength according to the indications of symptoms and weight curve. The specific point in the treatment is the careful adjusting of the strength of the food to the digestive power.

In cases of this type in which there is excessive mucus, or mucus and blood in the movements, these being usually cases which have existed a long time, irrigations of the colon should be used.

The initial treatment of the fermentation type, or fermental diarrhea, is that of the irritative, using boiled water only for the first twenty-four hours after emptying the bowel and barley water for the second. The special points in the treatment of this condition all depend on recently acquired knowledge of the etiology of this disease. The work of Tissier at the Pasteur Institute at Paris, and of other investigators, has shown that in this form of diarrheal disease a complete change occurs in the bacteriology of the intestine, and that at the time of recovery there is a very rapid return to the normal bacterial picture. Tissier studied the bacteria found in health and in this disease and found that the most dangerous organisms concerned in this fermentation thrive and form toxins in proteid media, whereas carbohydrate media are unfavorable to their development. He found also that the growth of certain other organisms was antagonistic to the growth of the dangerous fermenting saprophytes, and that, for example, the lactic acid bacillus, when introduced into cultures of these forms, was able to inhibit their growth, to overcome them and to drive them out.

This work indicates that all proteid foods are dangerous in this disease, and that foods consisting wholly or mainly of carbohydrates should be used during its most active stages. It also suggests the possibility of bringing about artificially the transformation of the flora of the stools from that found in disease to that of health, by the administration in large numbers of some such antagonistic organism as the lactic acid bacillus. Tissier advocated giving to these patients pure bouillon cultures of this bacillus.

It is in this form of summer diarrhea that the too early use of milk feeding has been known to be so dangerous. This work of Tissier is very suggestive in explaining the reason, as milk contains proteid, and it also explains the very bad effects so frequently seen under the use of whey and albumen water. As to when milk feedings should be resumed, I believe, basing my opinion on the Infants' Hospital records, that, unless the treatment with living lactic acid bacilli, to be presently described, is also employed, it is better to delay milk feeding for a third twenty-four hours, using barley water with the addition of some carbohydrate such as lactose or maltose. After this, in the average case, feeding with a dilute milk modification can be advantageously begun, using at first a formula no stronger than: Fat, 2%; lactose, 5%; proteid, 25%; and increasing the strength of the formula very gradually until a satisfactory gain of weight is obtained. The split proteid is of no advantage in this form, for whey proteid, while more digestible, is fully as favorable to the development of the dangerous fermenting saprophytes as is casein.

The use of living lactic acid bacilli, as suggested by the work of Metchnikoff, Tissier, Moro and others, is the greatest weapon against summer diarrhea which modern research has supplied. The scientific basis of this treatment is the possibility of driving out a pernicious micro-organism by overwhelming it with an antagonistic variety harmless to man. Buttermilk is made by inoculating milk with pure cultures of lactic bacilli and, if it is not subsequently heated, it contains enormous numbers of living lactic acid bacilli. Buttermilk has been largely used in infant feeding, but for another reason; its chemical digestibility and the lactic acid bacilli have always been killed by pasteurization. I chose unpasteurized buttermilk because it contained food and medicine, providing a food which was stable enough for experimental purposes and which contained a maximum number of the living bacilli. It was of course first necessary to prove that the good results did not come from the digestible character of the buttermilk. For this purpose a number of cases were first given pasteurized buttermilk without improvement, and then, with no other change than omitting the pasteurization, improvement was immediate and recovery rapid. After the good results of this treatment appeared manifest, I thought I could combine the use of living lactic acid bacilli with all the resources of percentage feeding by inoculating various milk modifications with the organisms and letting them " ripen " under the development of the bacilli. It proved that this was not practical, as the fat in such mixtures tends to separate out in the form of butter. Skimmed milk, however, may be thus ripened.

In practice, when it is desired to employ this treatment of living lactic acid bacilli, the physician may use buttermilk from some dairy, giving it unpasteurized. Or he may obtain from a dairy or milk laboratory a pure culture of this bacillus and, after pasteurizing his skimmed milk to kill other organisms, may add the lactic acid culture. The milk is then kept in a warm place until enough acidity develops to sour the milk or produce a very fine curd, and then it is kept on ice for use. Some of this milk each day is set aside as a culture for inoculating the next day's supply. Or he may obtain milk so prepared from a Walker-Gordon laboratory. The artificial preparations of the lactic acid bacilli, such as the lactone tablets, make excellent buttermilk for mere feeding purposes, but are not advisable when our purpose is to give as many as possible of living bacilli.

The results of this treatment have been reported elsewhere. I believe it to be a very effective treatment, specific for this form of summer diarrhea. Under its use, there is often seen a very rapid transformation of the movements to the normal, cessation of diarrhea and rapid gain in weight. Its failure, I think, can be attributed to a mixture of the irritative type, where the digestion cannot tolerate the high proteid content of the buttermilk. In some of such cases I have obtained good results by giving the bacilli in bouillon culture, combined with carbohydrate solutions as food. Moro has obtained good results by injecting cultures into the rectum. I have in some cases used living lactic acid bacilli as the sole method of treatment without purgation or starvation, and have seen, even in severe cases, immediate recovery follow its use. At first I used it experimentally in cases where the resumption of feeding with ordinary milk modifications was followed by occurrence of fermentation. Since its good results became manifest I used it as a routine after the second twenty-four hours, with less loss of weight and less loss of time. Some cases will gain on the ripened milk; others require food of a higher caloric value. In this latter class of cases the ripened milk is used for a time as a medicine, and then other modifications with low proteids substituted, with casein and whey gradually increased until the baby begins to gain. In the desperate " end of the summer cases," where babies are seen in the extreme of atrophy and inanition from repeated attacks, this treatment will at times bring about recovery. In prolonged cases with signs of ileocolitis, it may be advantageously combined with irrigation of the colon.

Finally, the treatment of infectious diarrhea remains to be described. The initial emptying of the bowel is here also followed by twenty-four hours of boiled water only, and a second twenty-four hours of barley water or carbohydrate solution. The subsequent feeding is not specific in this type, but depends upon the amount of indigestion or fermentation present in addition, and should conform to that outlined for the two forms of acute intestinal indigestions. The measures specifically effective against infectious diarrhea are two — irrigation of the colon and antidysenteric serum.

Irrigation of the colon is employed against the anatomic condition of ileocolitis which is always present from the start in cases of truly infectious etiology. The irrigations should be given twice a day with a soft rubber catheter. The catheter should be pushed up as high as possible and two quarts at least should be allowed to run through. I believe normal salt solution is preferable to any astringent. Irrigations should be continued as long as there is fever, or excessive mucus is found in the movements.

It has been impossible to demonstrate the value of antidysenteric serum statistically on account of the difficulty of proving the identity of the disease, with the resulting absence of authentic mortality statistics and because of the tendency of the disease to recover with other methods of treatment. Flexner himself, I think, believes the value of this immune serum has not been properly appreciated. In vitro it is one of the most effective of immune sera. Research has shown that the great majority of cases of infectious diarrhea are due to the dysentery bacillus in its various strains, and the serum prepared by Mulford is polyvalent. I have used it in a number of cases with very great apparent benefit. In other cases it has appeared to fail. The number of cases is yet too small to permit the drawing of any definite conclusions. On the basis of certain individual cases I believe it may be very effective. I should not hesitate to use it, and I believe it should be used in every case of infectious diarrhea which does not rapidly yield to ordinary methods of treatment.

The treatment of the diarrheal diseases prevalent in the summer should, I believe, be based on the known facts as to the etiology of the disease. This may, for the four types, be briefly summarized as follows:

1. Acute nervous diarrhea: Castor oil or calomel, boiled water for twelve or twenty-four hours, temporary dilution of food, paregoric in persistent cases.

2. Acute intestinal indigestion, type of deficient secretion, irritative diarrhea: Castor oil or calomel, boiled water for twenty-four hours, barley water or other carbohydrate solution for a second twenty-four hours, followed by dilute milk modifications, with low fat and casein and high sugar and whey proteid; irrigation of the colon in long-standing cases.

3. Acute intestinal indigestion, fermentation type, fermental diarrhea: Castor oil or calomel, boiled water for twenty-four hours, barley water for the second twenty-four hours; avoid proteid foods, such as albumen water or whey. It is safest not to begin milk feeding till the third day, and then very cautiously, with modifications low in fat, whey proteid and casein. Living lactic acid bacilli are a specific against this disease and are given in ripened fat-free milk or in buttermilk, which is best begun after forty-eight hours. Irrigation of the colon in long-standing cases.

4. Infectious diarrhea: Castor oil or calomel, boiled water for twenty-four hours, barley water for the second twenty-four hours; subsequent feeding according to the type of indigestion also present; irrigation of the colon twice daily; antidysenteric serum in resistant cases.

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REPORT OF A CASE OF HODGKINS' DISEASE IN A CHILD.

BY HALSEY DE WOLF, M.D., PROVIDENCE, R. I.

I SHALL take but little of your time in discussing the general subject of Hodgkin's disease, as it has been thoroughly threshed out in the literature for many years past, and with the exception of the recent contribution from William C. White, of Pittsburg, has had practically no new light thrown upon it, certainly nothing with which you are not familiar.

White's interesting study of the glands of several cases would seem to show that they contained large numbers of spirochetes. Some of the glands were examined *post mortem*, and some aspirated during life, the spirochetes being found in the aspirated fluid. They were also detected in the blood vessels, which suggests the possibility of finding them in the blood stream itself. This work is, I believe, still under investigation and may possibly yield valuable results in determining the etiology of the disease.

From it White presents the following reasonable suggestions:

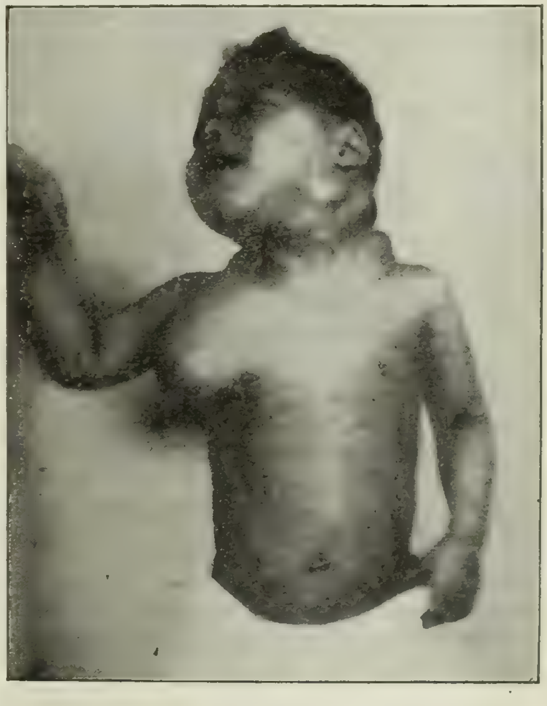
1. Either the spirochete is the etiological factor in the enlargement of the glands; or,

2. The glands are infected secondarily with spirocheta pallida; or,

3. Hodgkin's disease may be a mild form of lues, as tuberculous glands are a mild form of tuberculosis.

As etiological factors, — heredity, tuberculosis, syphilis, the possible relation of the disease to lymphosarcoma, its probable occurrence as an acute infection, — all have their exponents and opponents, for and against. The arguments brought are familiar and do not need repetition here. The fact remains that, so far, no one definite cause for this disease has been generally accepted by the profession.

The pathology is chiefly distinctive from the great overgrowth of the lymphoid structures — the hyperplasia of the more superficial nodes producing the changes that give the appearance so suggestive of the disease. The lymph nodes remain discrete and do not break down; the spleen is moderately enlarged, the liver very little so. The *blood* changes are those of secondary anemia with but a moderate reduction of red cells and slight, if any, leucocytosis. Eosinophiles are likely to be present and are distinctive



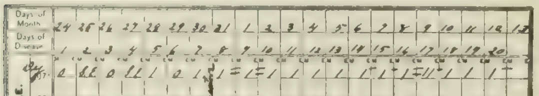
of the disease. This occurs most often in young adults and rather infrequently in children.

The symptoms are usually of long duration, extending over a course of two or three years. The lymph nodes at one side of the neck and axilla are usually the first to enlarge, followed by an extension to the bronchial, tracheal and mediastinal glands, with resultant pressure symptoms; later, the inguinal and abdominal lymph nodes become enlarged, together with the spleen and often the liver.

As has been said, anemia is present, often a low grade of fever, and finally a marked cachexia and extreme emaciation.

The case which I have to show to-day was admitted to my service at the Rhode Island Hospital and is of interest from the very complete picture it presents of the disease under discussion.

I am indebted to Dr. B. H. Buxton, my interne, for the following notes, and to Mr. Frank Worden for the accompanying photograph. As the x-ray plate showed nothing abnormal, it seemed hardly worthy of reproduction.



I. A. Date of admission March 24, 1909. Recommended by Dr. Charon, of Manville, R. I. Age, 4. Color, white. Birthplace, Rhode Island.

Family history. — One of thirteen children, all of whom are healthy, except the patient. Father has "Bright's disease." No history of consumption.

Past history. — Was weak as a baby, but has never been sick until the present illness.

Present illness. — Dates back two years, when the mother noticed a lump in the right axilla. This began to grow larger and was followed by other lumps on the right side of the neck. These lumps have continued slowly to grow larger. Child has seemingly been in no pain or suffered any discomfort until the last two weeks, when he began to vomit and also had a slight cough. Has also had difficulty in swallowing and, when crying, a little obstruction to his breathing. The large lump in the axilla at times seems tender to the touch. Has slight headache. Seems to be a bright child. He has a very large appetite; bowels regular. Does not like to go out, but plays normally indoors. He walks properly. There is no history of hemorrhages.

Physical examination. — Fairly well developed and nourished. Child apparently quite anemic, with pale mucous membranes and sallow color. Cheerful disposition, apparently having no pain or discomfort. Pupils equal and react to light and distance. No aural, nasal or conjunctival discharge. No facial or other paralysis. Mouth and tongue are clean; throat normal.

On the left side of the neck are from twelve to twenty enlarged discrete glands, ranging from the size of a small almond to the size of a large horsechestnut. These are located in the posterior triangle as well as the anterior. There is one quite large gland just above the clavicle, one on the side of the neck and another just under the angle of the jaw.

In the right axilla is a large tumor the size of an orange, which is freely movable and soft. Just behind the mass in the axilla is a small discrete gland, while below the right clavicle is a marked prominence of the chest, as well as an indefinite mass in front of the ribs. The ribs seem to be pushed forward by an underlying mass. Breath sounds are diminished over this protrusion. There are no enlarged glands in left axilla or in either groin, and no fluctuation in any of the enlarged glands.

Heart and lungs are negative.

Abdomen. — Quite prominent. Liver just palpable below costal margin. Spleen enlarged, extending forward to a point one inch from median line and downwards to a point three fingers' breadth below costal margin on the left. No other masses felt in abdomen.

Extremities. — Reflexes normal. No edema.

Blood examination negative. T. B. Scratch test slightly suggestive.

Treatment. — Fowler's solution, gtt. iii t. i. d., to be increased gradually. X-ray treatment three times a week.

March 30. Child runs a slight temperature which is higher at night.

April 12. Child has been getting x-ray treatment for two weeks, with apparently no result. Blood examination two days ago showed a secondary anemia. Glands have not increased much in size.

April 13. Discharged with directions for treatment. To come in once a week for x-ray and observation.

Complete blood examinations. March 24: Hemoglobin, 80%; white cells, 8,400; red cells, 7,040,000.

Differential count: Polymorphonuclears, 79%; small mononuclears, 15%; large mononuclears, 5%; eosinophiles, 1%.

April 10: Hemoglobin, 70%; white cells, 7,000; red cells, 3,648,00.

Differential count: Polymorphonuclears, 73½%; small mononuclears, 14%; large mononuclears, 11½%; eosinophiles, 1%.

Slight achromia or reds; no normoblasts; no megaloblasts.

It would seem that the enlargement of the glands, beginning in the axilla and neck, the enlarged spleen and the blood findings of a secondary anemia warrant the diagnosis of Hodgkins. We were not allowed to remove a portion of gland for further histological diagnosis, and the question of operative treatment was not raised in the case as it was so far advanced.

THE CURE OF CLUB FOOT IN INFANCY WITHOUT OPERATION.*

BY ALBERT EHRENFRIED, M.D., BOSTON
Graduate Assistant, Orthopedic Out-Patients Department, Children's Hospital; Surgeon to Mt. Sinai Hospital, etc.

IN these days of surgical exploitation we have to a degree fallen into the habit of associating the word "operation" with club foot. As the result of a rather extended observation of club-foot cases, I became impressed some time ago with the comparative infrequency of good final results of operative treatment, referable, without question, in part to the age of the child when it first came under treatment, and partly, also, to the laxity of the parents in following up a tedious aftercare. But it is, after all, hardly reasonable to expect an excellent functional result from a foot which has been necessarily mutilated by one or more operations. For I have found, as a rule, that a large proportion of cases operated upon in infancy have had to undergo operation for relapse, and some as many as five or six times.

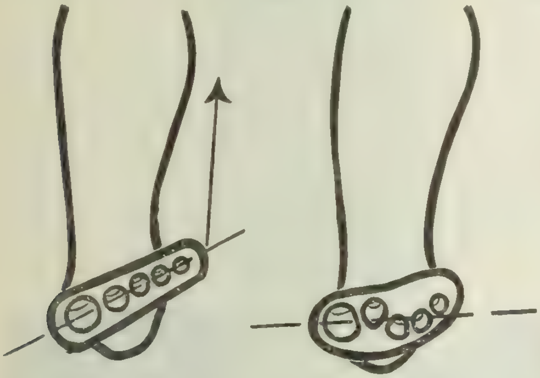


FIG. 1. Diagram showing advantage in applying a collar and allowing it to set before attempting to maintain position over old method of attempting to gain position with plaster still wet.

Comparatively early in the treatment of this condition I became convinced that if a case of congenital equino-varus was taken in hand at an age so young that the feet were still flexible to a certain degree, the deformity could be corrected without operation by means of manipulation and and retention; that there would be less danger of relapse, and that the cured foot would be in form and function a normal foot.

No arbitrary limit can be set to the period within which the condition may be expected to respond to non-operative treatment. Practically all cases are fully correctible and even over-correctible just after birth, but, if treatment is neglected, the Achilles tendon progressively shortens and the plantar fascia shrinks so that at eight or ten weeks the foot becomes rigid in deformity, and even partial manual correction becomes impossible. A foot may be kept flexible for a longer period under manipulation at home, and, indeed, some mild cases may be cured by manipulation alone if started early enough. Ordinarily I have found that any foot under six weeks will respond to non-operative treatment. The younger the infant, other things being equal, the better.

The treatment which I have practiced consists in manipulation and retention. The purpose of the manipulation is to stretch the structures which, by their rapidly progressive shortening, are tending to fix the foot in the extreme degree of deformity. These consist notably of the plantar fascia and the ligaments concerned in supporting the arch of the foot, which holds the varus deformity, and the Achilles tendon, or, rather, the calf muscles themselves, which, by their shortening, cause the equinus.

The manipulation is performed after this fashion. The ankle is held firmly by the fingers of the left hand. The right hand gently but firmly grasps the forefoot, which, the heel being fixed, should be gradually abducted as far as possible. If the manipulations cause pain the infant will become rebellious and spasm of the muscles will be set up, which will interfere with the desired object. This abduction should be repeated several times, each time carrying the foot out as far as possible and holding it a few seconds, allowing it gradually to return. Then the same procedure, supplemented by eversion of the foot, should be repeated for a minute or two. The entire foot should be gradually everted until the sole looks outward. Then, with the foot abducted and everted, dorsiflexion at the ankle should be practiced. Finally, the entire foot may be circumducted about the ankle.

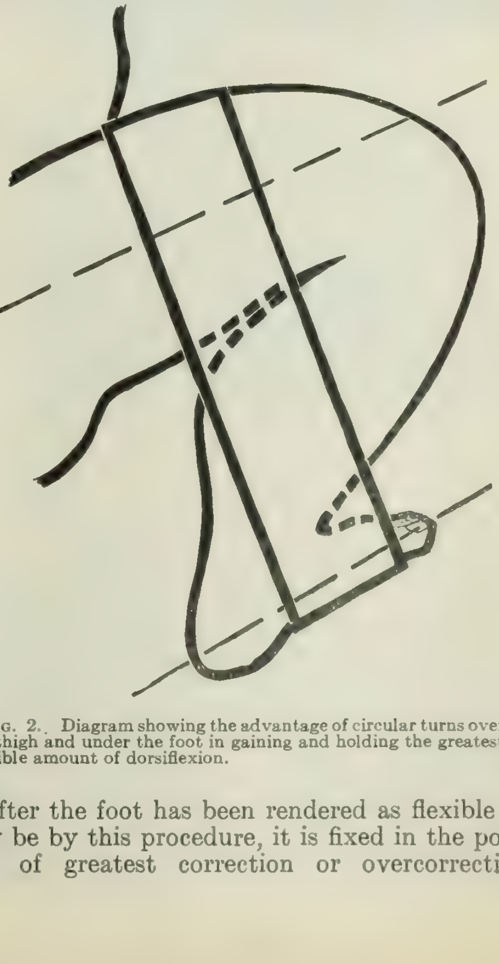


FIG. 2. Diagram showing the advantage of circular turns over the thigh and under the foot in gaining and holding the greatest possible amount of dorsiflexion.

After the foot has been rendered as flexible as may be by this procedure, it is fixed in the position of greatest correction or overcorrection allowable, by some retentive apparatus. The purpose of this retention is to maintain the stretch on the structures already noted and at the same time to allow the lax opposing structures to contract, and to prevent and correct the maldevelopment of the bones of the ankle. It is the malformation of these bones which forms the most serious obstacle to correction, in an untreated case, as the child grows older.

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* Elaboration of remarks made at the Clinical Day of the Annual Meeting of the American Orthopedic Association, June 12, 1909, when the author showed six illustrative cases.

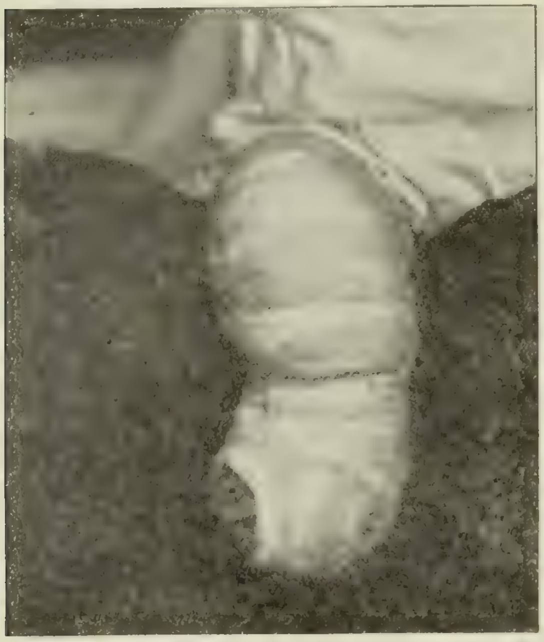


Fig. 3. Plaster applied, front view.

Fixation may be had by means of splint or plaster of Paris.[7] If any force has been necessary in overcoming the deformity, the splint is inadequate. In the plaster-of-Paris cast we have at our hand a simple and highly satisfactory retentive apparatus, light and capable of holding any foot in any degree of correction or overcorrection, if properly applied, without danger of slough or interference with circulation. If inconsiderately used it is liable to cause serious inconvenience.

The plaster is applied from thigh to tips of toes, with the knee flexed, so as to prevent the cast from twisting on the leg, and allowing a return of the varus deformity. The skin should be clean and dry and well powdered, and the foot and leg should be evenly and snugly padded with narrow sheet wadding. The bony prominences should be generously covered, but if too much wadding is used, it is likely to pack together, so that the foot and leg become loose in the cast. It is convenient to have an assistant in case the child should struggle, but I have usually applied my plasters without aid other than mother or nurse.

If the plaster is applied to the best advantage, three two-inch rolls are ample in a young infant. Of the first roll, half is used in making a collar about the forefoot. This is applied — the foot hanging relaxed — in such a way, with circulars and reverses, as to lie snugly against the foot. It should extend to the tips of the toes, but should not cramp them or hide their extremities. It should fit closely against the inner border of the great toe, to its very tip, so as to give efficient leverage in abduction. The remainder of the roll is applied in circular turns about the thigh, carried as high up as possible.

No further plaster is applied until the collar has set. When this has become solid one can efficiently manipulate the forefoot as a unit and apply a considerable amount of force without cramping or dislocating the toes, or causing pressure sloughs; for the pressure is not concentrated, but is distributed evenly through the collar.

The second roll is applied, after six or eight minutes, in the form of circular turns over the thigh and under the ball of the foot. These turns are drawn as tightly as possible, with the object in view of flexing the knee and dorsiflexing the foot at acute angles. If the bandage goes high up on the thigh and far out on the foot, there will be a considerable leverage at the command of the operator. This roller should always be applied in such direction that the turns, when drawn tight, will naturally assist in elevating the outer border of the foot and maintaining eversion — thus: on the right leg the plaster should be applied as ordinarily in the direction of the hands of a clock; on the left, in the reverse. The last inches of this roller should be used in making a tight circular or two about the calf to draw the plaster which has just been applied close in to the leg.

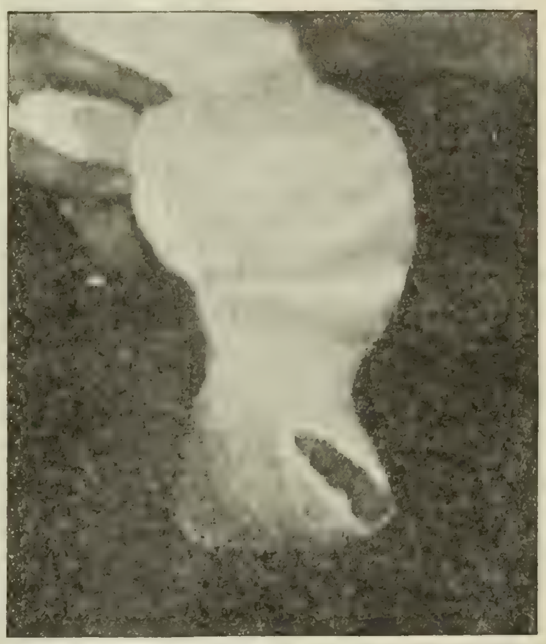
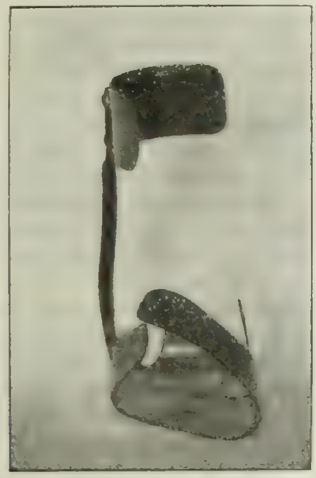


Fig. 4. Plaster applied, side view.

The third roller is put on immediately and is used to cover in the knee and heel, which have not yet been touched. The plaster here need not be thick, as it is not essential in maintaining the position; and for the sake of lightness it had best be applied in recurrent turns.

A plaster applied in this way will hold all the correction which can be gained by manipulation, with the exception of abduction. To obtain this, the foot should be held abducted while the plaster is drying. In holding the position care should be taken not to indent the plaster with the fingers, or a slough may result. After it has dried sufficiently to maintain its own position, any trimming which may be necessary about the toes is performed, and it is a good rule also to split the plaster part way down the outer side, so as to allow of its being removed more readily in case of emergency or when the proper time arrives.



Figs. 5 and 6. Front and side views of tin splint for mild and convalescent cases.

The child is not allowed to depart until it is certain from the color of the toes that there is no interference with circulation; and the mother is instructed to bring the baby in immediately or remove the plaster herself if the toes become white or blue. In a resistent foot, where considerable pressure may have to be exerted, there is always some danger, but with this form of plaster it is at a minimum because there is no pressure from plaster under the popliteal space or in the bend of the ankle.

Plasters are reapplied every two weeks, each time after thorough manipulation. With this frequent change there is no likelihood of eczema of the skin or interference with the nutrition and growth of the limb. It is best to consider the retentive apparatus as secondary in point of importance to the manipulation. It is the manipulation which progressively stretches the structures which is at fault; the retention apparatus simply holds what has already been gained.

Plaster treatment may be started any time after the baby is ten days old. It should be continued until the foot can be overcorrected without force and holds the normal position without apparatus. Under favorable circumstances this should take from three to six months, depending on the age of the infant and the flexibility of the foot. As the chief obstacle to good recovery in these cases is lack of patience on the part of the parents, this necessary condition to a good result should be made clear to them when the treatment is first instituted, so as to assure their continued co-operation.

After an apparently normal foot has been obtained by treatment, the patient should by no means be allowed to drop out of sight. He should be kept under observation for at least a year after the treatment by plasters has been discontinued, to forestall the occurrence of relapse. A certain amount of manipulation should be kept up so as to maintain the flexibility of the foot.

I have found it an advantage in some cases to make use of a splint after the plasters have been discontinued. This is made of tin with an upright of heavy iron wire which can be bent so as to give any degree of dorsiflexion or eversion. It is applied to the leg, over sheet wadding, by means of adhesive straps or gauze bandage. In convalescence it may be worn only at night and the foot manipulated by the mother or nurse in the morning after it is removed and at night before it is applied.

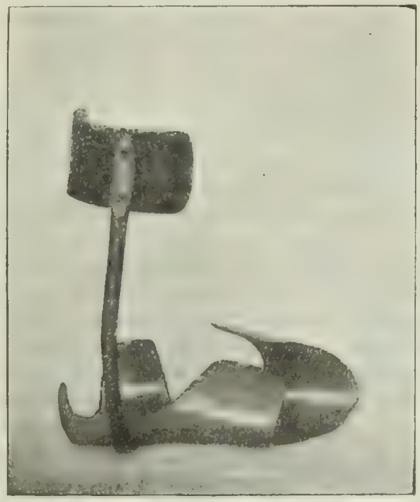


Fig. 6.

CONCLUSIONS.

1. Practically all cases of congenital club foot are curable without operation if taken in hand before the child is six weeks old.

2. The younger the infant at the time of instituting treatment the better.

3. The results are better than if treatment is postponed until operation becomes necessary.

4. The routine treatment consists of manipulation, followed by a plaster bandage, every two weeks, progressively overcorrecting the foot; as soon as the foot offers no resistance to overcorrection and maintains the normal position naturally, continued manipulation, a tin splint

to be worn at night, or a brace if the child is old enough to walk.

5. Relapses are bound to occur under any form of treatment if the aftercare is neglected; the patient should be kept under close observation for one year aftei apparent complete recovery.

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Massachusetts General Hospital.

CLINICAL MEETING OF THE THROAT DEPARTMENT, MARCH 31, 1909, IN MEMORY OF DR. FREDERIC I. KNIGHT.

Dr. A. Coolidge, Jr.: This clinic was one of the first two or three laryngological clinics in this country. It was established by Dr. Knight in 1872, soon after the laryngoscope became a practical aid in diagnosis and treatment. He obtained from the hospital permission to occupy a small room and take charge of such patients as came under the possibilities of the new system. He conducted the clinic for twenty years, at first alone; later with Dr. Langmaid as his colleague, and assisted by Dr. Hooper, Dr. Farlow and others. Not only was he the pioneer, but during the twenty years of his service he was the teacher and leader of this subject in this community.

Those of us who were his students, his assistants and his friends wish to recall him and his work, to both of which we are all so much indebted.

Dr. S. W. Langmaid: It seems eminently proper that at one of the stated clinical meetings of the Throat Department of this hospital a portion of the time should be devoted to a reminiscent view of the character and accomplishments of a former member of the staff, especially as Dr. Knight was the first professor and authorized teacher of the diseases of the throat and their treatment in New England, his field of clinical instruction being in this hospital.

It is because of my relation with Professor Knight in the earliest days of his practice, and because the growth of knowledge of the nature and treatment of diseases of the throat was shared so equally by us, that I have been asked to contribute my mite on this occasion. I should have been greatly disappointed had such an opportunity been denied me to testify, however briefly, my appreciation of a most unusual physician, man and friend.

The later years of his life and practice are so well known to most of you that I shall, in the few words I can be allowed to speak, refer especially to the career of Dr. Knight before he could have been known to any member of the present staff. I remember him first and quite distinctly when we were students in the medical school, — suddenly coming into our midst from whence we knew not, from what former residence or from what college, and I do not think any of us had any curiosity to know, for he immediately became so assimilated with us in every way, especially socially, that his companionship was accepted as a matter of course. I speak of this because it was characteristic of him to the end of his life.

The facts were that he was born in Massachusetts and was a graduate of Yale, but, although I saw as much of him as of any other of my fellow-students, it was many years before I knew that Yale was his alma mater.

I do not mean that he shrank from making the fact known, but he naturally, throughout his life, effaced his own individuality in the cause he served and in the social conditions and thoughts of his friends and associates. I would not have you conclude that he was afraid of stating his opinions or convictions; in fact, he was delightfully controversial whenever there was occasion to express an adverse opinion.

As a student he was most diligent, more especially in the clinical department of medicine. I cannot remember him in connection with the surgical department. It has seemed to me that outside of the surgery of the thorax he had no special interest in surgery.

I cannot allow myself to say more than a word with regard to his career as a throat specialist, and that is that he was thoroughly informed with regard to all that was known of the nature of throat diseases and their treatment up to the time of his resignation as a teacher. He added much to the fund of knowledge of throat diseases by very valuable papers that dealt with the clinical aspects of certain forms of disease which had not previously been thoroughly studied, and his observations are to-day a matter of true history and of great value.

Lastly, I cannot refrain from rendering my tribute to Dr. Knight as a man. Gentle, even-tempered as few men are, but bold in his contention for what seemed to him to be right, generous in thought and deed, he was a true physician and a militant friend.

My esteem for him as a diligent student and as a daily companion and, later, as a sound thinker and wise practitioner, continued to the very end of his life. The greater part of the reasons for such esteem cannot be given, but what I have so imperfectly said must voice my admiration for our friend and teacher who was worthy of great admiration and long remembrance.

Dr. John W. Farlow: Dr. Knight, after graduating at Yale in 1862, studied medicine, first at the United States Hospital in New Haven, then at the Harvard Medical School, where he received the degree of M.D. in 1866. In 1867 he became associated in partnership with Dr. Henry I. Bowditch, and this relationship continued till 1879. Meanwhile he held appointments in the Boston Dispensary, the Carney Hospital and the City Hospital. These he relinquished in 1872 to establish a special clinic in laryngoscopy at the Massachusetts General Hospital. In 1871–72 he spent a year in Europe, studying chiefly in Vienna and Paris. While in Paris, in May, 1872, he received the appointment of instructor in auscultation, percussion and laryngoscopy in Harvard University, and in 1882 he became clinical professor of laryngology, resigning in 1892.

When I was in my second year in the Harvard Medical School, in 1876, Dr. Knight asked me if I would act as his assistant in the Throat Department of the Massachusetts General Hospital, which had then been running only three or four years, and it was from him that I first received instruction in laryngology. The Throat Room was very small, but large enough for the limited number of patients; usually there were not more than two or three, including old patients.

I remember well these early days, when the examination was usually of the pharynx only, and by daylight, the nose not being looked at. The laryngeal mirror was often used, but the rhinoscopic mirror very seldom. The topical applications were solution of nitrate of silver and tincture of the chloride of iron. I recall asking Dr. Knight how I was to know which one to use, and he replied that if the pharynx looked red I was to use the nitrate of silver, and if relaxed the chloride of iron. One of our constant patients, referred by Dr. J. J. Putnam, from the Nerve Department, was a man with locomotor ataxia. He had what I called a red throat, to which I proceeded to apply nitrate of silver, causing a severe spasm of the glottis in the patient and a still severer spasm of the heart in me. Dr. Knight then told me that the therapeutic law, which I have cited, had exceptions and that apparently I had found a marked example.

While I treated the throat patients, Dr. Knight taught auscultation and percussion in the same room to small classes of students; in fact, more of his time was occupied with these chest cases than with diseases of the nose and throat. This was but natural, because the throat clinic was small, knowledge of the diseases of the upper air passages was limited and its scope so small that the medical profession and students paid but little attention to what is now justly considered a most important and interesting branch of medicine. As this was before the discovery of cocaine, operations were very infrequent.

The following year I was a student-assistant in the private office of Dr. Henry I. Bowditch, on Boylston Street, opposite Arlington Street. Dr. Knight's office led out of Dr. Bowditch's and I saw more or less of Dr. Knight nearly every day in his private work. Dr. Bowditch had no knowledge of diseases of the larynx, and for nasal or laryngeal treatment patients were referred to Dr. Knight, who had a few simple hand-sprays and what we now look upon as rather primitive apparatus. He used a large Waldenburg inhaler for bronchial affections.

My relations with Dr. Knight continued up to within a few days of his death. He passed my office window nearly every day for a number of years, and I look back with great pleasure on many short walks that I took with him.

He was always deeply interested in laryngology and he had a very strong personal attachment for those who worked in paths similar to his own. The fact that he was an authority in laryngology, diseases of the heart and lungs, tuberculosis, climatology, sanatoria, shows that he had something much beyond a technical, manipulative knowledge of diseases of the nose and throat.

He was interested also in the literary side of his profession and was one of the editors of the "Archives of Laryngology," of which only four volumes were published, but these volumes are filled with most excellent articles, and the whole standard of the publication was the highest. He was one of the founders of the Boston Medical Library, a member of its Executive Committee for many years, and was also its Vice-President.

He was also one of the founders of the American Laryngological Association and one of its most valued members, and its President in 1882.

In the thirty-five years that I knew him I always found him a friendly, interested, sympathetic, many-sided, broad-minded man, who, though devoting himself to special medical work, recognized the relation of his specialty to general medicine and hygiene and was able to give to his patients the best of advice. He was a most valued member of the medical profession and also of the community at large.

Dr. J. P. Clark: I should like to add just a few brief words of personal tribute to what has been said this morning about Dr. Knight.

Beginning in September, 1889, I had the privilege of serving three years under Dr. Knight in the Throat Department of the Massachusetts General Hospital, and during that time our relationship was always friendly, cordial and sympathetic. Dr. Knight took a personal interest in any work which his assistants undertook and was always ready to aid them with wise counsel. In many ways Dr. Knight was an ideal man to work with; he was not easily annoyed; he was even-tempered and calm. Simple, modest and considerate, he was much more ready to praise than to blame; indeed, it can be truly said that he hated to find fault, and when he did, it was always in a kindly, almost apologetic manner.

My friendship with Dr. Knight, which began in this way, continued until his death and will always remain in my mind a cherished memory.

Dr. Coolidge showed the first record book of the clinic opened by Dr. Knight in September, 1872. There were three patients on the first day, and the diagnoses were tonsillitis, tuberculosis and syphilis of the larynx.

It is interesting to note that Dr. H. K. Oliver had brought some instruments from Europe and had given one or two private courses at the bedside in the use of the laryngoscope the year before Dr. Knight established this clinic.

A CASE OF DENTIGENOUS CYST. ENUCLEATION OF THE CYST AND DRAINAGE THROUGH THE NOSE.

BY D. C. GREENE, JR., M.D., BOSTON.

The routine method of treating dentigenous cysts by incision, curetting and drainage is satisfactory in the majority of cases. There are, however, certain cases, particularly cysts of unusually large size, in which this method results in extremely slow retrogression of the cavity. Such a case I showed last year. In this case, which was operated on nearly two years age, I removed nearly the entire anterior wall of the cyst and thoroughly curetted the cavity, which was found to contain many small fragments of wooden toothpicks which the patient had forced up through a small sinus at the tip of a tooth socket. There was no evidence of any part of a tooth in the cavity. After curetting I packed the cavity with gauze and later systematically cleaned and drained it. The reduction in the size of the cavity was very slow. A year after the operation it was about one half its original size and still causing some discomfort from the lodgment of food within it. The results in this case and in others which I have not had the opportunity of following so closely suggested a method of treatment first mentioned to me by Dr. Mosher, namely, the drainage of the cavity into the nose by way of the antrum, and closing off the mouth-opening, in order to avoid the annoyance and contamination caused by the latter. A further object to be obtained, if possible, is the removal of the wall of the cyst by enucleation. The following case illustrates the method which was in this instance satisfactory as to results:

The patient, a young man of twenty-one, had for the past five years been having more or less discomfort in the right upper jaw, with swelling at intervals. In the early part of his trouble the second molar tooth had been extracted and an opening made through the socket into a cavity said to have contained pus. Since that time swelling and dental troubles had recurred at irregular intervals. Last fall an opening had been made through the canine fossa into a cavity of considerable size which discharged a purulent fluid for two months, at the end of which time I first saw him in consultation with Dr. F. E. Garland. Examination showed a hard, smooth, rounded tumor of the upper jaw, corresponding to the anterior and outer wall of the right antrum. There was a bulging upward and inward of the outer part of the floor of the right nostril, and the right lower turbinate was pushed towards the median line. There was no intranasal evidence of inflammation in the antrum. The mucous membrane in the vicinity of the ostium appeared normal. A probe passed into the cavity through the mouth-opening showed that the cavity extended up close to the floor of the orbit and a considerable distance outwards. Transillumination was much brighter through the right antral region than through the left. On washing out the cavity through the mouth-opening no fluid came through the nose. This evidence all tended to show that the cavity was a cyst and not the antrum. At operation I assisted Dr. Garland, who enucleated the cyst largely by blunt dissection. Inasmuch as the anterior wall of the antrum was closely incorporated with the posterior wall of the cyst, it was found that complete removal of the cyst wall made its cavity one with the antrum. Again, the inner wall of the cyst being in close connection with the outer wall of the right nasal fossa, we found that in removing the cyst we had established a communication between the nasal cavity and the antrum. A gauze drain was placed through the nose and into the antral cavity. By this method the large cyst has been effectually disposed of, and we have an excellent specimen for pathological examination. A portion of the cyst wall, sectioned for microscopic examination, shows the columnar epithelium of the antrum on one side of a thin plate of bone and the stratified epithelium of the cyst on the other side.

These cysts are derived from the ingrowth of the epithelium of the jaw in the embryo which forms the tooth germ. By some irregularity in the process of development a portion of this epithelial mass is pinched off from the rest and grows in an atypical way. The case reported represents the simplest type of such irregularity in developemnt, namely, a single cavity lined with stratified epithelium. It is not necessary to conceive of such tumors which are intimately connected with the teeth in their development as having any part of the structure of the completed tooth in their composition, although such a condition may be, and often is, present.

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Clinical Department.

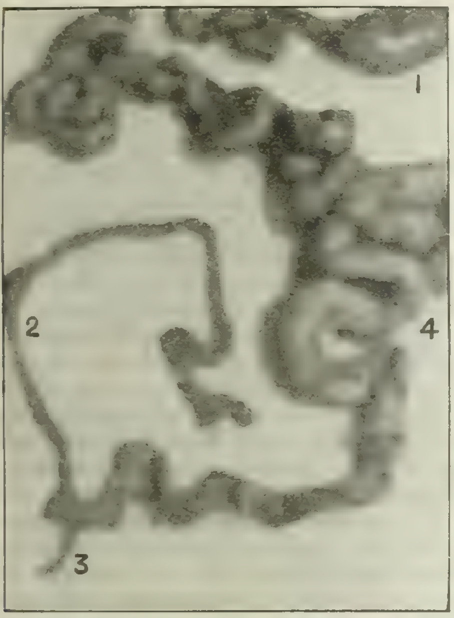
A CASE OF NON-DEVELOPMENT OF THE INTESTINAL TRACT.

BY A. K. PAINE, M.D., BOSTON.

Mrs. X., aged 25, primipara, was delivered of a full-term male child; the patient is strong and was very well during the whole of the pregnancy. About the fifth month she fell a few steps on the stairs, but was conscious of no ill effects following; during the last month the fetal movements were not as vigorous as before that time.

The confinement was short and, while the membranes ruptured with the first pains, progress was rapid and the delivery completed with low forceps after ten hours. The baby weighed seven and three-quarters pounds and, to inspection, presented no anomalies of development; urination took place shortly and continued at regular intervals; the bowels, however, had not moved by the end of twenty-four hours, and a soft rubber catheter was inserted; at a distance of two and one-half inches from the anus it met an obstruction. Under ether, the examining finger could feel a narrowing of the rectum to a cone-shaped point above; no bulging could be felt in any direction and no impulse either from the coughing or crying of the infant, or from pressure on the abdomen. The next day the abdomen was opened with an incision in the left inguinal region, when the sigmoid and descending colon were found to be a hard fibrous band, the size of a common pencil, without any apparent canal.

Through an incision on the right side, at McBurney's point, the cecum and ascending colon were found to be in the same condition, with the adjacent small intestine of about the same size, but with a canal containing dried meconium. At a point some distance from the cecum, a loop considerably distended was drawn through the incision, fastened and opened; it contained meconium, some of which escaped. The baby lived eight days after the operation, but nothing further passed through the opening in the intestine. Everything by mouth was immediately expelled. After its death, the entire intestinal tract was removed. The stomach was of normal size and empty; the jejunum was distended to a diameter of one and one-half inches in places, and full of meconium; as the small intestine approached the cecum, it grew rapidly smaller in size, with increasingly thick walls, until the canal was nearly obliterated; the large intestine was eight inches long, the size of a lead pencil, with a canal that would admit a small probe everywhere, except for one and one-half inches at the junction of the sigmoid and rectum, where it was entirely obliterated; the walls were fibrous in character, with no muscular elements.



1. Stomach. 2. Large intestine. 3. Cecum and appendix. 4. Small intestines.
Showing the stomach in the upper right-hand corner, the dilated small intestines, the appendix and cecum in the lower left-hand corner, and the relative size of the colon.

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A CASE OF STRANGULATED HERNIA. SPONTANEOUS RECOVERY.*

BY C. W. STODDER, M.D., MARSHFIELD HILLS, MASS.

Oct. 17, 1908, I was called to see Mrs. R., a Christian Scientist, aged fifty-nine, married; residence, Sea View. She was in considerable pain, referred to right side, had vomited constantly for two weeks, with no movement of the bowels. Pulse, 100. Temperature, 97°. Slightly cyanosed and cold extremities.

On physical examination, found a tender, edematous, slightly tympanitic tumor in the right inguinal region. She had always been constipated, and had noticed a "bunch" in this region for a year and a half, which caused much discomfort, especially after hard work. In August, 1908, it was very tender; the bowels did not move for ten days, during which time she vomited constantly, a similar condition to the present attack, but she called in no physician. This attack gradually subsided, and the bowels began to move with frequent bloody discharges, which continued for nearly a week. Could get no history of strain before present attack.

Two days previous to calling me, she was seen by Dr. A. A. Arthur, who, being in doubt as to diagnosis, asked for counsel, which was refused. I made a diagnosis of "probable strangulated hernia," and advised immediate operation, which was refused, and called Dr. C. H. Hare in counsel, who also advised immediate operation. I had ice applied to the tumor, ordered high enemas every six hours, with no results; morphine suppositories for the pain, and stimulation.

Oct. 18. Condition remained about the same.

Oct. 19. At my morning visit, I noticed a small gangrenous area, about the size of a ten-cent piece, at the apex of the tumor. At my evening visit, this was enlarged to the size of a silver quarter.

Oct. 20. Found the whole tumor gangrenous, soft and oozing a moist, gaseous substance with a fecal odor. I then made an incision into a fecal abscess, which was very offensive and discharged freely.

The tissues subsequently sloughed down to the muscles, and formed a cavity four inches long by one and one-half inches wide. At the lower part of this cavity was a knuckle of intestine, about the size of the first phalanx of thumb, bright red in color, which I reduced into the abdominal cavity, with considerable pain to patient. The temperature was subnormal, pulse 100 to 120, very feeble, for two weeks. Cavity filled slowly by granulation.

Nov. 15. Passed gas per rectum for first time.

Dec. 3. In giving enema, part of the fluid came through the fistula.

Dec. 9. Had a large mass of feces in rectum, which she could not discharge, and it was broken up and removed digitally. At times, there has been a large amount of bile discharged through the fistula, but very little undigested food.

Jan. 10, 1909. Had a diarrhea, some of the discharge coming through the rectum.

Jan. 15. Passed formed feces per rectum naturally, three months after initial symptoms.

The patient refused to have an operation for closure of the fistula, but this has gradually contracted, and, at time of writing, can only pass a fine probe. No discharge, except a thin serum. Her bowels move naturally, she is up all day, sleeps well, has a good appetite, pulse and temperature normal, and does a good share of her work. The fistula has all the appearance of closing.

I find very little literature regarding cases of spontaneous cure in strangulated hernia. Richardson, in Park's "System of Surgery," says: "The effect of strangulation necrosis upon the patient varies with his susceptibility to infection and his powers of endurance; some patients succumb in a few hours, others survive the constitutional and local strain of spontaneous cure through a fecal abscess and artificial anus."

Oct. 26. Saw patient again to-day, and found that the sinus had healed up entirely and remained so until August, when, in lifting a pail of water, the wound reopened, and discharged for two weeks. It then healed, and to-day there is a firm scar; bowels are moving regularly without cathartics (she has not used a cathartic since April), she sleeps and eats well, and does most of her work. Has no pain or discomfort in region of wound.

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* Read before the Hatherly Medical Club, March 10, 1909.

Medical Progress.

RECENT PROGRESS IN OPHTHALMOLOGY.

BY MYLES STANDISH, M.D., BOSTON,
AND
EDMUND W. CLAP, M.D., BOSTON.

CHOKED DISK AND THE DECOMPRESSIVE OPERATION.

The question of trephining to preserve or recover vision in choked disk has received much attention the last year. E. v. Hippel reports a case and reviews the literature. Choked disk may be an early symptom of brain tumor and the only indication for operation. It is an undoubted fact that when in choked disk the vision begins to fail, the prognosis for sight is bad unless the cause of the choked disk can be removed. The author discusses the cases where the tumor cannot be localized or where it is inoperable, viz., the cases where it is a question of palliative operation to save sight — 221 cases from all sources; 53 died at or shortly after operation, and of the remaining 168, the choked disk subsided in 100, remained in 18, and no data in the other cases. As far as records of vision, improved or retained, are given, the outlook is much more favorable when the operation is done early, and, when the cause is tumor cerebri, the per cent of favorable results is higher. Lumbar puncture may give temporary, but not lasting, improvement to the choked disk in brain tumor. In rare cases of intracranial disease, choked disk subsides with recovery of vision; this is especially so in syphilis; even here treatment may be too slow to save vision and operation be indicated. In this same series of 168 cases, 75 lived more than one-half year, and 60 lived more than one year up to five years. It is worth while to attempt to save vision even in apparently hopeless cases, as the diagnosis of brain tumor is so uncertain and some supposedly malignant tumors have recovered. An objection to palliative trepanation is the danger, direct and remote, of the operation. If we take only those cases done to preserve sight, viz., early cases having still useful vision, we find the operation very much safer than when trephining is done for relief of other symptoms. The skill of the operator and the carrying out of the details as given by Horsley, Kocher, etc., is of great importance, such as chloroform narcosis, incising the dura after a few days, using cocaine on the dura before cutting it and avoiding irritating antiseptic solutions. The author draws the following conclusions: Palliative trephining done while sight is still good in the majority of cases causes the choked disk to subside and is favorable for the preservation of sight. Early operation in choked disk with tumor symptoms, where no tumor exists, gives complete cure, while failure to operate may end in blindness, with recovery otherwise.

Horsley says that all cases of optic neuritis should be relieved by operation. Simple trephining without opening the dura is not enough; nor is puncture of ventricle or lumbar puncture sufficient to secure lasting results; the opening in dura must be 5 cm. When the tumor cannot be located, the author prefers opening the temporal region to reach the intrapeduncular space or, as a second choice, the occipital region. He asserts that the tumor is situated on the side where the optic neuritis begins, and several points may aid in determining which optic disk has been longest affected, as the changes in the interstitial tissue, the amount of striation, stippling and dotting, and amount of shrinkage and atrophy. The most swollen nerve is not necessarily the one in which the neuritis began.

On the other hand, Paton, from a careful study of 102 cases of brain tumor, thinks homolaterality not the rule. In 30 cases seen from the beginning of the neuritis, 13 developed at the same time in each eye, 11 began in the contralateral eye and 6 in the eye on the side of the tumor; further, in 4 cases where the neuritis was on one side only, it was in all on the side opposite the tumor. Also the amount of swelling of the disks gives no clue to the side, the higher degree of swelling occurring just as often on the side opposite the tumor as on the homolateral side. In 102 cases the amount of swelling was practically equal in 53, greatest in the homolateral eye in 25, and greatest in the contralateral eye in 24. Bordley and Cushing state: Seventy per cent of our cases had the papilla on the side of the tumor most involved. Of cases seen before choked disk appeared, in 80% the first swelling occurred in the eye homolateral to the tumor, and in 12% the ultimate damage to the nerve was greatest on this side. In patients showing greatest swelling on contralateral eye, this may be due to anatomic peculiarities in the optic-nerve sheath or to a tumor originating on one side and growing away from point of origin and indenting the opposite hemisphere (which may occur especially in the frontal lobes). These authors think the amount of damage as shown by new white connective tissue, changes in disk and about vessels, and signs of atrophy and the central vision, and especially the visual fields (form and color), may be the best localizing signs as to side. Centrally located tumors might be expected to increase pressure equally in all directions, and they usually do cause an equal choking of the disks. Tumors which do not cause a general increase of intracranial pressure through internal hydrocephalus are much more apt to lead to an unequal process in the two eyes. Paton says the great bulk of the cases that do not get optic neuritis are pontine and subcortical tumors; if these tumors in the white matter spread to the base, then neuritis arises.

De Schweinitz and Holloway find in 33% of their cases the swelling equal in each eye, greater on tumor side in 46%, greater on opposite side in 20%; and these authors, too, insist on the importance of the age of the neuritis rather than its amount.

Paton finds 80% of all cerebral tumors give rise to optic neuritis, the remaining 20% showing no fundus changes. Cerebellar and temporo-sphenoidal tumors always develop it, and tumors of ventricles, optic thalamus and midbrain nearly always. The nature of the tumor has nothing to do with the causation of the neuritis; in fact, fibromata and tubercular growths are much more likely to cause neuritis than malignant growths which cause a greater breaking down of brain substance. The study of how brain tumors cause choked disk has led to wide diversity of opinion ever since the subject has been investigated at all, and the work done during the last year does not entirely clear up the subject. Of several theories, only two hold the field to-day. The mechanical view (Schmidt Rimpler-Manz) of the production of choked disk has long been held, but the theory that the process is a papillitis — a true inflammation due to toxins or a descending neuritis — has perhaps had the widest acceptance since v. Leber introduced it in 1881; but experiment and especially clinical observations and the results of the decompressive operation in cases where the eye grounds have been carefully studied are now numerous enough to make many authorities greatly modify, if not give up, the inflammation theory. There is a great amount of incontrovertible clinical evidence as to the value of the decompression operation for the choked disk of brain tumor, and if the cause of papilledema in brain tumor is increased intracranial pressure, then the case is clear. Cushing and Bordley have carried out a series of experiments on dogs in which they produced choked disk by pressure within the skull, and their conclusions are as follows: (1) That fluid under tension in the intracranial subdural space will produce a choked disk, observed with the ophthalmoscope and determined pathologically. (2) Digital pressure against the dura will produce similar lesions. (3) Distension of optic nerve sheath is associated with these conditions. (4) Venous congestion alone fails to cause any appreciable edema of nerve head. (5) Long-continued pressure may lead to retinal hemorrhages and other features of chronic choked disk. (6) An elastic foreign body, capable of swelling, introduced between skull and dura, will produce choked disk. From a considerable series of such experiments, and from a large clinical experience, these authors are convinced that choked disk is primarily a mechanical result of passage of cerebrospinal fluid under tension from subarachnoid spaces of the interpeduncular region into the vaginal sheath of the optic nerve.

On the other hand, using apparently similar methods, Frazier in seven cases did not obtain a single instance of papilledema, though producing intracranial tension up to a point far exceeding that found clinically, and he concludes that in the etiology of choked disk some factor or factors other than increased intracranial pressure play an important part. None the less this author has no doubt of the value of the decompressive operation to preserve the vision in otherwise inoperable cases.

Thorner, in a very exhaustive paper on the cause of choked disk, sums up his experiments and observations as follows: On physical grounds it is improbable that increased intracranial pressure can be propagated to the papilla on account of the capillary resistance of the intervaginal space of the optic nerve sheath. If such a transference could take place, it would reach Tenon's space and cause exophthalmus. The authors' experiments to cause a local increase of pressure did not cause choked disk when the injecting fluid was indifferent and absolutely non-irritating. Clinical facts show the origin of choked disk in some cases without intracranial pressure, but due to toxins.

Attention has been called to the similarity of the symptoms in some cases of so-called albuminuric neuroretinitis to those of brain tumor with choked disk, and on the view that intracranial increased pressure might be responsible, operation has been advised. Cushing and Bordley report such a case with uremic symptoms and neuroretinitis in which a decompressive operation was done, followed by recession of the symptoms and subsidence of the optic neuritis, though the patient died a month later from a cerebral hemorrhage.

ETIOLOGY OF TRACHOMA.

Greeff emphasizes the infectious nature of trachoma and describes bodies which he thinks may be the cause of this disease. These are round bodies considerably smaller than the smallest known coccus. They color strongly with Giemsa, sometimes more red, sometimes more violet, weakly with anilines, and do not stain by Gram's method. They are surrounded by a lighter halo. By high powers they are seen not to be perfectly circular in outline, but slightly oval, like bacteria with rounded ends. Sometimes they tend to occur two together like double cocci; in late stages they lie in masses together, mostly intracellular, and then the halo and the double forms are not recognizable. These bodies are found in the follicles (free and intracellular) and in the epithelium and free in the fibrinous secretion. In sections they are found not only superficially, but deep, in the tissues. Fresh untreated cases must be examined; a few treatments with bluestone cause the bodies to disappear from the secretion. The bodies vary considerably in size, probably in different stages of development.

RANGE OF ACCOMMODATION AT DIFFERENT AGES.

Duane has revised Donders' work on the range of accommodation at different ages, drawing his conclusions from a large number of cases in which the subject was made really emmetropic — a cycloplegic being used in most of them and the astigmatism determined to a .12 of a diopter, and in general the vision being at least 20/20. As a test object he used a single engraved line 0.2 mm. wide and 3 mm. long bisecting a white card 3 mm. long by 1.5 mm. wide, mounted on a large square of black velvet. Measurements were made with a Prince rule from the anterior focus of the eye, viz., 13 mm. in front of the cornea, where the correcting glass is usually placed.

Compared with Donders' results, the author finds under twenty years of age the power of accommodation less, while from twenty to forty-five the range is greater than Donders'; after forty-five it falls lower again. From thirty-eight to fifty the falling off is 4.8 diopters, or twice that of Donders. After fifty-one, accommodation is nearly constant, diminishing not more than .50 diopters in ten years. Even at sixty years there is a range of 1 diopter not accounted for by a small pupil. Myopes have as good a range of accommodation as emmetropes. The means of his results at decades are as follows:

Age.	Diopters.	Age.	Diopters.
10	14.00	40	6.0
20	11.7	50	1.9
30	8.4	60	1.2

INCREASED TENSION WITH ANTERIOR SYNECHIÆ.

Increase of intraocular pressure frequently occurs with corneal scars; almost invariably when the whole pupillary border of the iris is involved in the scar; often when only part of edge of pupil is concerned (especially in ectatic scars) and occasionally even in scars without incarceration of iris. The periphery of the iris in these cases is laid against the posterior surface of the cornea. Fuchs has examined seventy cases in microscopic preparations (some cut in serial sections) of corneal ulcer, before and after perforation, and leucoma adherens without increase of tension and, as control, similar cases with increase of tension. 1. Ulcer of cornea before perforation; in most cases the sinus of anterior chamber had a normal form often filled with exudate which did not lead to adhesion, but which, on healing, cleared up entirely. During the acute stage the swollen periphery of the iris may touch the ligamentum pectinatum and undoubtedly may in rare cases leave adhesions which involve only part of the sinus and do not lead to increase of tension, though usually these clear up entirely. 2. In cases of fresh perforation, contact of iris with cornea at the periphery occurs, either all the way round or in places, and permanent adhesions usually follow. If the perforation heals without incarceration of iris, the sinus is probably left free, and the contraction of the pupil plays an important part in this. When there are anterior synechiæ, almost invariably there is adhesion of iris to back of cornea in the sinus corresponding to the anterior synechiæ, and not usually elsewhere. If the pupillary edge of iris is caught in the wound, the adhesion is mostly limited to the sinus; if more peripheral incarceration takes place, the adhesion extends from root of iris to the point of perforation. In many eyes the iris root was adherent to the ligamentum pectinatum all the way round, and yet no increase of tension had been present even when this condition had existed for years. This may be explained by the presence of small non-adherent spaces (not found in our sections), or filtration took place where the iris tissue was still normal, viz., not thickened. In some cases, then, we have obliteration of sinus without increase of tension, and in others obliteration with increased tension, and these differ in that the first have normal iris, the second have tissue of iris thickened and close pressed. This latter is partly result as well as partly cause, the increased tension causing a pressing on and thickening of iris, and this thickening further interfering with filtration and augmenting the increase of intra-ocular pressure — a vicious circle. Of course we expect to find adhesions of iris to cornea peripherally in cases of increased tension, but this investigation shows that extensive obliteration of the sinus of anterior chamber may occur in cases of perforation of cornea with incarceration of iris without any increase of tension. This adhesion predisposes to increased tension, but we must look further to decide why some cases develop it and some do not. As to therapy, we may draw this conclusion: that the more active the sphincter iridis, the more the iris is drawn away from contact with the cornea and, therefore, we should omit atropine as soon as the accompanying iritis is subsiding.

INTERSTITIAL KERATITIS.

Stevenson reviews this subject and finds from average of many statistics that interstitial keratitis forms 1% of eye diseases; is most frequent from five to ten years of age, next from ten to fifteen; is rare, but occurs over thirty years, and is more in females. Etiology, usually syphilis (inherited), but other factors occur, as tuberculosis, malaria and influenza. Acquired syphilis is an occasional cause. The spirochetes have been found in the cornea of a fetus with parenchymatous keratitis. Stevenson concludes that interstitial keratitis is an infection of the cornea by one or another specific micro-organism, the commonest being the spirochete, but also the bacilli of tubercle and influenza and the plasmodium malariæ occur. This author thinks the disease little influenced by specific treatment and prefers arsenic internally, and atropine, dionin and fomentations locally.

Gifford, however, thinks that interstitial keratitis may be kept from appearing in the second eye in some cases by a vigorous antisyphilitic treatment when the disease first comes in one eye. Carpenter reports on interstitial keratitis in acquired syphilis and finds it a cause as reported in from 3 to 10% of cases. The attacks are less virulent and are shorter than in the inherited form, and salmon patches uncommon, while the cornea clears up almost entirely. Usually only one eye is attacked. Interval of time from initial lesion varies from few months to ten years or more. Iritis and anterior chorioiditis are infrequent complications; rarely there is ulcer of the cornea and a few instances of destructive inflammation of the eyeball are reported. Prognosis is good and antisyphilitic remedies yield prompt results. The author reports a case of chancre of conjunctiva followed in five months by interstitial keratitis, and he finds ten such cases on record.

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Reports of Societies.

NEW ENGLAND PEDIATRIC SOCIETY.

The seventh meeting was held in Rhode Island Hall' Brown University, Providence, R. I., May 8, 1909' Dr. Charles W. Townsend in the chair, Fritz B. Talbot, M.D., Secretary.

Dr. Halsey DeWolf, read a paper entitled

REPORT OF A CASE OF HODGKINS' DISEASE.[1]

DISCUSSION.

Dr. A. R. Crandall: I am reminded of a patient of my own, a little girl of five years, whom I saw four years ago with an enlargement of the glands in the left side of the neck in both the anterior and posterior triangles. There was no enlargement of the glands anywhere else. There was slight enlargement of the spleen. No blood examination had been made. I was a little in doubt as to the diagnosis, but I operated and removed from the left side a number of glands varying in size from a small marble to an English walnut, to the amount that would fill a pint jar. A year later the child was brought to me again, and I removed almost the same amount of glandular tissue from the same side of the neck. The pathological report on the glands showed simple hyperplasia, and it was undoubtedly a case of Hodgkin's disease. The second operation was performed three years ago and there has never been any recurrence of the glandular swelling, although the spleen still remains large. The child is very anemic, but I see her playing about the street every day. It is a very interesting case because operative treatment is not supposed to be of any particular benefit.

Dr. J. S. Stone: I have seen several similar cases to the one which Dr. Crandall has mentioned, one especially where the cervical lymph nodes were removed, in which the progress of the disease was distinctly put off. But in these cases, in time other lymph nodes became involved, which either were irremovable, — the mediastinal or retroperitoneal. Thorough surgical measures certainly seem to put off the progress of the disease in selected cases. In the case shown this afternoon the condition was too far advanced at the start to consider surgical interference, but in cases seen early and with the diagnosis made early, there is much to be gained by operation. The character of the nodes is so characteristic that they can be differentiated from the tuberculous nodes before operation by the uniformity in their consistency and the lack of softening and breaking down in spite of the fact that some are very much larger than others. At operation the firmness and the whiteness of the lymph nodes is very characteristic, as is also the absolute lack of any adhesions around them, in which they are very different from the tuberculous nodes. In all the cases which I have seen surgical interference merely put off the end, though in some cases several years elapesd between the first operation and the final illness.

Dr. Charles Hunter Dunn, Boston, read a paper entitled

THE TREATMENT OF SUMMER DIARRHEA AS INFLUENCED BY ETIOLOGY.[2]

DISCUSSION.

Dr. E. D. Chesebro: Dr. Dunn has described the conditions very clearly and his classification ought to be of great service in determining the proper treatment. Presumably the serum treatment will receive a good deal of attention in the immediate future. It certainly seems a rational method of treatment in selected cases, and I fancy most excellent results will follow its intelligent use.

Dr. J. L. Morse: I agree, of course, with the classification which Dr. Dunn has used, as it is the one used in teaching by the pediatric department at the Harvard Medical School. For the same reason I agree with almost everything which he has said. I believe, of course, in emptying the bowel and in a period of starvation. I do not believe, however, that starvation is enough; I think we must also give water. I feel very strongly about this and want to emphasize the importance of giving a baby as much water as it would naturally get in its food during the period of starvation. I feel that when this is done the babies do much better and that the loss of weight is much less than when water is not given. It seems to me that of all the remedial measures which I have tried, this giving of water, subcutaneously if necessary, is the most important. I entirely agree with Dr. Dunn as to the use of opium, but while agreeing with him, I still feel that it is necessary to emphasize the dangers of opium both in infancy and in the diarrheal diseases. As regards bismuth, I have come to practically the same conclusion that I have regarding opium, that is, that it is indicated under the same conditions that opium is. It does not, of course, have the dangers which opium has.

I have been endeavoring for a number of years to find out when to resume food in these cases. I start in each summer with fresh hopes that I shall find out just when to begin food, and each summer I end heartily discouraged with my results. I cannot at present formulate any definite conclusions except, of course, as regards the nervous type of which he speaks. I cannot quite agree with everything which Dr. Dunn has said about the etiology of the special class of cases in which he recommends the use of lactic acid bacilli, or with what he says as to the value of lactic acid bacilli in treatment. It seems to me that without a bacteriological examination we are assuming a good deal when we say that a given case is due to an organism which will be overcome or even antagonized by lactic acid bacilli. I have used buttermilk and living lactic acid bacilli in a considerable number of cases, and I must say that in most instances I have not seen the specific action of which Dr. Dunn speaks. My own feeling is that in most of these cases the good results obtained with buttermilk are due not so much to the lactic acid bacilli as they are to the absence of fat in the buttermilk and to the finely divided form of the casein. I have given both pasteurized and unpasteurized buttermilk to these cases, as Dr. Dunn has, but have not arrived at quite the same conclusions.

In connection with the use of carbohydrates in the interval before beginning milk, it seems to me important to bear in mind the dangers of alimentary intoxication from an excess of sugars. A point to be remembered in connection with starch mixtures is that undigested starch in the movements looks very much like mucus. I have many times seen starvation and irrigations continued because it was supposed that there was mucus in the movements, when the mucus was really starch, as was shown by the iodine test. I have also seen a number of cases of glycosuria in these cases when too much sugar was given. In speaking of irrigation of the bowel Dr. Dunn said, "Irrigation of the bowel at least twice a day." I should say "never more than twice a day," because I believe that great injury may be done by too frequent irrigation of the bowel. I believe that irrigation is of use in these cases of infectious diarrhea, but I do not think that it should be done more than twice or, at most, three times in the twenty-four hours. It should be stopped if the baby is exhausted or made nervous by the irrigation. I have had a moderate amount of experience with the serum at the Floating Hospital for a number of summers. Some cases have done well while it was being used; other cases have done badly. Some cases have apparently responded marvelously to its use; other cases have not responded at all, and still other cases have recovered as quickly without it as did the most striking cases in which it was used. It is, therefore, very hard, in the light of our present knowledge, to draw any very definite conclusions as to the value of the serum.

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[1] See p. 739.

See p. 734.

Dr. William P. Lucas, Boston, read a paper intitled

THE APPLICATION OF RECENT EXPERIMENTAL WORK IN HEMORRHAGIC CONDITIONS IN CHILDREN.[3]

Dr. De Normandie, in discussing Dr. Lucas's paper, said: Mr. President, in the Boston Lying-in Hospital we have had 11 cases which we have treated with rabbit serum. Of these, 5 got well and 6 died. It seems to me after looking up the records and talking with the house officers, that the ones that died received the serum in insufficient doses and not promptly enough. Dr. Leary, of the Tufts Medical School, of whom we got our serum, first advised giving 15 ccm. Since then he has told us to give 30 ccm., and we have had better results. There is no question but that we have had three or four cases that have improved very remarkably. The bleeding has been stopped by the rabbit serum and the babies have got well and have gone out of the hospital perfectly well and gaining weight. I also found, in looking up the records, that we have had 4 cases treated with gelatin and paregoric. Of these 4 cases, 2 died and 2 got well. Three others died so quickly that no treatment was instituted at all. Seven of 18 cases coming in the course of a year and a half or two years got well and 11 died, which is a tremendous mortality. It seems to me that the use of rabbit serum is the thing that at present holds out the most hope.

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Book Review.

The Problem of Age, Growth and Death, A Study of Cytomorphosis. By Charles S. Minot, LL.D. (Yale, Toronto), D.Sc. (Oxford), James Stillman Professor of Comparative Anatomy in the Harvard Medical School. Illustrated. Pp. 280. New York and London: G. P. Putnam's Sons. 1908.

This volume, dedicated to Prof. Angelo Mosso, is based on a series of lectures given at the Lowell Institute in Boston during the spring of 1907. The book deals with certain general biological problems and is the result of study which has extended over many years. The essential phenomenon, however, under consideration is the significance of the increase in the amount of protoplasm in the developing cell as a criterion of growth. The guinea pig for somewhat obvious reasons was the animal chosen for the study of these vital phenomena. Following an introductory letter addressed to Senator Mosso, the subject-matter is discussed under the following headings: The Condition of Old Age; Cytomorphosis: The Cellular Changes of Age; The Rate of Growth; Differentiation and Rejuvenation; Regeneration and Death; The Four Laws of Age. There are, in addition, three appendices which concern themselves with certain technical details having an indirect bearing upon the general problem under discussion.

The book is an attempt on the part of an experienced biologist and anatomist to determine in a somewhat original way the underlying conditions of growth and old age. In the course of the well-sustained argument the conclusion is reached early that old age is merely the advanced and final stage of cytomorphosis which takes place with far greater rapidity in the embryo than in the more mature organism. The paradox is thereby developed that we grow old much more rapidly in infancy than in later life. The general conclusion of the first part of the lectures is the conception that "the growth and differentiation of the protoplasm are the cause of the loss of power of growth." Finally, the ultimate four laws of age are reached through the application of the biological principle implied in the growth and changes in form of the individual cell:

First, rejuvenation depends on the increase of the nuclei.

Second, senescence depends on the increase of the protoplasm and on the differentiation of the cells.

Third, the rate of growth depends on the degree of senescence.

Fourth, senescence is at its maximum in the very young stages, and the rate of senescence diminishes with age.

As the corollary from these, we have this: Natural death is the consequence of cellular differentiation.

This series of lectures is a valuable addition from a fundamental biological standpoint to the increasing and often superficial literature concerning old age. It naturally does not attempt to solve ultimate problems, but it certainly clears the way for a useful conception of the facts of growth seen by a man of science rather than by the sentimentalist. A further value of the book is the fact that it is entirely intelligible to the lay reader, while losing thereby nothing of its scientific value. We commend the book strongly to biological students as well as to those interested in the more general aspects of the subject of senescence and the biological significance of death.

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[3] See p. 731.

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INCREASING FREQUENCY OF SUICIDE.

In the current number of the *Spectator* is an article by Mr. Frederick L. Hoffmann presenting statistics of suicide in 65 American cities in 1908, and comparing them with similar figures for the ten years preceding. According to this compilation, there were in these cities, representing a population of 17,000,000, 3,853 suicides in 1908, a proportionate number 3.7% greater than in any year of the previous decade. The geographic distribution and increase of the suicide rate are significant, and may be tabulated as follows:

	Rate per 100,000.		Net
	1898–1907.	1908.	Increase.
North Atlantic States,	15.9	19.5	3.6
North Central States,	20.3	22.6	2.3
Southern States,	14.5	19.6	5.1
Western States,	27.7	33.8	6.1

In other words, the rate increase has fallen chiefly on the southern and western states, where the more rapid growth of cities has brought the stress of civilization on those not fitted to bear it, whereas in the older northern communities this stress has come on those better adapted and habituated to the conditions of city life. The city with the highest rate is Oakland, Cal., which shows an increase of 33.6 per 100,000 in the past decade. The increase in Salt Lake City was 26.4, in New York City 2.9, in Philadelphia 4.3, in Chicago 1.1, in Boston 5.6. Only three cities showed a decrease during this period: New Haven, Conn., 1.9; Orange, N. J., 5.7; Newport, R. I., 9.4.

It is always dangerous to draw conclusions from incomplete data, but the figures above stated at least present facts which "must give us pause." Obviously the total frequency of suicide is increasing and the burden of the tax falls chiefly on the newer centers of civilization. The movement of the "suicide center" represents a sociologic problem of interest analogous to the purely physiologic one of the annual seasonal fluctuations of the suicide curve. Mr. Hoffmann believes "that the increase in suicidal frequency affects particularly the well-to-do, prosperous and better-educated elements of the population, rather than the unfortunate, the ignorant and the poor." If true, this is probably due to the greater nervous strain involved in professional and business life, showing that suicide is a product of psychic causes rather than of physical suffering. It may be suggested that one factor in the increase may be the pernicious publicity given nowadays by many newspapers to suicide and to crimes of which it is the sequel, thus putting familiarity and morbid suggestion in the minds of many not accustomed to resist them. This and other aspects of the question deserve medical investigation in an effort better to understand and to control suicide as a symptom of grave and increasing social disease.

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A TUBERCULOSIS "PREVENTORIUM."

In July last the cottage at Lakewood, N. J., formerly occupied by President Cleveland was fitted up as an institution to which was given the novel name of a tuberculosis "preventorium" for children, and since then it has been conducted as an experiment, the object being to receive children of the New York tenements who have become infected with tuberculosis and to restore them to health by treating the disease in its earliest stages. For girls, fourteen beds are placed in the interior of the house and the porch arranged for six additional beds, while accommodations for twenty boys were provided in a nearby open-air camp one hundred feet long. The cottage stands in the pines and is surrounded by eight acres of land. With the assistance of Dr. James A. Miller, an arrangement was made with the New York Association of Tuberculosis Clinics to select the children to be sent to the new home. Since July 2 ninety-two children ranging from four to fourteen years of age have been sent there from thirteen clinics or hospitals, and the physicians in charge at Lakewood have reported that all have shown marked improvement. On Nov. 9 a conference was held at the residence of Henry Phipps, in New York, at which it was decided to make the institution permanent and to enlarge its scope. Marcus M. Marks, the president, stated that it had been founded to cope with the alarming condition revealed by the discovery of 23,325 cases of tuberculosis among children in New York City in 1908, and by Dr. Herman M. Biggs' estimate that there are 40,000 children in the tenements infected with the disease, most of whom could be saved by proper treatment. It was announced that Nathan Strauss, who made the gift of the Cleveland cottage, had donated a majority of the stock of the Lakewood Hotel, valued at $500,000, the proceeds to be applied to the running expenses of the preventorium. Miss Dorothy Whitney, daughter of the late Secretary William C. Whitney, has given $100,000 for the establishment of a department in practical instruction in carpentering, basket-making and other branches of industry, and among other contributors are the wife of Dr. Walter B. James, Jacob N. Schiff, president of the Montefiore Home and Hospital, and I. N. Seligman, treasurer of St. John's Guild. It is the desire of the trustees to increase the capacity of the institution to 400 beds. For this purpose they hope to secure an endowment of $1,000,000, the interest on which will pay 40% of the running expenses. In addition, $60,000 a year will be needed, and this it is purposed to raise by subscriptions and membership fees. Dr. Alfred F. Hess is in active charge of the medical work, and on the consulting staff are Drs. A. Jacobi, H. M. Biggs and S. S. Goldwater.

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CONFERENCE ON PREVENTION OF INFANT MORTALITY.

The national conference on the prevention of infant mortality was held last week in New Haven, Conn., under the auspices of the American Academy of Medicine. At the sessions of the several sections numerous papers were read on the various aspects of the problem, medical, charitable and educational. Questions of infant feeding, hygiene, heredity and eugenics were discussed, and resolutions were passed calling attention to the need of further study and work on the subjects under consideration. At the close of the meeting the convention formally organized itself as a National Society for the Study and Prevention of Infant Mortality.

Though little definite accomplishment resulted from this recent conference, much good may be hoped from the general interest aroused by its discussions and from the future work of such an association. Among the many problems of the time, none are more important than those connected with the care and development of children, upon whose welfare is to depend the fate of the race. Intelligent and serious recognition of these problems is the first and most important step towards their solution. The following resolutions were adopted at this meeting:

The task of preventing infant mortality is second to none in importance and should engage the best attention and effort of all individuals, lay and professional, and of every commonwealth and community. As looking toward the attainment of such prevention the American Academy of Medicine records its convictions in the following resolutions:

1. *Resolved*, that the present high rate of infant mortality is due to inherited debility or disease, improper environment and care, improper feeding and communicable diseases, and is to a high degree preventable.

2. *Resolved*, that the breast feeding of infants is, when possible, the only proper method, and that artificial feeding should never be substituted as a matter of choice.

3. *Resolved*, that the reporting of all communicable diseases, especially of those commonest in society, to health boards should be compulsory.

4. *Resolved*, that the scientific instruction of the young in practical hygiene and sanitation, and of mothers in the care and rearing of infants, is an important duty resting chiefly on physicians, sociologists, school authorities and boards of health.

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THE PHYSICIAN'S RESPONSIBILITY IN EARLY PHTHISIS.

A patient who writes on "How I Got Well," in a recent number of the *World's Work*, tells how he was "cured" of phthisis. While the story is written for the laity, it has in it a lesson for the profession. There are still too many physicians who, like the specialists consulted by this young man, make a diagnosis of early pulmonary tuberculosis and then tell their patient to "go West and rough it, and the climate will do the rest." We do wrong thus carelessly to disregard an early warning of the approach of a treacherous and communicable disease. A little vacation is a good thing, but miserably inadequate for the purpose. The patient has got to give up everything else and make a business of getting well. The climates of Colorado, Arizona and New Mexico are unquestionably the most favorable in this country for phthisical patients, but climate is only one factor in effecting a cure.

Whether he goes West or not, the patient must live a carefully regulated life; there must be constant medical supervision of his diet, his digestion, his mental attitude, his hours of sleep, rest and exercise (if any of the latter can be allowed), the amount of pure air and sunshine about him. Strict attention to these little details is more easily enforced in a sanatorium, but it can be done in the patient's home, as has been demonstrated by the system of tuberculosis classes.

Nothing in the practice of medicine demands more patience, perseverence, tact and cheerfulness on the part of the physicians than the management of an early case of pulmonary tuberculosis.

NEW METHODS OF TREATING PNEUMONIA.

With the article by Dr. Timothy Leary on vaccine treatment of lobar pneumonia, published in the latest previous issue of this Journal, may interestingly be compared the paper by Dr. Cleaveland Floyd and Dr. W. P. Lucas in the September number of the *Journal of Medical Research*, describing their study of the action of leucocytic extract on the course of pneumonia.

Dr. Leary reports a series of 34 cases of pneumonia in alcoholics treated with pneumococcus vaccine with a mortality of 17.7%, as against the usual mortality of over 40% in this class of cases. In another series of 49 ordinary cases there were only 2 deaths, making a total mortality of 9.7% for both series.

In contrast with this, Drs. Floyd and Lucas present a series of 41 unselected cases treated with leucocytic extract with a mortality of 12.2%. These figures, though not sufficient for proof, are surely striking in comparison with the average mortality from pneumonia, which Wells, Musser and Norris, from compilation of many thousand cases, agree in placing at over 20%.

For both these new methods of treatment are claimed the advantages of lessened toxemia, expedited crisis and diminished mortality. Possibly each accomplishes the same result in a different way, one by stimulating and exaggerating normal production of antibacterial and antitoxic substances in the blood, the other by supplying these substances directly. Whichever proves in practice the more efficacious, it is earnestly to be hoped that further trial of both may be made in order to obtain further data of their value in the treatment of this disease which is now in many communities the most frequent cause of death.

CONTINUED STUDY OF PELLAGRA.

At the third annual meeting of the Southern Medical Association, which was held in New Orleans last week, and attended by over five hundred physicians from all parts of the South, the principal topics of discussion were pellagra and the hookworm. Dr. G. C. Savage, president of the association, stated his belief that pellagra is not due to eating spoiled corn, but is a degenerative nerve disease. Report was made that at the Pasteur Institute at New Orleans several monkeys had been inoculated with blood from a pellagra patient but had as yet developed no signs of the disease.

In this connection, attention may be called to an article by Dr. Carroll B. Welton in the current number of the *Journal of the American Medical Association* presenting the results of an examination of the eyes in 55 cases of pellagra at the State Hospital for the Insane at Bartonville, Ill. Dr. Welton concludes that there is nothing pathognomonic in the optic lesions of pellagra, but that the presence of severe eye symptoms indicates a grave prognosis. In the same number of the *Journal* may be found a complete report of the proceedings of the recent pellagra conference.

LENGTH OF ARMS IN CRIMINALS.

The fallibility of preconceived theories in science is illustrated by the recent observations of Dr. Perrier at the provincial prison in Nimes, France, relative to the length of the arms in criminals. According to Lombroso's theory, the criminal, who represents a reversion towards the anthropoid ape, should be characterized by arms longer than the average. To test the truth of this Dr. Perrier made a series of measurements and found that, on the contrary, criminals have abnormally short arms.

Classification of his statistics seems to show that in persons committing crimes of violence the arms are of relatively normal length, whereas exceptionally short arms occur in those who commit crimes of cunning, notably in counterfeiters. These figures are too few to be conclusive, but they serve to indicate important possibilities of error and the desirability of determining criminal types by observation rather than by inference.

MEDICAL NOTES.

Bubonic Plague in California. — Two cases of bubonic plague have been recently reported from California. In both the infection is believed to have been transmitted by ground-squirrels. There was a considerable epidemic of plague in California in 1907–8, but no case is known to have occurred in San Francisco since Jan. 30, 1908, and none in Oakland since July 17, 1908.

DEFINITION OF PASTEURIZATION. — To prevent the sale of imperfectly pasteurized milk under the name "pasteurized," the New York City Board of Health has recently forbidden that any milk be so labeled unless it has been heated to a minimum of 140° F. for at least twenty minutes. The temperature of pasteurization is usually considered to be 157° F., but this ordinance will at least have the advantage of establishing a standard minimum requirement, and of defining the process for protection of the public.

TYPHOID AT NIAGARA FALLS. — In a paper before the conference of sanitary officers of New York State, held last week at Rochester, N. Y., Prof. W. T. Sedgwick, of the Massachusetts Institute of Technology, called attention to the high annual death-rate from typhoid fever in the region about Niagara Falls. In the decade from 1897 to 1907 this rate ranged from 107.9 to 181.6 per 100,000. The extensive sewage pollution of the falls is of double importance since it not only maintains local endemic disease, but serves to disseminate infection by means of the many thousand tourists who yearly visit Niagara.

THE RECENT CHOLERA EPIDEMIC IN HOLLAND. — At the time of the epidemic of Asiatic cholera in Holland last summer, Dr. R. A. C. Wollenberg was ordered to the Netherlands by the United States government to investigate the outbreak. He has recently reported that it is now entirely suppressed. Incidentally his report contains great praise for the work of the Dutch health officials, especially in Rotterdam, where the first cases of cholera appeared on Aug. 20. By Sept. 11 the city was declared free from the disease, there having been in the meantime 34 cases and 14 deaths. The management of other infectious diseases in Rotterdam is equally efficient, the total death-rate of the city having been reduced in the past twenty-five years from 25 to 12½ per 1,000.

ALVARENGA PRIZE OF THE COLLEGE OF PHYSICIANS OF PHILADELPHIA. — The College of Physicians of Philadelphia announces that the next award of the Alvarenga prize, being the income for one year of the bequest of the late Señor Alvarenga, and amounting to about one hundred and eighty dollars, will be made on July 14, 1910, provided that an essay deemed by the committee of award to be worthy of the prize shall have been offered.

Essays intended for competition may be upon any subject in medicine, but cannot have been published. They must be typewritten, and must be received by the secretary of the college on or before May 1, 1910.

ARMY MEDICAL CORPS EXAMINATIONS. — The surgeon-general of the army announces that the first of the preliminary examinations for the appointment of first lieutenants in the Army Medical Corps for the year 1910 will be held on Jan. 17, 1910, at points to be hereafter designated.

Full information concerning the examination can be procured upon application to the "Surgeon-General, United States Army, Washington, D. C." The essential requirements to securing an invitation are that the applicant shall be a citizen of the United States, shall be between twenty-two and thirty years of age, a graduate of a medical school legally authorized to confer the degree of doctor of medicine, shall be of good moral character and habits, and shall have had at least one year's hospital training or its equivalent in practice after graduation. The examinations will be held concurrently throughout the country at points where boards can be convened.

There are at present eighty-one vacancies in the Medical Corps of the Army.

BOSTON AND NEW ENGLAND.

ACUTE INFECTIOUS DISEASES IN BOSTON. — For the week ending at noon, Nov. 16, 1909, there were reported to the Board of Health of Boston the following cases of acute infectious diseases: Diphtheria 67, scarlatina 41, typhoid fever 11, measles 70, smallpox 0, tuberculosis 54.

The death-rate of the reported deaths for the week ending Nov. 16, 1909, was 15.07.

BOSTON MORTALITY STATISTICS. — The total number of deaths reported to the Board of Health for the week ending Saturday, noon, Nov. 13, 1909, was 173, against 221 the corresponding week of last year, showing an decrease of 48 deaths and making the death-rate for the week 14.48. Of this number 93 were males and 80 were females; 164 were white and 9 colored; 108 were born in the United States, 64 in foreign countries and 1 unknown; 53 were of American parentage, 97 of foreign parentage and 23 unknown. The number of cases and deaths from infectious diseases reported this week is as follows: Diphtheria, 67 cases and 3 deaths; scarlatina, 34 cases and 1 death; typhoid fever, 17 cases and 6 deaths; measles, 89 cases and 1 death; tuberculosis, 51 cases and 19 deaths; smallpox, 1 case and 0 deaths. The deaths from pneumonia were 14, whooping cough 1, heart disease 26, bronchitis 4 and marasmus 1. There were 9 deaths from violent causes. The number of children who died under one year was 29; the number under five years 42. The number of persons who died over sixty years of age was 52. The deaths in public institutions were 65.

Of the above infectious diseases the following were non-residents: Consumption: 1 death. Scarlet fever: 1 case. Typhoid fever: 1 death. Smallpox: 1 case (at quarantine).

Deducting deaths of non-residents, the total is 153 and the death-rate is then 12.81.

ANTHRAX IN LYNN. — From the Lynn Hospital last week was reported a case of anthrax in a nine-year-old schoolgirl. The local lesion was excised and at latest accounts it was thought the child would recover. The origin of the infection has not yet been determined.

A CENTENARIAN. — Miss Phoebe Ann Wade died in Lynn, Mass., last week at the reputed age of 102 years. She is stated to have been born in Wadesville, Annapolis County, N. S., on March 10, 1807. Her mother died young, but her father lived to be 98. For many years Miss Wade worked as a nurse. She had been totally blind for some time before her death.

NOTIFICATION OF INFANTILE PARALYSIS. — As a result of the epidemic which has prevailed in Massachusetts during the past two summers, anterior poliomyelitis was last week added by the State Board of Health to the list of diseases of which it requires immediate notification by physicians. Notification of this disease has for some time been required by the Boston Board of Health.

BEQUESTS. — By the will of Miss E. S. Bangs, of Boston, among other bequests the Boston Children's Hospital receives $2,500.

Through the will of Adelaide Standish, of Brookline, Mass., the Perkins' Institution and School for the Blind receives $5,000; the West End Nursery and Hospital, $2,000; the Industrial School for Crippled Children, $2,000 and the Instructive District Nursing Association, $2,000.

BOSTON MEDICAL LIBRARY. — At the annual meeting of the Boston Medical Library held Nov. 9 in Sprague Hall in the Library, the previous officers were re-elected, and Dr. Edwin H. Brigham, the retiring assistant librarian, was elected a vice-president. The reports of the librarian and council showed a gratifying increase in the number and value of the books and pamphlets of the Library and in the use made of them by the members; also a satisfactory attendance at the meetings held during the year in the Library rooms.

THE NEW BOSTON PSYCHOPATHIC HOSPITAL. — The purchase of a site for the new Psychopathic Hospital in Boston has just been completed by the Trustees of the Boston State Hospital. The land selected is at the corner of the Parkway, Brookline Avenue and Fenwood Road, the other boundary being Vila Street. There are altogether about ninety thousand feet of land. The site selected is about five minutes' walk from the Harvard Medical School buildings and will be very easy of access from the other medical schools. The lot is open and the surroundings unobjectionable, one long boundary being on the Parkway, and is large enough to allow for such expansion as may be necessary as time goes on. Preliminary studies of plans will be undertaken in the near future, and no effort spared to have the hospital ready as soon as possible. It will be understood, however, that the plans demand very careful and detailed consideration.

BOSTON SOCIETY OF MEDICAL SCIENCES. — The first meeting of the Boston Society of Medical Sciences will be held on Tuesday evening, Nov. 23, in the Nutrition Laboratory of the Carnegie Institution, Vila Street. Prof. Francis G. Benedict, the director of the laboratory, has kindly consented to explain the object of the institution and to demonstrate the laboratory, including the various calorimeters. Vila Street leads off Longwood Avenue north of the Medical School and runs by the heating plant.

This institution represents the most modern ideas of laboratory construction in Boston, and it is perhaps not too much to say that it has no equal in the world along its special lines of work. Hence we are sure Dr. Benedict's invitation to inspect it will be very generally accepted. In order that all who attend the meeting may have opportunity adequately to see and appreciate the various appliances, it has seemed best to limit the attendance, and for this reason admission will be by ticket only. Applications for tickets should be made to the president, who will distribute the same in order of application.

NEW YORK.

BEQUEST TO SLOANE MATERNITY HOSPITAL. — William D. Sloane has made a gift of $150,000 to Columbia University for additions to the Sloane Maternity Hospital, which he and his wife founded. The money is to be devoted to the erection of a seven-story wing for the treatment of diseases of women, and this addition is especially appreciated by the medical faculty, as it will afford the students the opportunity of clinical study in both obstetrics and gynecology under one roof.

AUTOMOBILE SPEED. — There was recently an interesting division of opinion among the justices at the Court of Special Sessions as to whether or not a physician should be permitted to speed in an automobile when answering a professional call. One of the three held that even sixty miles should be permitted in cases of this kind, while the other two dissented. Consequently, the chauffeur in the case before the court was sentenced to prison for one day and fined $100. The physician who owned the automobile had been summoned in haste to perform an operation at a hospital.

SEWAGE IN NEW YORK HARBOR. — The Merchants Association of New York, which has energetically opposed the plan for discharging untreated sewage into the harbor, announces with satisfaction that an amicable settlement has been arrived at with the Passaic Valley Sewerage Commission. The government authorities have insisted upon a certain standard of purity, and it is possible that if the state of New Jersey should find it too expensive to meet the requirements demanded, it may dispense altogether with the tunnel through which it was proposed to convey the unpurified sewage into New York Harbor.

NEW BUILDING FOR ST. JOHN'S GUILD. — At the annual meeting of St. John's Guild, held on Nov. 9, announcement was made of plans to erect a new building on the site of the Guild's Seaside Hospital at New Dorp, Staten Island, to accommodate the increased work of the Guild, and it was stated that about $225,000 would be required for the purpose. The report of the president showed a total endowment fund of $105,083 at the end of the fiscal year, a total of 44,414 women and children carried on the day excursions of the hospital boat, *Helen C. Juillard*, and a total of 2,696 women and children treated at the Seaside Hospital, with but 51 deaths. Addresses were made by Prof. William M. Sloane, of Columbia University, Dr. A. Jacobi and others, and a descriptive lecture, with stereopticon views illustrating the work of the Guild, was given by Duff G. Maynard, of the board of trustees.

INJURIES AND DEATHS IN THE STREET. — The National Highways Protective Society has published a list showing that in the month of October no less than 22 persons were killed and 34 injured in the boroughs of Manhattan and Brooklyn by automobiles and auto- and horse-trucks. One of the deaths was caused by a motor cycle. This list is stated to be twice as large as any similar one gathered in a single month in the city of New York, and the largest ever brought together in any part of the country for the same period of time. It shows, the Secretary of the Society, Col. Edward S. Connell, says, the increasing number of automobiles, the greater rate of speed at which they are run, and the inexperience of the chauffeurs. The society will present a bill to the legislature this winter providing for the appointment of a highway commission to pass upon all applications for chauffeurs' licenses, and among the provisions in the bill is one prohibiting any person under sixteen from driving any kind of a business vehicle in a town of more than twenty-five thousand inhabitants.

MORTALITY REPORT. — The weekly reports of the Health Department show that the mortality in the city during the month of October represented an annual death-rate of 15.04 as against 14.33 in September and 14.26 in October, 1908. There was, therefore, a slight increase both over September and over October of last year. The corrected death-rate, excluding non-residents and infants under one week old, was 14.15. Among the diseases in which there was an augmented fatality were the following: The weekly average of deaths from pulmonary tuberculosis increased from 134.75 in September to 147 in October; the weekly average from pneumonia, from 56.5 to 77.75; from bronchopneumonia, from 60.25 to 75.5; from cancer, from 61.25 to 69.25; from apoplexy, congestion and softening of the brain, from 18.25 to 25; from organic heart diseases, from 98.5 to 133.75; from Bright's disease and acute nephritis, from 79.75 to 92; and from cirrhosis of the liver, from 21.75 to 23.75. Among the diseases in which there was a diminished mortality were the following: The weekly average of deaths from typhoid fever declined from 24.5 to 20.75; from epidemic cerebrospinal meningitis, from 7 to 5; from acute bronchitis, from 18 to 17; from diarrheal diseases, from 200.5 to 128.25; and from diarrheals under five years of age, from

188 to 121.5. During the month there was one death from smallpox, the first recorded in the city since the first week in February.

Bequests of the Late John Stewart Kennedy. — Among the deaths from whooping cough during the month was that of the well-known financier and philanthropist, John Stewart Kennedy, who died on Oct. 31, from that disease, after an illness of two weeks, at the age of nearly eighty. For fifty years Mr. Kennedy, who began his career as a Scotch mining clerk, gave liberally and extensively to religious, charitable and educational objects, but through his own desire little of this work was ever made public. He took special interest in the Presbyterian Hospital, of which he was president for over twenty-five years, and visited the institution nearly every day. In 1901 he gave $400,000 for the erection and endowment of a home for its nurses, and last year made a gift of $1,000,000 for the general purposes of the hospital. In his will, the contents of which were made known on Nov. 5, he leaves one half of his great fortune of $60,000,000 to American institutions. Among the larger bequests are the following: Presbyterian Hospital, $2,250,000; Columbia University, $2,250,000; United Charities, a corporation of the state of New York, $1,500,000; Charity Organization Society, for its School of Philanthropy, $750,000. During his lifetime Mr. Kennedy had already given an endowment of $250,000 to the last-named institution. Among the smaller bequests are $100,000 each to Yale University and a number of colleges, $25,000 to the New York Infirmary for Women and Children, $10,000 each to the Manhattan Eye and Ear Hospital, the New York Orthopedic Dispensary and Hospital, the Home for Incurables, the New York Society for the Relief of the Ruptured and Crippled, and the Alumnæ Association of the Presbyterian Hospital, and $5,000 to the Bar Harbor (Me.) Medical and Surgical Hospital.

Local Conditions at Ashokan Reservoir. — Allen Hazen and George W. Fuller, specialists on purification of water, who have been retained by the New York Board of Water Supply as consulting engineers, have been making an investigation of local conditions at the great Ashokan reservoir of the new Catskill water system, in association with Chief Engineer J. Waldo Smith, in order to advise in regard to the details of the plans for the bacteriological treatment of the water which is to be supplied to the city of New York. The problem originally submitted was to determine whether the surface soil and vegetation on the bottom and sides of the reservoir should be entirely stripped down to the clay and gravel, as was done in the larger reservoirs of the Metropolitan Water District of Massachusetts, or whether some other treatment to obviate deterioration during storage was preferable. It was estimated that stripping the soil from the Ashokan reservoir in the manner done in Massachusetts would cost $5,000,000, and the Water Supply Board desired to have the best expert opinion as to whether the probable results would justify this expense. As the result of their study, Messrs. Hazen and Fuller have concluded that such stripping would not prevent tastes and odors in the water to a sufficient extent to warrant the large necessary expenditure, but that aëration, at a small fraction of the cost of stripping, would result in better water, and that perfectly satisfactory water can be obtained by means of aëration and filtration, whether the reservoir is stripped or not. They recommend that all trees and bushes over the entire area be cut close to the ground and burned shortly before the area is flooded, that around the shore of the reservoir all stumps and roots which might be unsightly in case of low water be taken out, and that at the outlet a large fountain be built, where all the water escaping would be thoroughly exposed to light and air. These recommendations, it is stated, will be carried out.

Current Literature.

New York Medical Journal.

Nov. 6, 1909.

1. Ballin, M. J. *Attic Suppurations.*
2. *Duncan, H. A. *The Present Status of Vaccine Therapy.*
3. Pedersen, V. C. *Intramuscular Injections in the Treatment of Syphilis.*
4. Barrett, C. W. *The Technic of Round Ligaments Shortening through the Internal Ring, combined with Colectomy.*
5. Weinstein, H., and Cronson, R. *A Case of Cholelithiasis simulating Duodenal Ulcer.*
6. Cumston, C. G. *Celsus on Diseases of the Stomach.*
7. Griffin, G. *The Fowler Position in the Treatment of Peritonitis, with a Description of the Gorham Bed and Report of Cases.*
8. Goodman, E. H. *The Influence of Hydrogen Peroxide on Hydrochloric Acid Secretion.*
9. Dowd, J. H. *A Foreign Body in the Urethra.*

2. Duncan sums up his experience and that of others with vaccine therapy as follows:

Staphylococcus infections yield most readily to this kind of treatment. Boils, carbuncles, furunculosis, sycosis and pustular acne due to staphylococci can be cured by this means in the majority of cases.

Stock vaccines give as good results as autogenous ones. A polyvalent vaccine should be used in doses of from 100,000,000 to 500,000,000 every five to seven days.

Streptococcus vaccines have not proved so successful. Fair results have been obtained in erysipelas and scarlet fever. All forms of pneumococcus infection have been unamenable to opsonic treatment. Tuberculin, except in tuberculosis of bones and joints, is still of doubtful value. Gonococcus vaccines are very potent in gonococcus arthritis, but valueless in acute gonorrhea. Experiments with typhoid vaccines have been unsatisfactory [L. D. C.]

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION.

Nov. 6, 1909.

1. BROWN, P. K. *Bacterial Examination of the Stools in Suspected Cancer of the Stomach.*
2. SIMON, S. K. *Amebic Dysentery.*
3. NOGUCHI, H. *A Rational and Simple System of Sero-diagnosis of Syphilis.*
4. WIEDER, H. S., AND L'ENGLE, E. M. *Some Studies of the Precipitin Tests for Syphilis.*
5. LITTERER, W. *Sero-diagnosis of Syphilis.*
6. BARACH, J. H. *Primitive Graphic Signs in Pulmonary Work based on Phonetic Values.*
7. SOLLMANN, T. *The Coming Revision of the United States Pharmacopeia.*
8. *STILLMAN, S. *Hypertrophic Stenosis of the Pylorus in Infants: Report of Cases Occurring on the Pacific Coast.*
9. *GIBBON, J. H., AND STEWART, F. T. *Perforated Gastric and Duodenal Ulcers.*
10. KING, H. D. *Pellagra, Ancient and Modern.*

8. Stillman emphatically states his belief that the hard cartilaginous tumor in the pyloric stenosis of infants will ultimately be found to be the result of a congenital abnormality of developmental origin and not the result of swallowing amniotic fluid or lanugo hair or normal healthy mother's milk, and that its proper title will be admitted to be "congenital hypertrophic stenosis." He also believes that a definite tumor can be more often palpated in these cases, especially if done under ether, and he sees no reason why an ether examination is not perfectly justifiable in these cases to determine the exact diagnosis. Infants stand operative measures fully as well as adults, provided two precautions are taken, viz.: that their vitality should not have been lowered by starvation before operation and that their body heat shall not be lowered by exposure during operation. Posterior gastrojejunostomy is the operation of choice.

9. Gibbon and Stewart emphasize the following points in their analysis of twenty-two cases. Scaphoid and rigid abdomen constitutes one of the most marked and valuable signs of perforation and continues until the peritonitis becomes so far advanced as to produce distention. The mistake is often made of expecting distention of the abdomen at the onset, when there is a perforation of the stomach as the result of the escape of gas. Distention is never present in the early stages and, when present, it indicates an extent and degree of peritonitis from which patients seldom recover. Arrest of intestinal peristalsis, as determined by auscultation, occurs only after the peritonitis is sufficiently advanced to produce intestinal paralysis. Little dependence can be put on the leucocyte count in the early stages of perforation. A patient operated on twenty-four hours after perforation has little chance of recovery. In the early cases, with little extravasation, simple cleansing with limited irrigation or moist sponges will suffice. When the extravasation is purulent or extensive, irrigation should be more or less general. Drainage is necessary except in occasional cases of early perforation with little and limited extravasation. There are distinct objections to performing a gastro-enterostomy in the presence of a perforative peritonitis. [E. H. R.]

SURGERY, GYNECOLOGY AND OBSTETRICS.

OCTOBER, 1909.

1. *HOFMEIER. *The Later Results of Ovariotomy, Especially in Cases of Doubtful Character of the Disease.*
2. *WHITE, C. S. *The Rôle of Heart Massage in Surgery.*
3. *STORRS, H. J. *Checking the Secretion of the Lactating Breast.*
4. *CROSSEN, H. S. *What is the Preferable Time for Abdominal Operation for a Chronic Inflammatory Mass in the Pelvis?*
5. POZZI, S. *The Evolution of Ovariotomy in France.*
6. THOMAS, B. A. *Esophagoscopy and Gastroscopy in Diagnosis.*
7. BUERGER, L. *Bone Sarcoma; Observations on Twenty Bone Sarcomata.*
8. *BRAASCH, W. F. *Some Data Acquired with the Aid of the Ureteral Catheter.*
9. GWATHMEY, J. T. *Anesthetics in Hospitals and Private Practice.*

1. Hofmeier, in discussing the later results of ovariotomy, believes that retention cysts, dermoids and fibroids of the ovary are local diseases and their removal of merely local importance. The later results in ovariotomy for adenocystomata are exceptionally good, and in most cases, where but one ovary is diseased, the physiological functions in young women are not changed and the general health not affected. Complete cure in cases of carcinomatous degeneration of one ovary is not only possible, but also the tendency of the other ovary to the same fatal disease is not so considerable that destruction is necessary. With cystadenoma serosum papillare, in spite of abundant peritoneal implantations and bilateral growths, cure is possible, but the general health may be seriously impaired or death may result by the return of the disease in the pedicle. The results in pseudomyxomata are more doubtful. In sarcoma, infection of the other ovary is so unlikely that its removal is not necessary.

2. White, after studying resuscitation by massage of the heart, concludes that this is an established method of resuscitation, ten successful cases having been reported by ten operators. Heart failure is rarely primary in chloroform anesthesia; it is, therefore, essential that respiration be invoked by artificial means in conjunction with heart massage. Artificial respiration alone will not start heart contractions or maintain blood pressure. The best results have been obtained by the simple subdiaphragmatic method. The most frequent indication for its use is in chloroform narcosis, with cessation of respiration and circulation. The earlier it is undertaken the more rapid the response of the heart. Further investigation is most desirable.

3. Storrs reports the results of a thorough try-out of Dr. Edwin R. Lewis' method of checking the secretion of the lactating breast. The method was described to the staff by Dr. Williams after seeing Dr. Lewis, of Westerly, R. I. It is as follows, and consists only of the administration of 15 to 20 gr. of potassium acetate in water three or four times a day, associated with small doses of codeia or morphia, if the breasts are very painful. With this treatment no breast pump or binder is needed, and in Storrs' series no breast abscesses have developed. He recommends it very highly. Complete drying up of the secretion is accomplished in a week.

4. Crossen states that gonococcic infections in the pelvis are generally tubo-ovarian. Streptococcic infections are generally parametric. In more than half of the cases of chronic suppuration in the pelvis the pus is sterile at the time of operation, showing that sterilization of the infected focus takes place automatically within a reasonable time in the majority of cases. This time is within about four months in gonococcic cases and indefinitely longer in streptococcic cases. Abdominal removal of the mass while the bacteria are active and virulent results in fatal peritonitis or local infection in many cases. Removal when the bacteria are dead or greatly attenuated is practically never followed by infection, even though there is extensive escape of pus into the pelvis. Abdominal section for removal of a streptococcic mass is never safe, as even years after the infection it may be followed by fatal peritonitis.

8. The important facts brought out in this article are: The length of catheter that can be inserted into the normal ureter and pelvis is, as a rule, 30 to 40 cm. Non-surgical obstructions, such as spasmodic contraction of the irritated or inflamed ureter, are frequently met with. A stone in the ureter can be felt with the ureteral catheter in about 80% of the cases; stone in the pelvis in about 70%. In most cases of advanced renal tuberculosis, obstruction is met with in the ureter, frequently multiple. If fifty or more centimeters of catheter can be inserted without friction, pelvic dilatation usually exists. If the capacity of the pelvis is more than 40 ccm., it is surgical. [E. H. R.]

The Lancet.

Oct. 16, 1909.

1. **West, S.** *Presidential Address on the Relation of Medicine to the Ancillary Sciences.*
2. **Ballance, C. A.** *Introductory Address.*
3. **Lister, A. E. J.** *The Operative Treatment of Cataract.*
4. ***Page, C. M., and MacDonald, S. G.** *A Report of Some Cases of Venous Anesthesia.*
5. **Roscoe, H.** *An Epidemic of Enteric Fever probably due to Infection by a "Carrier."*
6. ***Stuart-Low, W.** *Thyroidectomy and a Theory of Cancer Causation.*
7. **Clements, J. M.** *A Fatal Case of Endocarditis occurring during Scarlet Fever, with a Note on the Bacteriology of Scarlet Fever and Acute Rheumatism.*
8. **Knaggs, R. L.** *A Case of Duodenal Fistula Cured by Operation.*

4. Page and MacDonald give the results of the use of Bier's so-called "venous anesthesia" in nine operations. This method consists in depleting a limb of blood as completely as possible by means of bandages, tourniquets, etc., and then introducing the anesthetic, usually 100–200 ccm. of a .5% novocaine solution, into one of the superficial veins. He gives the details of this operation and its advantages and disadvantages.

6. Stuart-Low reports good results from the extirpation of the thyroid or ligating its vessels in various forms of cancer of nearby organs. The results were chiefly in lessening pain and discomfort, and in prolonging life. [J. B. H.]

Oct. 23, 1909.

1. ***Bagshawe, A. G.** *Recent Advances in our Knowledge of Sleeping Sickness.*
2. **Carpenter, G.** *Congenital Heart Affections, Especially in Relation to the Diagnosis of the Various Malformations.*
3. ***Addison, O. L., and Hett, G. S.** *Chronic Glanders in Man with Reference to an Unusual Type Affecting the Upper Respiratory Tract.*
4. **Madden, F. C.** *Two Interesting Bilharzial Conditions.*
5. **Hernaman-Johnson, F.** *A Case of Late Rickets (?) in a Previously Healthy Child aged Thirteen Years.*
6. **Ivens, F.** *A Calcified Left Ovarian Dermoid Separated from its Pedicle, Transplanted on to the Right Broad Ligament and Vesical Peritoneum. Removal on the Tenth Day of the Puerperium from a 12-Para.*
7. **Bennett, R. A.** *Case of Obliterative Arteritis.*
8. ***Allan, J.** *The Importance of the Early Recognition of Tuberculous Mediastinal Glands in Children.*
9. **Kennedy, A. M.** *A Case of Carcinoma of the Vermiform Appendix.*

1. Bagshawe, in a careful and thorough article, reviews and brings up to date the subject of sleeping sickness. He first discusses the various agents supposed to transmit this disease, considering flies, mosquitoes, personal contact, sexual coitus. He goes over the various methods of diagnosis. Up to date, a direct examination of the blood gives better results than any other. He considers the various symptoms and the treatment, giving in detail the various arsenic preparations and their effects. A combination of two drugs is the best method in his opinion. He briefly goes over the subjects of prognosis and prophylaxis.

3. Addison and Hett report in detail two cases of chronic glanders and discuss the mode of infection, incubation period, latency, variety of manifestations, duration of the disease, prognosis and treatment.

8. Allan believes that tuberculosis of the bronchial glands should be considered as pulmonary tuberculosis and given the same treatment. He believes that all children showing signs or symptoms of a tuberculous process, whether or not any signs can be found in the lungs, should be given rigorous treatment. [J. B. H.]

British Medical Journal.

Oct. 16, 1909.

1. ***Russell, W.** *Intermittent Closing of Cerebral Arteries: Its Relation to Temporary and Permanent Paralysis.*
2. **Carpenter, G.** *Congenital Heart Affections, Especially in Relation to the Diagnosis of the Various Malformations.*
3. ***Halliday, J. R., and Whiting, A. J.** *The Peroneal Type of Muscular Atrophy, with an Account of a Family Group of Cases.*
4. **Hernaman-Johnson, F.** *Case of Chronic Infantile Paralysis of Ten Years' Standing: Treatment: Result.*
5. **Hewat, A. M., and Sutherland, H. G.** *On the Determination of the Tubercle Bacillus in the Blood of Persons Suffering from Phthisis.*

THE SCIENCE COMMITTEE OF THE BRITISH MEDICAL ASSOCIATION.

6. ***Williams, O. T., and Forsyth, C. E. P.** *The Influence of the Unsaturated Fatty Acids in Tuberculosis.*

THE BRITISH MEDICAL ASSOCIATION.

Section of Medicine.

7. ***Allbutt, T. C.** *Discussion on Angina Pectoris.*

Section of Laryngology, Otology and Rhinology.

8. **Thomson, St. C.** *Opening Remarks.*
9. **Barr, T.** *Discussion on the Treatment of Tinnitus Aurium.*
10. **Jones, H. E.** *Preliminary Observations on the Association of Slight Abnormalities of the Auricle with Certain Forms of Deafness.*
11. **Jackson, G.** *The Etiology of Exostoses of the External Auditory Meatus.*
12. **Woods, R. H.** *A Case of Extirpation of the Larynx Fitted with a New Vocalizing Apparatus.*
13. **Neil, J. H.** *The Surgical Anatomy of the Tonsils.*
14. **M'Kenzie, D.** *The Clinical Value of the Labyrinthine Nystagmus Tests.*
15. **Lack, H. L.** *Discussion on the Treatment of Cicatricial Stenosis of the Larynx.*
16. **Scanes-Spicer, R. H.** *Cancers of the Throat: Their Etiology and Sites of Origin.*

1. Russell, in an interesting article, discusses intermittent closing of the cerebral arteries. This phenomenon accounts for many cases of what was thought to be cerebral hemorrhage, but recovered afterwards. It is akin to the condition known as intermittent claudication. He gives the details of one such case. The effects of intermittent closing may be placed in four groups:

(1) Temporary impairment or suspension of the function of the part affected.

(2) It favors thrombosis.

(3) Causes a greater opportunity for softening.

(4) If the heart is strong, favors hemorrhage through the vessel wall proximal to the closed part. The treatment is directed along general lines to regulate and reduce blood tension.

3. Halliday and Whiting, after careful investigation of Rosenberger's methods of finding tubercle bacilli in the blood of phthisical patients, agree with Schroeder and Cotton, of this country, that at no time in the course of pulmonary tuberculosis is the tubercle bacillus demonstrable in the blood.

6. Williams and Forsyth, as a result of a series of metabolism experiments on the influence of unsaturated fatty acids in the tubercle bacillus, conclude that such acids have the power of disintegrating the waxy envelope which surrounds the bacillus and may thus favor its destruction. They advise the administration of such fats, olive or cod liver oil, in tuberculosis.

7. Lindsay, Allbutt, Brunton, Osler and others discuss angina pectoris. Lindsay dwells chiefly on the meaning of the term "angina" and its etiology. He advises using "major angina" and "minor angina," but believes that the term "pseudo angina" means pseudo-diagnosis. Allbutt, Brunton and others discuss the causes and the pathology of this condition. [J. B. H.]

Oct. 23, 1909.

1. **Savage, G. H.** *The Harveian Oration on Experimental Psychology and Hypnotism.*

2. *Ross, H. C., and Macalister, C. *A Report on Cancer Research. An Investigation by "in Vitro" Methods.*
3. Bayly, H. W. *The Diagnosis of Malignant Disease by Means of the Antitryptic Index.*
4. Henderson, T. B. *An Investigation of Serratus Magnus Infection in Cancer of the Breast.*
5. Hislop, P. W., and Fenwick, P. C. *Cancer in New Zealand.*
6. Gemmill, W. *Rodent Ulcer Treated by Potassium Bichromate.*
7. Turner, G. G. *Two Cases of Ascites due to Liver Cirrhosis Treated by Operation.*
8. Grieg, D. M. *Two Cases of Primary Carcinoma of the Appendix.*

2. In a report on cancer research, Ross and Macalister describe a chemical substance which causes a remarkable train of events when it is absorbed by human lymphocytes, in that it promotes, first, excitation of ameboid movements, then reproduction and then death. These events are closely related to each other and, under experimental conditions, follow in quick succession. They discuss the relation of this phenomenon to cancer, which itself is characterized by cell reproduction and death. Their experiments have shown that a mixture of methylene blue and atropine excites ameboid movements in leucocytes; blood of a cancer patient also does this. The same mixture causes lymphocytes to extrude flagella with a particle of chromatin at their ends; so does the plasma of a cancer patient. They have shown that an extrusion of chromatin appears to be a phenomenon which occurs in cancer cells, and that cancer cells produce "something" which aggravates the disease. They believe that this "something" may be chromatin. Their conclusions, though vague, are interesting, and the results of their experiments suggestive. [J. B. H.]

Deutsche Medizinische Wochenschrift. No. 40. Oct. 7, 1909.

1. v. Baumgarten, P. *What Manner of Contagion Plays the Most Important Rôle in Human Tuberculosis?*
2. *Garré, C. *Vessel and Organ Transplantation.*
3. v. Bramann. *Thyroid Implantation in Myxedema and Cretinism.*
4. Klapp. *The Conservative Treatment of Surgical Tuberculosis.*
5. Sellheim, H. *A Useful Sign in Placenta Previa.*
6. Lang, E. *The Treatment of Lupus Vulgaris with Regard to the Pathogenesis.*
7. *Schauta, F. *The End Results of Complete Vaginal Extirpation of the Uterus in Carcinoma of the Cervix.* (Conclusion.)
8. Plehn, A. *Spleen and Liver Enlargement with Anemia and Benign Course.*
9. Giemsa, G. *The Staining of Moist Preparations with my Azur-Eosin Method.*
10. Zanfrognini, A. *A New Colorimetric Method for Adrenalin Determination.*
11. Hesse. *An Etiologically Interesting Case of Vitiligo.*
12. Löwe, L. *The Question of Hypophysis Operation.*
13. Pescatore. *A Few Breathing Exercises.*
14. Mehlhorn, W. *A Binder for Operations and Childbirth.*

2. Garré reviews briefly the results in transplantation of vessels and organs to date. The most success has been obtained in vessel transplantation from one animal to another of the same kind. Both veins and arteries have been successfully transplanted. In the transplantation of organs the thyroid has shown the most possibility of success, and in dogs this has been done. Kidney transplantation has never been successfully carried out in Garré's laboratory when the transplantation was from one animal to another, but has been done from one part of the body to another in the same animal. Transplantation of the spleen, intestines and extremities has been attempted, but not with permanent success. However, Garré thinks there is a great future for this form of treatment.

7. Schauta, in concluding his article from the preceding number, takes up the objections raised against his form of operation and answers them. He again emphasizes the uselessness of attempting to remove the glands. He further believes that the glands act against carcinoma cells as they do against bacteria, namely, destroy them. He then presents figures on the frequency of injury to the bladder, rectum and ureters, by the vaginal and abdominal route, and finds that they speak in favor of the vaginal route. In regard to sepsis, he also thinks that his method is the more favorable, as the carcinomata are almost always ulcerated. [C. F., Jr.]

No. 41. Oct. 14, 1909.

1. Scholtz, W. *The Principles of the Treatment of Eczema.* (Clinical lecture.)
2. Vulpius. *The Value of Portable Orthopedic Apparatus.*
3. *Miekley. *The Effect of Mercury and Atoxyl on Human Syphilis.*
4. Jaeger, O. *Limitation of Sodium Chloride in Diseases of the Kidneys during Pregnancy.*
5. Rosenhaupt, H. *Salt Infusion by Rectum, as Specific Treatment for Pylorospasm in Infants.*
6. Seefisch, G. *A Case of a Great Cyst of the Omentum in a Four-Year-Old Child.*
7. Hüne. *Aid in Demonstrating Tubercle Bacilli by Means of Antiformin.*
8. Teske, H. *Union of Fractured Radius in Typical Correct Position by Means of a Strong Bandage.*
9. Richter, P. *Injury of the Median Nerve beneath the Uninjured Ligamentum Carpi Transversum, and Paralysis of the Hand by a Foreign Body.*
10. Meyer, R. *The Use of Coryfin in Rhinology and Laryngology.*
11. Sarason, L. *An Essential Technical Improvement in my Ozet Baths.*

3. Miekley reports on thirty-one cases in which he has used a mercury and atoxyl combination for the treatment of syphilis. The combination is made up so that it contains 24.27% arsenic and 32.37% mercury. In giving it, it is mixed with nine parts of olive oil and injected intramuscularly in .5 g. doses. Three days later another .5 g. dose of the mixture is given, and four days later 1 g Then at weekly intervals doses are given for four weeks, until the patients receive in all .5 g. of the Hg and As combination. Figuring out this amount, it makes the total Hg only 0.16 g. and the arsenic 0.125 g. In women, smaller doses are used. The symptoms rapidly disappear in the course of a few days in both secondary and tertiary syphilis. The explanation of the action of this combination he does not make, nor has he followed the cases long enough to find out if symptoms recur without further treatment. That feature he hopes to report on later. There is some pain at site of injection, but no lasting injuries to kidneys or eyes have been noted by him. [C. F., Jr.]

Münchener Medizinische Wochenschrift. No. 41. Oct. 12, 1909.

1. *Grasmann, M. *The Treatment of Severe Gunshot Wounds of the Lung by Suture.*
2. *Reinhart, A. *Experiences with the Wassermann Reaction.*
3. Liefmann, H. *The Mechanism of the Serum Reaction for Lues.*
4. Nitsche, Schlimpert, H., and Dunzelt, H. *The Inhibition-Reaction of Much in the Insane.*
5. Hecker. *The Early Diagnosis of Measles.*
6. Gansch, F. *Disability in the Feet.*
7. Funck, K. *Alimentary Glycosuria in Chronic Enteritis.*
8. Steinitz, E. *Therapeutic Experiments with Medinal and the Homologous Dipropyl-Compound.*
9. Freund, L. *Radiation Treatment of Bone Tuberculosis.*
10. Fink, F. *Fifth Report on the Effect of Carlsbad Treatment in Gallstone Disease.*
11. Heller, F., and Schultz, J. H. *A Case of Vesication Produced by Hypnosis.*
12. May. *A Case of Diffuse Dilatation of the Esophagus.*
13. Hauptmann, A. *Vicarious Menstruation by Bleeding at the Lips.*
14. Althoff, H. *Fatal Hemorrhage from the Funicular Vessels in a Child Twelve Days Old in a Family of Bleeders.*
15. Flesch, M. *Hyperemesis Gravidarum.*

16. **Müller-Hagen.** *Instrument for Taking Blood Specimens for Bacteriologic Investigations.*
17. **Williamson, R. T.** *The Geographic Distribution of Diabetes Mellitus.*
18. **Reh, M.** *Estimation of the True Size of Organs from the Size of the Röntgen Shadow.* (Preliminary communication.)
19. **Grund, G.** *Preparation of Precipitins Specific for Organs.*

1. The writer reports two cases, one of hemothorax, the other of pneumohemothorax, which were successfully treated by operation. He formulates the indications for operative interference as follows: When there is a large amount of blood in the pleural cavity, or when the blood continues to increase in the first few hours after the injury; when aspiration fails to give prompt relief from pressure-pneumothorax, and when there is pneumohemothorax.

2. Having studied the Wassermann reaction in a large series of cases, Reinhart comes to conclusions which are in accord with those of recent writers on the subject. He believes the test to be valuable for diagnosis in all stages of syphilis, but particularly in cases of heart disease, of abortion in women, and of early general paralysis. In the latter disease he obtained the highest percentages of positive reactions for parasyphilitic affections. Early tabes gave more positive reactions than late cases, but cerebral lues gave the greatest number of negative tests. The spinal fluid in these cases was nearly negative. In the first and second stages of syphilis the reaction is not a guide for treatment, but in latent and in treated cases a positive reaction is an important indication. Positive reactions were obtained in cases of luetic bone-lesions and were particularly strong in fresh hereditary cases and in keratitis parenchymatosa. Infants of mothers obviously luetic often did not give the same serum reaction as the mother. Mothers of children having hereditary lues are to be considered luetic even in the absence of signs. Acute lupus erythematosus should perhaps be added to the list of exceptions giving positive tests. The writer emphasizes the fact that positive reactions were obtained in cases of orchitis fibrosa and of aortitis which afterwards came to autopsy. [G. C. S.]

No. 42. Oct. 19, 1909.

1. **Trumpp.** *Viscosity, Hemoglobin and Albumin Content of the Blood in Childhood.*
2. ***Coan, A.** *Radium-Therapy of Malignant Tumors.*
3. ***Mendel, F.** *"Thrombophilia" and Early Getting Up after Childbirth, and Laparotomy.*
4. ***Veiel, E.** *The Influence on the Work of the Heart of Sinusoidal Four-Cell Baths.*
5. **Hörmann, K.** *Results in Narcosis with Artificially Diminished Circulation.*
6. **Thorel, C.** *Preliminary Communication on a Special Muscle-Connection between the Cava Superior and the Bundle of Hiss.*
7. **Casper, L.** *On Nephritis.*
8. **Leddig, M.** *Survey of the Graphic Methods of Recording the Heart Sounds.*
9. **Bubenhofer, A.** *Further Experiences with Alypin as a Local Anesthetic.*
10. **Himmelheber, K.** *Amaurosis in Pregnancy.*
11. **Reiche, F.** *Aneurisms of the Pulmonary Artery, with Observations on Murmurs in this Vessel.*
12. **Rossbach.** *An Intraventricular Brain Tumor, with Loss of the Corneal Reflex.*

2. Coan reports the results of the treatment of 110 cases by means of radio-active preparations. The great majority of cases were of carcinoma, and there were a small number of sarcomata and lymphosarcomata. A large percentage of the patients showed improvement under treatment, shrinkage of the tumor, softening and absorption, or, at least, relief from pain and an improvement in general condition. External tumors, such as recurrent carcinoma of the breast, were treated by injection of radio-active fluids. Insoluble carcinomata of the stomach were given the fluid internally and were treated also by radium rays. The writer believes that radium therapy is a useful addition to our means of attack upon inoperable malignant growths, but does not advise its use to the exclusion of surgery when surgery offers hope.

3. Mendel discusses at length the effect of early getting-up after childbirth, or operation, on the occurrence of phlebitis. He quotes Kimmell to the effect that the shorter the period in bed the less likely are thrombi to form, but he has reached the conclusion that this statement has not foundation in fact. The best means of checking the further growth of thrombi, once formed, is by elevation of the limb, and early movement is likely to dislodge emboli and, therefore, must be avoided.

4. The electric four-cell bath, according to the writer, has a less marked stimulating effect upon the heart than has the carbon-dioxide bath. It is recommended when, for any reason, the full carbon dioxide bath cannot be used. [G. C. S.]

Berliner Klinische Wochenschrift. No. 42. Oct. 18, 1909.

1. **Klotz.** *The Antiferment Treatment of Suppurative Processes in Infants.*
2. **Czekkel, F.** *Proteolytic Ferments in Infants' Stools.*
3. ***Sokolowski, A.** *Diagnosis and Treatment of Incipient Phthisis with the Aid of Modern Diagnostic and Therapeutic Methods Considered Clinically.*
4. **Carraro, A., and Kuznitzky, E.** *The Regeneration of the Adrenal.*
5. **Poll, H.** *The Biology of the Adrenal System.*
6. **Meyer, K.** *The Nature of Serum Antitrypsin.*
7. **Hertzell, C.** *Ophthalmoscopy in the Presence of Opacities.*
8. **Posner, C.** *Cystitis Dolorosa.*

3. Sokolowski reiterates the fact that it is the only by means of an early diagnosis that phthisis can be arrested. He emphasizes the importance of studying thoroughly the general symptoms, mentioning particularly loss of weight, strength and appetite. So many other conditions may manifest themselves in the same way that the diagnosis is by elimination. Incipient diabetes, nephritis, conditions of malnutrition, excesses of all kinds, masturbation, spermatorrhea, in women the use of thyroid preparations and "anti-fat cures," are conditions to be ruled out.

Sometimes the only help in diagnosis is the post-meridian fever. Though many cases are apparently afebrile, if watched closely day after day the majority will show the characteristic rise.

In discussing the modern aids to diagnosis, the author considers that the x-ray has attained its greatest triumph. The subcutaneous tuberculin test is too delicate, too unreliable and impracticable. The skin test of Von Pirquet is entirely valueless in diagnosis. The Calmette test is accompanied by too great risk of serious conjunctivitis. The technical difficulties alone make Wright's method by determination of the opsonic index impracticable.

Not enough importance is given to the sputum examination. After giving a mild expectorant, sputum may be obtained. Single examinations are of no value. Repeated examinations properly done are of the greatest value. [H. P. G.]

No. 43. Oct. 25, 1909.

1. **Lewin, L.** *Fright and Apprehension as a Cause of Accident.*
2. **Ritter and Uehling.** *Tuberculosis in Childhood and the Question of Immunity.*
3. **Falta, W., and Jvcovic, L.** *Adrenalin as an Antidote.*
4. **Ephraim, A.** *The Importance of Bronchoscopy in Internal Medicine.* (To be concluded.)
5. ***Grossich, A.** *A New Method of Sterilizing the Skin for Surgical Operations.*
6. ***Sokolowski, A.** *Diagnosis and Treatment of Incipient Phthisis by Means of Modern and Diagnostic and Therapeutic Methods, presented from the Clinical Standpoint.* (Conclusion.)

5. The author claims that the mechanical method with water, soap, brush, ether and alcohol results in the swelling of the upper layers of the epidermis, which are partly scrubbed off, exposing, but not destroying, the bacteria in the deeper layers. His method consists in the application of the tincture of iodine to the dry, clean skin for from five to ten minutes. The penetrating and septic qualities are superior to those of any other antiseptic.

His method is supported experimentally by bacteriologic investigations and clinically by his own results, primary healing in all of 700 traumatic injuries, unless there were signs of infection at time of operation; an unbroken series of 500 minor and major operations in which skin infection never occurred (this last series including 129 consecutive hernia operations).

6. Sokolowski continues his discussion, separating six types of early phthisis according to their onset: those protracted and subacute cases developing on a background of emphysema; cases beginning as fibroid phthisis; cases simulating chlorosis; cases first manifesting themselves as serous pleuritis; cases beginning as labor pneumonia; cases in children beginning as bronchopneumonia.

To the general treatment and prophylaxis of phthisis the author adds little. He insists on the importance of local antituberculosis societies.

As yet, the specific treatment of tuberculosis with any of the varieties of tuberculin or with the sera of immunized animals has accomplished little more than the general treatment alone. It is, however, through these attempts that therapeutic advance may be expected.

Among the modern surgical methods, Sokolowski mentions the radical excision of the foci and the opening and drainage of cavities, the results of which are as yet unfavorable.

Palliative operations, removing of ribs and freeing of ends of ribs to promote expansion and aëration in cases showing a tendency to heal have been tried.

Finally, the production of artificial pneumothorax by the injection of nitrogen in an attempt to stimulate fibroid changes and permanent fibrosis, though only applicable to a small number of cases (those which are very chronic and in which one lung is comparatively free from involvement and the other pretty completely involved) seems to promise some hope of permanent arrest. [H. P. G.]

Deutsches Archiv für Klinische Medizin. Bd. 97. Heft. 3 and 4. September, 1909.

11. *Morawitz, P., and Siebeck, R. *Dyspnea from Stenosis of the Respiratory Tract.* I. *Experiments on Gas Analysis.*
12. *Siebeck, R. *Dyspnea from Stenosis of the Respiratory Tract.* II. *The Cessation of Functional Activity of the Lung.*
13. *Fischer, N. *Sclerosis of the Pulmonary Arteries and Its Origin.*
14. Rolly, F., and Meltzer, O. *Experiments on Metabolism in Fever, Inanition and Cachectic States.*
15. Fornet, W., and Kreucker, E. *The Diagnostic and Prognostic Value of Opsonic Investigations in Tuberculosis.*
16. *Jacob, L. *General Infection with Bacillus Coli Communis.*
17. Volhard, F. *The Relations of the Morgagni-Adams-Stokes Symptom-Complex to Heart-Block.*
18. Gigon, A. *The Amount of Sugar Derived from Albumen in Diabetes.*
19. Book Notices.

11, 12. Morawitz and Siebeck find that dyspnea, from experimental tracheal stenosis in animals, does not alter the oxygen-content of arterial blood, but that the carbonic acid content increases rapidly. In man, distention of the alveoli with carbonic acid generally occurs, but is not demonstrable until air hunger appears. There also occurs an immediate rise in functional activity of the lung and an increase in air volume. The increased functional activity is not dependent upon the carbonic acid distention of the alveoli; it can be further increased by voluntary deep inspiration.

13. Fischer reports the results of a pathologic analysis of one hundred heart cases, with especial reference to the condition of the arteries of the lungs. He found sclerosis of these vessels in every case in which there had been long-continued hypertrophy of the right side of the heart and increased blood pressure in the lesser circulation. On the other hand, the lungs were absolutely free from such changes in many cases, with a high degree of sclerosis in the aorta and the peripheral arteries, but without material disturbance of the lesser circulation.

16. General infection with bacillus coli communis occurs seldom, says Jacob, in comparison with the great frequency of this bacillus in local inflammatory processes. He reports the results of an exhaustive study of thirteen such cases. There are favorite ports of entry for bacillus coli, as in the case of the pyogenic cocci; the most important are the intestine, the gall ducts, the urinary tract and the uterus. Coli septicemia has a more or less distinct clinical picture, the most important characteristics being an extremely irregular temperature curve and a very variable white count; hemorrhages and herpes are less common than in other forms of septicemia, and the occurrence of pyemic metastases is comparatively rare. The writer's bacteriologic experiments show that colon bacilli live in the blood only a short time. They can be cultivated best on culture media containing bile. The prognosis of coli septicemia is better than that of staphylococcus or streptococcus septicemia, the percentages of recoveries in cases with positive blood-culture findings being about 40. [L. D. C.]

Bulletino delle Scienze Mediche. September, 1909.

1. *Collina, G. *Influence of Belloc's Carbon on the Proteolytic Activity of the Pancreas.*
2. Ferri, A. *Some Cases of Laryngeal Stenosis Complicating Scarlatina and Measles.*

1. Collina reports the results of his extensive experimental biologic researches on the action of Belloc's carbon in the human system, from which he draws the following conclusions:

a. The influence of carbon on digestion is favorable; in an alkaline reaction, there is exaltation of the general activity of the proteolytic pancreatic ferment, and the influence of the carbon is less marked; in an acid reaction the general activity of the ferment is somewhat inhibited and the favorable influence of carbon is more marked. *b.* This influence becomes more manifest the greater the duration of digestion. *c.* If the duration of digestion is brief, the influence of the carbon may vary with its relation to the proteid and the reaction. *d.* In the presence of bile the influence of carbon on the ferment is reduced to zero. *e.* If pancreatic extract is obtained from the gland of an animal recently killed, during digestion the carbon may have an influence equal to zero. *f.* Belloc's carbon has no manifest influence on the proteolytic activity of the pancreatic juice when obtained by extract from a fresh pancreas. *g.* Belloc's carbon has a markedly favorable influence on the proteolytic activity of the pancreas in the presence of putrefied meat. *h.* Belloc's carbon favors the proteolytic activity of the pancreas when the latter is impeded by the presence of products of putrefaction. [R. M. G.]

Miscellany.

THE AMERICAN ASSOCIATION FOR THE STUDY AND PREVENTION OF INFANT MORTALITY.

As a result of the conference arranged by the American Academy of Medicine on the Prevention of Infant Mortality, and held Nov. 11 and 12 at Lampson Hall, Yale University, the American Association for Study and Prevention of Infant Mortality was organized at a special meeting called at the close of the conference and held on Saturday morning, Nov. 13, in Lampson Hall. Dr. F. H. Gerrish, of Portland, Me., presided, and Dr. Charles McIntire acted at secretary. A constitution and by-laws were adopted, and the following officers were elected. President, Dr. J. H. Mason Knox, Jr., Johns Hopkins Medical School; First Vice-President, Prof. C.-E. A.

Winslow, biologist in chief of the Laboratory Research, Massachusetts Institute of Technology, Boston; Second Vice-President, Mr. Homer Folks, secretary of the New York State Charities Aid Association; Secretary, Dr. Henry I. Bowditch, of the Harvard Medical School, Boston; Executive Committee, the officers and Dr. Mary Sherwood, Baltimore, Md.; Dr. J. S. Neff, Director of Public Health and Charities, Philadelphia; Mr. Robert W. Bruere, New York; Dr. Helen C. Putnam, Providence, R. I., and Dr. John S. Fulton, secretary-general of the International Congress on Hygiene and Demography, Washington. It was decided that the board of directors should number at least thirty members. The complete number was not appointed, the directorate being authorized to elect additional members at a later meeting. Those appointed included Dr. H. Merriman Steele, of the Yale Medical School; Dr. Charles Richmond, Henderson professor of sociology of the University of Chicago; Dr. F. H. Gerrish, of Portland, Me.; Dr. J. Morton Howell, health officer, Dayton, Ohio; Dr. John M. Connolly, of Boston; Dr. H. J. Gertenberger, of Cleveland; Prof. Isabel Bevier, of the University of Illinois; Dr. W. H. Carmalt, of the Yale Medical School; Dr. Thomas Morgan Rotch, of Harvard Medical School; Prof. Irving Fisher, of Yale University, President of the Committee of One Hundred on National Health of the American Association for the Advancement of Science; Dr. Caroline Hedger, of the United Charities of Chicago; Dr. W. A. Evans, director of health, Chicago, Ill.; Dr. Lilian Welsh, of Baltimore; Dr. J. F. Edwards, Department of Health, Pittsburg; Dr. Richard A. Urquhart, of the Johns Hopkins Medical School, Baltimore; Dr. Charles P. Putnam, of Boston; Dr. Thomas Darlington, health commissioner of New York City.

Baltimore was selected as the meeting place of the society. The meeting will be held in the autumn of 1910. Dr. Charles Richmond Henderson, of the University of Chicago, was nominated president for 1910–1911.

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DEDICATION OF THE NEW HALL OF THE COLLEGE OF PHYSICIANS OF PHILADEPHIA, NOV. 10, 11, 1909.

The fellows and guests of the college marched in academic procession from the First Unitarian Church to the new building, on the steps of which Dr. William J. Taylor, secretary of the Building Committee, delivered the keys to the vice-president of the college, Dr. George E. de Schweinitz, who accepted them on behalf of the president and officers and in the name of the fellows of the College of Physicians of Philadelphia.

The procession then ascended the handsome marble stairs and entered Weir Mitchell Hall where the dedication exercises were held. Dr. James Tyson, president of the college, introduced the visiting guests representing other medical libraries and presenting addresses of congratulations.

John Shaw Billings, M.D., brought congratulations from the New York Public Library and from Carnegie Institution of Washington.

Charles Loomis Dana, M.D., represented the Academy of Medicine of New York, and brought a a message of fraternal greetings and congratulations. "The Academy," he said, "owes its existence to the widows and orphans of medical men, and shows how the poor and humble may be an inspiration to mighty things." The first board of health of New York was organized through the effort of the Academy. In sixty decades the membership of the Academy has increased from one hundred and eighty-four to over a thousand, with a waiting list.

Reginald H. Fitz, M.D., presented congratulations from the Boston Medical Library, saying that "the College of Physicians of Philadelphia and the Boston Medical Library meet on common ground in their effort to take their place among those seeking nothing for themselves, but all for the race."

William Sydney Thayer, M.D., presented congratulations from the Medico-Chirurgical Faculty of Maryland, which was not perhaps "a sister society, but a child, since a large number of our founders gained inspiration from members of this venerable institution."

Robert Fletcher, M.D., of the Library of the Surgeon-General's Office, in a letter extended congratulations from that body, and expressed regret at his inability to attend.

Frederick P. Henry, M.D., honorary librarian of the College of Physicians of Philadelphia, called attention to the library, which he said is in the front rank of the medical libraries of the world, and second to none as a working library. "The books are a collection of animate objects, which have not only stimulated, but compelled, progress. Twice they drove us from our home, and finally, with metaphorical whips and scourges, they drove us like a swarm of bees into this hive of learning. Like a swarm of bees also there was needed a metallic sound to make us settle, and gold has been literally poured out at our feet. The bookstacks have space for three hundred thousand books, with ample room for extension, so that the youngest member need not anticipate the expense of another removal during his life-time. The library is contained in the finest building of its kind in either hemisphere, and the jewel is worthy of its casket."

Dr. S. Weir Mitchell and Andrew Carnegie were prominent figures throughout the day, and while no direct reference was made to Mr. Carnegie during the proceedings, Dr. Henry's allusion to "a metallic sound" was greatly applauded.

Cablegrams of congratulations were received from the Royal College of Surgeons of Edinburgh, the College of Surgeons of Engand, and from William Osler. There was also read resolutions from the Boston Medical Library sending congratulations. Letters were received from Dr. J. Cheston Morris and Dr. Horatio C. Wood, Fellows of the College who were prevented by ill-health from being present.

RECORD OF MORTALITY

For the Week ending Saturday, Nov. 6, 1909.

Cities.	Reported deaths in each.	Deaths under five years.	Cities.	Reported deaths in each.	Deaths under five years.
New York	—	—	Waltham	9	0
Chicago	622	161	Pittsfield	7	1
Philadelphia	—	—	Brookline	6	—
St. Louis	—	—	Gloucester	3	—
Baltimore	175	47	North Adams	6	2
Cleveland	—	—	Northampton	6	1
Buffalo	—	—	Chicopee	12	7
Pittsburg	—	—	Medford	8	1
Cincinnati	—	—	Beverly	7	3
Milwaukee	—	—	Leominster	6	2
Washington	—	—	Hyde Park	3	2
Providence	—	—	Melrose	2	0
Boston	216	46	Newburyport	4	2
Worcester	32	9	Revere	1	—
Fall River	47	24	Westfield	3	1
Cambridge	31	7	Woburn	3	0
Lowell	38	11	Peabody	—	—
New Bedford	30	17	Marlboro	7	0
Lynn	15	4	Attleboro	5	2
Springfield	22	2	Adams	—	—
Lawrence	31	10	Clinton	5	1
Somerville	14	6	Gardner	8	4
Brockton	13	6	Milford	1	0
Holyoke	17	5	Watertown	2	1
Malden	6	1	Plymouth	—	—
Chelsea	6	3	Southbridge	2	1
Newton	12	2	Weymouth	3	0
Salem	6	2	Framingham	7	1
Haverhill	11	3	Wakefield	—	—
Fitchburg	—	—	Webster	—	—
Everett	8	1	Arlington	3	—
Quincy	6	0	Greenfield	1	—
Taunton	20	5			

LIST OF CHANGES OF STATIONS AND DUTIES OF COMMISSIONED AND OTHER OFFICERS OF THE PUBLIC HEALTH AND MARINE-HOSPITAL SERVICE FOR THE SEVEN DAYS ENDED NOV. 3, 1909.

Carmichael, D. A., surgeon. Granted eighteen days' leave of absence from Nov. 15, 1909.

White, J. H., surgeon. Directed to report at Bureau upon special temporary duty. Oct. 29, 1909.

Woodward, R. M., surgeon. Granted fourteen days' leave of absence from Oct. 30, 1909, on account of sickness.

Stoner, J. B., surgeon. Granted ten days' leave of absence from Nov. 2, 1909.

Stimpson, W. G., surgeon. Relieved from duty on revenue cutter "Manning," and directed to proceed to Philadelphia, Pa., and assume charge of the service, relieving Passed Assistant Surgeon R. H. Creel. Oct. 27, 1909.

Rosenau, Milton J., surgeon. Resignation accepted, to take effect Jan. 31, 1910, revoked by direction of the President, Oct. 29, 1909.

Rosenau, J. Milton, surgeon. Granted five months' leave of absence, without pay, from Feb. 1, 1910.

Foster, M. H., passed assistant surgeon. Directed to proceed to Antwerp, Belgium, upon special temporary duty, and, upon completion of said duty, report to the medical officer in charge at Naples, Italy, for duty. Oct. 29, 1909.

Fox, Carroll, passed assistant surgeon. Relieved from duty on revenue cutter "Bear," and directed to proceed to Washington, D. C., and report to the director of the Hygienic Laboratory for duty. Nov. 2, 1909.

Gwyn, M. K., passed assistant surgeon. Granted three days' leave of absence from Oct. 30, 1909, under Paragraph 191, Service Regulations.

Roberts, Norman, passed assistant surgeon. Granted two days' leave of absence from Nov. 1, 1909, under Paragraph 191, Service Regulations.

Hunt, Reid, chief, Division of Pharmacology, Hygienic Laboratory. Detailed to attend the National Conference on Pellagra to be held in Columbia, S. C., Nov. 3 and 4, 1909. Oct. 28, 1909.

Alexander, E., acting assistant surgeon. Granted fifteen days' leave of absence from Nov. 4, 1909.

Deerhake, William P., acting assistant surgeon. Granted one day's leave of absence in October, 1909, under Paragraph 210, Service Regulations.

Gill, S. G., acting assistant surgeon. Granted twenty-one days' leave of absence from Nov. 9, 1909.

James, William F., acting assistant surgeon. Granted thirty days' leave of absence from Nov. 4, 1909.

Holsendorf, B. E., pharmacist. Granted thirty days' leave of absence from Nov. 29, 1909.

Spangler, L. C., pharmacist. Granted six days' leave of absence from Oct. 18, 1909, under Paragraph 210, Service Regulations.

Eldredge, M. B., pharmacist. Granted six days' leave of absence from Oct. 11, 1609.

APPOINTMENT.

Dr. Charles Bell appointed an acting assistant surgeon for duty at Detroit, Mich., Nov. 1, 1909.

RESIGNATION.

Joseph H. Kastle, chief, Division of Chemistry, Hygienic Laboratory, resigned, to take effect Sept. 30, 1909.

APPOINTMENTS.

Dr. John H. Cunningham, Jr., Dr. Arthur T. Legg and Dr. L. R. G. Crandon, all of Boston, have been appointed on the consulting staff of the newly constructed Rufus S. Frost General Hospital in Chelsea.

SOCIETY NOTICES.

South Boston Medical Society. — The regular meeting of the South Boston Medical Society was held in Hobah Hall, Monday, Nov. 8, 1909, at 8.30 p.m. Subject of the paper: "Facts and Theories about Venereal Diseases," by Dr. Benj. Tenney, and a demonstration by Dr. Boardman. Discussion of the paper followed by the members of the society.

P. J. Timmins, M.D., *President.*
J. C. Rogers, M.D., *Secretary.*

New England Pediatric Society. — The eighth meeting of the New England Pediatric Society will be held on Saturday, Nov. 27, 1909, in the Medical Library, 8 The Fenway, at 8.15 p. m. The following papers will be read: 1. Business and Election of Officers. 2. "Diagnosis and Treatment of Intersusception," Arthur R. Kimpton, M.D. 3. "A Case of Intersusception," Charles W. Townsend, M.D., Fred T. Murphy, M.D. 4. "Some Results of the Work in Behalf of Babies of the Committee on Milk and Baby Hygiene," John M. Connelly, M.D. 5. "The Clinical Significance of Curds in Infants' Stools," Fritz B. Talbot, M.D.

Charles W. Townsend, M.D., *President.*
Fritz B. Talbot, M.D., *Secretary.*

RECENT DEATHS.

Charles Kimball Cutter, M.D., M.M.S.S., died in Somerville, Nov. 11, 1909, aged fifty-eight years.

Dr. Edward J. Hogan, an old New York practitioner, died on Nov. 7. He was born in that city in 1837, and was graduated from the College of Physicians and Surgeons in 1857.

Dr. George Seymour, a prominent physician of Utica, N. Y., died on Nov. 8, at the age of seventy years. He was graduated from the medical department of the University of the City of New York in 1865, and at the time of his death was attending physician at St. Luke's Hospital, Utica.

Dr. Gabriel Grant, of New York, died on Nov. 8, in his eighty-fourth year. He was sixth in descent from Major Robert Treat, whose son, Richard Treat, organized the settlements along the Passaic River, and was born in Newark, N. J., on Sept. 4, 1826. He was graduated from Williams College in 1846, where he also later received the degree of A.M., and from the College of Physicians and Surgeons, New York, in 1851. In 1852 Dr. Grant went to Panama, in the height of the California gold rush, and practised as a surgeon. Two years later he was recalled to New York to fight the cholera epidemic then prevailing. He was afterwards appointed health commissioner in Newark. In 1861 he was commissioned as surgeon of the Second Regiment, New Jersey Volunteers, and after serving for three years and four months was retired on account of a wound received in operating on the field. After the Civil War he went to New York to practise.

BOOKS AND PAMPHLETS RECEIVED.

Treasury Department. Public Health and Marine-Hospital Service of the United States. Bulletin No. 55. Quantitative Pharmacological Studies: Adrenalin and Adrenalin-like Bodies. By W. H. Schultz. Washington. 1909.

The Indications for the Radical Mastoid Operation, Based upon Pathologic Lesions. By S. J. Kopetzky, M.D. Reprint.

Original Articles.

THE DIAGNOSIS OF ULCER OF THE DUODENUM.*

BY E. A. CODMAN, M.D., BOSTON,
Assistant Visiting Surgeon, Massachusetts General Hospital.

In offering this paper to you I am strongly conscious of two things: The first is that I have some really important information to give you on this subject, and the second is that I am unable to state it vividly enough or interestingly enough to make you realize it. I am aware that in one reading of this paper you will not be able to grasp and assimilate the statements made in it. Every one of them has been carefully considered and has evidence behind it if you will take the pains to examine it. Before criticising it too severely, I beg you to reread it and also to read another paper which has been published in the Boston Medical and Surgical Journal, Sept. 2, 9, and 16, on "The Importance of Distinguishing Simple Round Ulcer of the Duodenum from Those Ulcers Involving the Pylorus or Arising Above It."

The statements which I make in these papers are not entirely original, for Moynihan in England, Mayo in the West, and John Munro here in Boston have been preaching the best of them for some years. My chief claim for your attention is that a study of fifty cases of *proved* duodenal ulcer from the records of the Massachusetts General Hospital shows that these gentlemen have been right in the main in their claims that duodenal ulcer is a common disease which we all meet and which we can diagnose and cure if we try to. It is at least twice as common as gastric ulcer, and nearly as common as acute appendicitis.

In preparing this paper it seemed to me that a study of a series of proved duodenal ulcer cases would be more instructive than a review of the literature of the subject, which is so much confused with gastric ulcer. I have, therefore, taken from the records of the Massachusetts General Hospital during the last twelve years all the cases proved by autopsy or operation to be true duodenal ulcer. (Perforation cases are included because perforation is merely an incident of the disease. The perforation is acute, the ulcer is not.) Clinical cases not definitely proved duodenal ulcer have not been included, and even cases supposed to be duodenal ulcer at operation, but in which the surgeon evidently had some doubt, have, with two exceptions, been discarded. I have also included three cases operated on in my private practice, and one autopsy of a case not operated on. Case L was that of a personal friend operated on by another surgeon.

In all, I have 50 cases, 11 of which I have operated on myself and 25 of which were operated on by other surgeons.

That a study of the diagnosis of duodenal ulcer is needed is well shown by the reading of the records of these cases. The diagnosis was rarely arrived at before operation, and in many cases only at autopsy. The most common errors were made by confusion with appendicitis, gallstones and gastric ulcer in the more severe cases, but dyspepsia, hyperacidity and neurosis of the stomach were the scapegoats in the earlier and milder cases. Even at operation, with the hand in the abdomen, cancer of the pylorus and cancer of the head of the pancreas were given as the probable diagnoses by good surgeons in two cases. Autopsy showed that they were misled by the inflammatory thickening about simple round ulcers a centimeter or two in diameter. And here let me say that, pathologically, according to Dr. Wright's careful autopsy records, duodenal ulcers present a remarkable monotony. They are always close to the pylorus and are either a single round ulcer of 1 to 2 cm. in diameter, or perhaps two or three ulcers arranged in a circle, or in a few cases a continuous narrow encircling ulcer girdling the duodenum a centimeter or two below the pylorus. I have not included in this study the pyloric ulcers which are usually supposed to be gastric in origin, although I firmly believe these to be usually duodenal, as I have explained in a recent paper.

I do not propose to use these fifty cases statistically, tabulating the age, sex, occupation, duration, etc. In these respects this series simply reinforces the statistics from other collections. They were mostly males between twenty and fifty. Their occupations were so diverse as to render any conclusion as to etiology from that cause unlikely. One thing was striking in this respect, however — that this disease is one of active, hard-working men. It is not a lazy man's disease. It affects individuals who work hard and get their meals irregularly. One teetotaler amongst them also makes an exception if we try to consider alcohol as a cause. Many of them, nevertheless, *were* drinking men.

Perhaps the most striking thing in these histories is the clinical variety compared with the pathological monotony.

Duodenal ulcer, like tumor of the brain, has its cardinal symptoms, and yet any one or all of these symptoms may be absent, especially in the early stages. Just as in tumor of the brain shortly before death we get headache, vomiting and blindness plainly developed, so in duodenal ulcer, perforation, exhausting hemorrhage or obstruction of the pylorus bring the patient to the surgeon or pathologist. A tumor of the brain may exist for years without vomiting, headache or optic neuritis, and the skillful diagnostician must make his diagnosis when the first one of these symptoms appears without waiting for the others. A duodenal ulcer may exist without pain, vomiting, hemorrhage, perforation or obstruction of the pylorus. This is shown very strikingly in this series. Case XXIII bleeds and has no pain. Case IX suffers intensely from pain and never bleeds. Case V perforates, and until the day of perforation has no pain or bleeding. Case XI has pain and bleeding, but never vomits. Then Case XLVIII has all the symptoms, and it is evident that the converse must be true, that there must be cases which have no symptoms, except negligable dyspepsia, and which heal naturally and completely.

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* Read at The Massachusetts Medical Society, June, 1909.

There is one feature, however, that is pretty constant, and this is pain. Although a few cases occur without it, in the great majority it is present. I believe that this pain is characteristic enough to justify a provisional diagnosis without the other symptoms. This symptom of pain is like the feeling of rigidity of the abdominal muscles in acute appendicitis. We have grown to rely on it in making our diagnosis. I think most of us would be willing to put a pretty high wager on the diagnosis of acute appendicitis when we get that peculiar feeling of rigidity under our hand, even if we did not hear the history of the case or make a full examination. The pain of duodenal ulcer seems to me of the same relative importance.

When a young or middle-aged man complains of a severe though bearable pain when the stomach is just becoming empty a couple of hours after his last meal, and if at times he is subject to relatively acute attacks with continuous pain, epigastric tenderness and vomiting, you may suspect duodenal ulcer. If he is an active, hard-working individual, and interested in his work, but unable to enjoy it because tormented by this pain, you may be fairly sure of the diagnosis. It is more than likely that you will find that he has attributed his trouble to different articles of diet which any healthy man ought to digest perfectly. He has cut out one after another of these articles so that he is practically starving himself in the vain effort to get the particular articles which cause his pain removed from his diet list. You will think him fussy, and put him down as a nervous dyspeptic. As a matter of fact, he would not be able to get rid of his pain *entirely* by the most judicious diet. Some patients find this out, and instead of starving themselves, eat three extra " between meals," and these patients surprise you by looking so stout and well and yet complain of their stomachs. Their healthy appearance, apparently incompatible with a serious lesion, makes you put them down as nervous. If they are able to take rest enough to digest this extra food, they get along pretty well, but a little hard work, tiring them out and interfering with their natural digestion, makes them start down hill again. Improvement from rest and a careful diet, and freedom from work and worry, may be expected in duodenal ulcer as well as in nervous dyspepsia. But the very individuals who have duodenal ulcer are difficult ones to drive away from work. Exploratory operation may be necessary to convince them that their disease is organic and not " nervous."

In looking over these histories it has seemed to me that many mistakes might have been avoided if attention could have been focused on the primary symptoms in these cases. By primary symptoms, I mean the daily painful dyspepsia complained of apart from the acute attacks which represent symptoms from an acute or subacute inflammatory condition of the parts surrounding the ulcer.

The uninflamed quiescent chronic duodenal ulcer is a tiny insignificant thing in appearance. As I have pointed out recently, it lies during closure of the pylorus in the puckered folds of mucous membrane just outside the sphincter and is comparable to a fissure in the anus. When the pylorus is closed, the round ulcer becomes a longitudinal fissure, and mucous membrane becomes apposed to mucous membrane. At this time it would be difficult for food or secretion, either acid or alkaline, to come in contact with its infolded surface. This is the comfortable time experienced after a meal. When the food in the stomach becomes acidified it unlocks the pylorus and begins to pass on into the duodenum. At this time the ulcer is exposed and pain occurs. As the pylorus relaxes, the fissure becomes the round ulcer and I believe it is possible that it even becomes a transverse fissure when the longitudinal fibers of the pylorus contract. Some of these ulcers actually look like a little diamond, shaped as if they had been pulled alternately in the longitudinal and transverse directions.

Microscopic sections of these ulcers show that at times the induration about them is almost *nil*, while at other times it is very great, so great that clinically the whole mass is said to be " the size of an egg " and is perhaps mistaken for cancer.

Now this inflammatory and edematous condition about an ulcer is absorbable and varies from time to time in extent. It consists of congested and edematous tissue comparable to the induration about a boil or any other sore. The parallel with fissure of the anus is again applicable. The fissure at times becomes acutely inflamed, indurated and agonizingly tender. The " acute attacks " to which cases of duodenal ulcer are subject can be better understood if we consider them due to these exacerbations of inflammation about the periphery of the ulcer. The adjacent lymphatic glands may also enlarge. At these times the spreading inflammation temporarily inhibits the pylorus and the symptoms take on an obstructive character as if there was really an ulcer of the stomach at the pyloric end. Perhaps the induration actually prevents the infolding. The stomach, then, will either not retain food well or shows a mild dilatation.

This is what I mean by confusing the secondary with the primary symptoms, for as a rule it is during one of these acute epochs that the patient seeks medical advice. At these times they resemble gastric ulcer cases and we find tenderness, vomiting and perhaps slight dilatation.

If the patient is put to bed, placed on a non-irritating diet and given a rest of a few weeks, the inflammatory symptoms subside. The pylorus functionates again without squeezing the inflamed tissue; the vomiting ceases, or the temporary dilatation, if it exists, disappears. As soon as the balance of nutrition is established by sufficient food, the patient feels well again, and even slight digestive disturbances and " hunger pain " may disappear for a time. He resumes work with the original little round ulcer still there, but the inflammation about it gone. Then the cycle begins again. Over-fatigue (the vertical position allowing the duodenal juices to back up on the pylorus) or congestion following an exposure to cold or over-indulgence in alcohol bring on another acute attack.

In my recent paper I have also outlined how these repeated attacks eventually cause an encircling ulcer which by progression stomachward forms the so-called pyloric ulcer which produces mechanical stenosis. Again the parallel with fissure in the anus is applicable, for it, too, by prolonged spasm and cicatrization, causes stricture.

Besides secondary symptoms due to these exacerbations of inflammation, we have perforation and hemorrhage to consider. These complications are accidents of the disease and not primary symptoms. They depend on the situation of the ulcer. If its base happens to be on the free peritoneal surface, a sudden increase in the gaseous tension inside the gut blows out the thin base, and general peritonitis occurs. If, on the other hand, the ulcer happens to be posterior and abuts on the pancreas, a zone of inflammatory tissue will probably prevent true perforation and we get merely a very severe acute exacerbation.

In my recent paper I have also given evidence to show that hemorrhage, too, is an accident of location. If the base happens to come on a big vessel (usually the pancreatico-duodenalis which passes transversely behind the ulcer-bearing area) there will be hemorrhage, but if the vessel is small, the zone of inflammatory and cicatricial tissue prevents bleeding. This series bears me out in this statement, for where there was any hemorrhage found it was at one time or another grossly present in the stools. It was only found in twelve of the fifty cases. Reliance on hemorrhage as a *sine qua non* of duodenal ulcer has been the chief cause of failure to make this diagnosis. If it is present, however, it is most reliable and, with characteristic hunger pain, makes the diagnosis almost certain.

There are a few other minor symptoms which I will take up categorically.

Tenderness: This is present during the "acute attacks" and also often during the quiescent interval at the time of the hunger pain. When the stomach is comfortably full and no hunger pain is present, the tenderness may disappear. It is often difficult to elicit because it is so high under the ribs. If the examiner puts his fingers gently under the ribs, slightly to the right of the median line, and the patient takes a long breath, a tender point may come down to the examining fingers. The patient usually locates the tenderness below the ensiform, but when an accurate examination is made, it is found to the right. The tenderness may be accompanied by a distinct muscular spasm in the acute attacks, and in two of my cases right-sided costal rigidity was very striking.

Belching is frequently spoken of in the histories. "Relief by belching" is such a common symptom of any trouble in the epigastrium that it seems to me of little value. Although many patients state that they get relief by belching, when you cross-examine them you find that they belch from the hope of relief rather than because they really get it. Belching may be due to the unwillingness of the pylorus to dilate enough to allow the gas to pass downward. If the cases are at all severe, the relief is very transient.

In the early stages the patient is also inclined to attribute his pain to his lower bowel, and sometimes "feels that if he could only pass wind the pain would be better." These sensations may be present even if there is no distention, and, on the contrary, the abdomen is retracted and concave. Constipation and diarrhea are mentioned in some cases, but there are enough cases where the bowels move normally to make it unlikely that these factors are important, either in the etiology or diagnosis. Constipation, by overloading the bowel, undoubtedly contributes to the drag of the mesentery and to the tendency to regurgitant peristalsis. According to my theory, this would flood the first part of the duodenum with pancreatic and biliary secretions and thus contribute to the irritation, if not cause the tendency to ulceration.

It seems not unlikely that some of the symptoms referred to the large intestine may be due to the close proximity of the hepatic flexure to the first part of the duodenum. Thus by contiguity, especially if there were mild peritonitis with the formation of adhesions, a certain amount of irritation of the colon would be caused. This might be expressed by constipation, diarrhea or an irritating desire to pass wind. Our ability to subjectively localize abdominal sensations is at best poor.

Jaundice occurs in a considerable number of cases, usually in transient attacks, and probably due to inflammation of the mucous membrane of the duodenum started up by the presence of the ulcer. In most cases it is milder and more fugitive than the jaundice associated with gallstones.

The vomiting of duodenal ulcer cases is pretty characteristic. In the first place, it only occurs during the acute attacks when the pylorus is temporarily disabled. If the process has lasted long enough to become a firm pyloric stricture it may be more like the vomiting of true gastric dilatation. As a rule it lasts only a few days and passes away when the stomach is rested. In the second place, it occurs some time after the meal because the pain is usually least after the meal is taken and before it is digested enough to open the pylorus. The vomiting comes at the height of the pain. In the third place, the vomitus itself shows complete digestion of the food, and, in fact, is usually yellowish or greenish mucus, or, if the case is a bleeding one, it may contain regurgitated blood. If the case is an old, severe one, it may have the characters of obstruction and show food eaten long before. Such a case will be so marked in other respects that the diagnosis of pyloric stenosis will at any rate be easy.

In some cases I believe it is possible to trace the period of duodenal symptoms changing to obstructive ones. This should be an important point in every gastric ulcer history.

Cases diagnosed as gastric ulcers, which give a history of pain and distress off and on for a long *period before vomiting began to be a symptom, are almost always duodenal. Long-continued, painful dyspepsia, with occasional attacks of pyloric symptoms, is the important combination to look for in duodenal cases.*

Besides the histories herewith presented of duodenal ulcer, I have looked over a large number of the histories of cases at the hospital, both in the medical and surgical records, in which this combination was perfectly evident. Although these cases are classed as gastric ulcer, both by the diagnostician and by the operating surgeon, I have no question that the lesion was duodenal. In future the diagnostician must consider duodenal ulcer as far the most probable cause in cases presenting the clinical signs of either temporary or permanent pyloric stenosis. " Gastric ulcers " must be called duodenal, or at least we must say duodenal or gastric, instead of vice versa.

The stomach tests, as chemical analyses of test meals and percussion of the distended stomach, are of little help in the diagnosis of duodenal ulcer. This fact is self-evident, for during the past ten years stomach analyses have not only been carefully done, but even carefully over-done, and yet very few diagnoses of duodenal ulcer have been made. In this series there is nothing to contradict the usual experience that the gastric analyses are normal, or nearly so, in these cases and only of negative value. Where they do show pathological signs, as dilatation or retention of food, we may feel confident that the pylorus is interfered with, at least temporarily.

Next to pain, the phenomena known as " sour stomach," " heartburn " and " hyperacidity " are the most common symptoms complained of. These sensations are difficult to define. We all probably know pretty well what they mean by these complaints, for there are few of us who have not experienced them ourselves. Sometimes the chemical analysis of gastric contents in cases complaining of these symptoms shows an absolute or relative excess of hydrochloric acid, but I am told by Dr. Joslin, who is an expert in such examinations, that these findings are by no means constant and that some cases complaining of the usual symptoms of hyperacidity actually do not have an excess of acid, and furthermore, that the methods in vogue of testing the quantity of acid are by no means accurate.

In previous papers I have suggested that the relief in these cases obtained by taking such alkalies as bicarbonate of soda is by no means a proof that the pain is caused by the acidity. It may be that the relief is due to closure of the pylorus, for Cannon has shown that acidification of the gastric contents causes the pylorus to open. Thus, if it be granted that the fissure theory which I have alluded to is reasonable, closure of the pylorus when the alkali is taken is the direct cause of relief by infolding the raw surface of the ulcer. Be this theory true, or that of the direct action of the acid the right one, these cases of duodenal ulcer do, as a rule, show pronounced symptoms of this character. In most cases these symptoms, like the hunger pain, come late after the meal. In my opinion, when they are persistent and accompanied by pain which is severe, though bearable, in otherwise healthy men, a provisional diagnosis of duodenal ulcer should be made.

The sensation of " sour stomach " is a common one in any gastric disorder and, moreover, the term is a popular one and the readiest expression which an ordinary patient can use to describe distress in the epigastrium. It would be difficult for any one to tell the difference in sensation between a hyperacidity and the distress caused by bitter acrid bile and pancreatic juice. Those of us who have been seasick know that the third or fourth vomiting is far more distressing than the first deluge when the contents of the stomach appears. It is my belief that bile and pancreatic juice rising in the intestine as far as or through the pylorus may give rise to painful sensations which are felt in the stomach, because our localizing sense in this region is not accurate. I am sure that I can myself recognize a pain in the epigastrium and yet feel that my stomach is functionating well.

I am not radical enough to say that every case of " hyperacidity " has a duodenal ulcer, but I do believe that many have. And further, I believe that some of the milder cases may be due to the reflux of the irritating pancreatic secretions on to the first part of the duodenum. Please bear in mind that in this paper and my recent one, to which this is a sequel, I have referred only to deep ulcers. Erosion of the mucous membrane in the same region may be responsible for some of the cases which do not last long enough to justify the diagnosis of true ulcer. Purely functional gastric neurosis in otherwise healthy young or middle-aged men, I am very skeptical about.

I have recently shown that there is some reason to believe that duodenal ulcer is pretty common, the proportion found in the autopsy statistics at the Massachusetts General Hospital being one in a hundred at least, and yet no scars of healed ulcers are found. This necessarily means that all duodenal ulcers fail to heal, or else that all healed scars escape notice. I cannot believe that nature has no power to heal these insignificant little ulcers, so that I am logically driven to the conclusion that many heal. You will notice that in two of these cases the cause of death was an accident, one a suicide and the other a crush from a vehicle. The ulcers were found incidentally. I should explain some of the much-talked-of cases of association of duodenal ulcers with burns in the same way. If painful gastric neurosis is common, so is duodenal ulcer. There are many minor points which are suggestive of duodenal ulcer which I have not time to dwell on, but I will take up briefly what seem to me the important points in differential diagnosis of this disease from: (1) Gastric ulcer; (2) gallstones; (3) appendicitis.

1. *Gastric ulcer.— Cases of supposed gastric ulcer, which in the early part of their history complain of hunger pain and sour stomach without vomiting, are likely to be duodenal.* This is made more probable if they are young or middle-aged men; if the history is of long duration without material change; if they are subject to occasional exacer-

bations when the symptoms have a pyloric character; if they are comfortable with a full stomach and in pain when it becomes empty; if there is tenderness or rigidity in the gall-bladder region; if the vomiting is not persistent, is small in amount, contains no food and occurs late after ingestion of the meal. If there is blood in the stools and none in the vomitus or stomach washings it is almost certainly duodenal. Blood in the vomitus or stomach washings is not incompatible with duodenal ulcer, however, for blood may be regurgitated into the stomach just as easily as ordinary bile is. Vice versa, blood of stomach origin may also be found in the stools.

The absence of blood in the stools is far from being an exception in duodenal ulcer. It is more likely the rule. The ulcer which does not bleed freely at some time does not bleed at all. Nevertheless, repeated examinations of the stools for occult blood should be made in suspected cases, because if blood is found, it is, with the other symptoms, almost positive evidence.

2. *Gallstones.* — Duodenal ulcer cases which have typical hunger pain or blood in the stools ought not to be confused with gallstones. The cases which are confusing are those duodenal cases in which the patient is comparatively free from symptoms except during the acute attacks. Such cases as No. IX are difficult to differentiate. If they are young males, the presumption is in favor of duodenal ulcer; if they are middle-aged or elderly females, it is in favor of gallstones. There are seldom cases in which the pain in relation to meals is not pretty decisive, gallstone cases being relatively more uncomfortable with the stomach full, and duodenal ulcer cases with it empty. Gallstone cases will almost always have, at times, attacks of pain so severe as to be unbearable and require morphine, while with duodenal ulcer cases the persistence of daily pain for long periods, or the repetition of the acute attacks, is what makes the patient seek assistance. The individual attacks, unless perforation occurs, are bearable, and with rest and a light diet pass off. Gallstone attacks are apt to severe for a few hours, while duodenal ulcer exacerbations are subacute and last a few days. Common duct cases or cases where there is real gallstone colic ought never to be confused. Cases where stones are in the gall bladder which are too large to pass the cystic duct and give chronic symptoms with spasm of the gall bladder without jaundice are the difficult ones. In such cases the real reason of failure is generally that the physician does not think of duodenal ulcer as a possible diagnosis. In this collection of cases the fact that the stools were often not examined for occult blood is a tacit confession of this fact. There will almost always be some point which will help. When the frequency of this disease is realized, and it has become a routine to consider it in abdominal diagnoses, failure will be less frequent.

3. *Appendicitis.* — In acute cases of appendicitis the possibility of duodenal perforation should always be considered. If the onset is sudden and violent (almost like a bullet wound), with some shock and general abdominal rigidity, the chances are in favor of duodenal perforation. The history of previous " hunger pain " and " sour stomach " increases this probability, but their absence is not necessarily in favor of appendicitis. If there is tympany over the entire area of normal liver dullness, appendicitis is ruled out. In some cases of appendicitis the liver dullness is *diminished* from mere distension, but it is not *obliterated.* On the other hand, a number of cases occurred in this series to show that the presence of liver dullness may still be found where a duodenal ulcer has perforated. In other words, gas does not always escape from the perforation.

When the surgeon opens the abdomen and finds clots of mucus or food in the abdominal cavity he may look for gastric perforation, for in duodenal perforation only fluid is the rule. Gastric perforations are usually accompanied by more shock and often have pronounced previous gastric symptoms.

Both gastric and duodenal perforations have a concave, boardlike abdomen with general, poorly localized tenderness when seen in the first twenty-four hours, while appendicitis cases are more apt to be distended and convex, with well-localized tenderness. I have previously stated that duodenal perforations are twice as common as gastric and that every surgeon is likely to meet at least 1 to every 40 cases of appendicitis. My own proportion has been about 1 to 16 in my last 100 cases.

The diagnosis of chronic appendicitis is more difficult. Alleged chronic appendices are daily being removed in this country, when the real diagnosis is renal or ureteral stone, duodenal ulcer, gallstones or lesions of the pelvic organs, etc. The pendulum of consent to this practice has swung too far, owing to the comparative safety of the operation. The real justification for this operation is that the patient has been observed to suffer one or more attacks of inflammation of the appendix, accompanied by fever and the classical signs. The practitioner and the surgical consultant often, however, agree in recommending appendectomy in cases of digestive disturbance or abdominal pain, even where no typical attacks of appendicitis, in the true meaning of the word, have occurred. The patient, even if his symptoms are not entirely relieved, has at least the satisfaction of thinking that a dangerous and useless organ has been removed. In these doubtful cases of appendicitis, where improvement in the regularity of the bowels, hyperacidity and indigestion are expected from the operation, the diagnosis of ulcer of the duodenum should be considered. The real difficulty is that as a profession we are exaggerating the importance of the appendix and neglecting the importance of the pylorus.

In the paper to which I have so many times alluded to-day I have given what seems to me pretty good evidence to show that duodenal ulcer is nearly as common as acute appendicitis. If one out of every one hundred cases dying from all causes and autopsied at the Massachusetts General Hospital in the last twelve years have had a typical deep open ulcer of the duodenum, it shows that the disease is common enough to be considered in every case of abdominal pain.

Gentlemen, every man whose life is miserable from a painful dyspepsia has a right to abdominal exploration if he desires it. I believe it is your duty to let him know that there is a surgical side to this question, even if you are doubtful of surgical results yourselves.

POSTSCRIPT.

For the benefit of those readers who have not seen my previous publications on the duodenum, the following résumé is presented.

1. That in the development of mammals the large intestine has swung across the small.

2. That thus necessarily the whole blood supply of the small intestine and most of the large must cross the small intestine.

3. That this crossing place occurs at the end of the duodenum beneath the superior mesenteric artery.

4. That in horizontal quadrupeds no obstruction is produced at this point.

5. That in vertical man a greater or less obstruction must necessarily be thus produced.

6. That as a result of this obstruction in man the secretions of pancreas and liver may at times be thrown backward on the first part of the duodenum.

7. That the first part of the duodenum is unfitted to withstand long-continued action of these secretions, since its mucous membrane is histologically and developmentally different from the rest of the duodenum and is more closely allied to that of the stomach.

8. That the action of these caustic secretions on this unprepared mucous membrane may give rise to irritation accompanied by certain painful sensations.

9. That such sensations may be felt in the epigastrium and attributed to the stomach.

10. That long-continued action of this kind may, under certain conditions, lead to erosion and even deep ulceration of the mucous membrane just below the pylorus.

11. That such ulcerations, when they are close enough to the pylorus, lie in the folds of mucous membrane just outside it, and are comparable to fissures of the anus.

12. That, like fissures of the anus, they are kept from healing by their relation to the sphincter.

13. That clinically, hunger pain and dyspepsia are the primary symptoms of such ulcers or fissures, and certain other clinical phenomena are secondary symptoms.

14. These secondary clinical phenomena of accidents of the disease are:

A. The well-known acute exacerbations of duodenal ulcer cases when there is a temporary, absorbable, inflammatory swelling of the tissues about the crater of the ulcer, causing increase of pain, tenderness and the signs of temporary intererence with the pylorus.

B. The so-called stenosis of the pylorus, when these acute attacks of inflammatory deposit have left enough cicatricial residue to actually obstruct the passage of food, even after rest and careful diet have allowed the inflammatory swelling to subside.

C. The complication of hemorrhage, which is due to the accident of situation, i. e., whether or not the ulcer happens to be over a large artery.

D. The complication of perforation depending on whether the ulcer happens to be anatomically on the free side of the duodenum or on the retroperitoneal side.

15. That in the diagnosis of these cases mistakes are made by too great consideration of these secondary accidental symptoms and too little attention to the primary insignificant hunger pain and indigestion.

16. That when these considerations are taken into account, the diagnosis is really not difficult in the advanced cases.

17. That many cases of intractable dyspepsia which never have these secondary accidental symptoms are really due to duodenal ulcer.

18. That ulcer below the pylorus is more common than it is above, and in future we must make diagnoses of duodenal or possible gastric ulcer instead of the vice versa.

19. That duodenal ulcer is nearly as common as acute appendicitis.

These statements are supported by the following evidence:

1. An examination of Dr. Wright's autopsy records at the Massachusetts General Hospital shows:

A. That duodenal ulcers occur invariably so close to the pylorus that they must lie in the folds of mucous membrane when the sphincter is contracted.

B. If they are multiple they are in the form of a ring, each in the same relation to the pylorus. They may extend or coalesce to form an encircling ulcer.

C. In nearly three thousand autopsies an open duodenal ulcer was present, whatever the cause of death, in over one in every hundred cases.

D. Duodenal ulcer occurs twice as frequently as true gastric ulcer.

E. Cases characterized by hemorrhage show a large artery in the base.

F. No scars of duodenal ulcers have been found in these three thousand cases unless an active ulcer was present, and then can only be demonstrated by microscopical section.

G. Scars left by round ulcers of the duodenum are not noticeable because the mucous membrane is replaced over them, glands and all. Microscopically they are recognizable by a cicatricial gap in the muscle layers.

H. Therefore, the absence of scars at autopsy is no argument against the frequency of the disease and is, indeed, in favor of it.

2. From a consideration of the clinical records I find that:

A. Duodenal perforation is from one twentieth to one fortieth as common as acute appendicitis.

B. That two of every three cases of so-called "gastric perforation" are really duodenal.

C. That two of every three cases diagnosed as "gastric ulcer" are really duodenal, and a far greater number than this of those diagnosed as pyloric obstruction.

D. That chronic cases complaining of hunger pain and subject to recurring attacks of temporary interference with the pylorus should be considered cases of duodenal ulcer.

ABSTRACTS OF HISTORIES AND AUTOPSY REPORTS OF FIFTY CASES OF DUODENAL ULCER IN WHICH THE DIAGNOSIS WAS CONFIRMED BY EITHER AUTOPSY OR OPERATION.

These include all such cases which were thus proved at the Massachusetts General Hospital from Jan. 1, 1897, to July 1, 1909.

The first twelve were personal cases, the rest were in the care of other surgeons.

Case I. I report this case in full because it is very typical and because it presents the clinical signs of subphrenic abscess which is such a common complication in these cases.

L. T. M., age thirty-seven, male. Butcher. Aug. 23, 1903. Massachusetts General Hospital. Vol. 450, p. 209.

The patient was a man of thirty-seven who, except for his acute symptoms, was in splendid condition for operation. His muscular development and the amount of his subcutaneous fat were ideal for an active man in the prime of life. Until the present attack he had considered himself perfectly well, but on close questioning admitted that he had had what he supposed was dyspepsia for several weeks, or perhaps more. He had sometimes had pain an hour or two after his meals. He had never vomited before the present attack, nor had he noticed bloody or tarry stools.

From Dr. Tinkham, of East Weymouth, I obtained the following history of the present attack. At about 5 P.M. on the previous day, while at Nantasket Beach, the patient had been attacked by sudden severe pain in the pit of the stomach. He had vomited several times then, but not since. He was seen by a physician, who relieved him with morphine, and the following morning sent him in an ambulance to East Weymouth. Dr. Tinkham, who was then called, recognized the gravity of the situation and at once arranged to have him sent to the hospital. He arrived at the Accident Room by ambulance from Weymouth at about 9 P.M., nearly twenty-eight hours after the initial pain.

When I saw him he was still somewhat narcotized, but in considerable pain. Respiration, 30; temperature, 102.5; pulse, 120; leucocytes, 50,000. The pulse, though rapid, was fair. The respiration was noticeably labored, though the heart and lungs were negative.

His abdomen was not greatly distended, rather concave than convex, and of almost uniform tenderness and rigidity. Though rigid and tender throughout, the upper right-hand quadrant was a degree more fixed and tender than the lower. Percussion was irregularly dull in the flanks and singularly tympanitic over the normal area of liver dullness. Rectal examination was negative (the bowels had not moved, although several enemata had been given.)

Favoring appendicitis, but being prepared for gastric ulcer, I made a high rectus incision through which both regions could be explored. The abdomen was full of pus. I noticed no escape of gas on opening the peritoneum, and at once examined the appendix. Its appearance, while inflamed, merely suggested involvement in the general peritonitis, to which it evidently bore no causal relation. To be sure, I removed it, and Dr. Jones, who kindly examined it for me, could find no perforation. I next explored towards the stomach and thought I notice the escape of some gas, though I could not be sure that I had not introduced it through the wound. As the anterior aspect of the stomach was normal, I next rapidly ran over the large and small intestine, sponging out a large quantity of pus and soup-like fluid as I did so, and keeping a Tait tube flushing the pelvis with salt solution. Coming back to the gall bladder I found patches of lymph on the pyloric end of the stomach, and while searching for a perforation I distinctly heard the escape of gas and found that this region kept rapidly filling with a brownish fluid containing streaks of bile. Had it not been for this guide, I think I should have missed the ulcer, for, not having perforation of the duodenum in mind, I should have spent much valuable time in examining again the posterior wall of the stomach.

Even after finding the perforation I had the greatest difficulty in closing it. It was situated on the anterior part of the duodenum, at the base of that portion of the gastrohepatic omentum which forms the anterior edge of the foramen of Winslow. The perforation itself was about the size of a slate pencil, but an area about it perhaps the size of a five-cent piece was somewhat indurated and edematous, so that it was too unyielding to invert with stitches. I, therefore, had to use the edge of the gastrohepatic omentum to cover the perforation. Superficial stitches in this tore out, but the urgency of the case demanded deep stitches. I think they must have held in the common duct or the fibrous tissue about it. Five or six silk stitches were thus placed.

The abdomen was then again thoroughly flushed with salt solution, with particular attention to the region above and about the liver. The wound was partially closed and cigarette wicks to the region of ulcer, flank and appendix.

To my surprise the patient pulled through, and on the tenth day his pulse, temperature and respiration were normal. He was kept on enemata for twelve days. During the next week, however, his chart showed a steady rise; on the seventeenth day, temperature, 102; pulse, 100; respiration, 26. Nothing could be found to account for this except two stitch abscesses, which did not seem a sufficient cause. There was no localized tenderness or spasm, and the abdomen appeared normal except for the wounds, which were draining well. There was no cough or marked increase in the rate of respiration to call attention to the lungs, but for the successive days it seemed to me that the liver dullness came higher and higher in the chest.

A consultation with Dr. Minot was held and the following results noted: The abdomen offered no indication of subphrenic abscess, i. e., the region on the right below the ribs was normal, concave and not tender. In the right chest, however, flatness, bronchial breathing and increased vocal fremitus indicated consolidation. To Dr. Minot it seemed probable that there was pneumonic consolidation in the lower lobe, and between this and the diaphragm an area filled by fluid or pus. He advised aspiration, which I accordingly did in the eighth interspace in the posterior axillary line. Pus was obtained and immediately after, under ether, I made an incision at the same point and evacuated a large amount of pus as if from an empyema. After excising about an inch of rib for better drainage, I put my finger into the large cavity and could feel, below, as I supposed, the convex surface of the diaphragm, and above, the concave surface of what I took to be adherent lung. As a matter of fact, the liver was below and the diaphragm was above, for on turning the patient to better wash the cavity the adherent diaphragmatic and parietal pleura suddenly broke apart and air and pus rushed into the pleural cavity; the lung collapsed, leaving the diaphragm like a flapping sail between the pleural and the abscess cavity. After washing both thoroughly with salt solution, I endeavored to close off the pleural cavity by gauze packing and drained the subdiaphragmatic space with tubes.

The patient bore the operation well, but was quite cyanotic during the night. In the morning his condition seemed fair, but distinctly worse than the night before. His face was anxious with the peritonitic expression. After dressing his chest wound I found that his abdomen was distended and somewhat tender, though he complained of no pain in it. There was, however, marked rigidity of the muscles so characteristic of peritonitis. I came to the conclusion that in my manipulations of the subdiaphragmatic abscess I must have ruptured it on the abdominal side, and by syringing spread the contents through the abdomen. It seemed that there was one possible chance of making an early diagnosis of this and once more flushing out the abdominal cavity. After giving it a careful study, I explored the left side of the abdomen under cocaine in the semilunar line. I found the abdomen full of creamy pus. Giving the patient a little ether I enlarged the incision and washed out the whole peritoneal cavity, except that part walled off by adhesions, and having put cigarette wicks in the splenic, pyloric and pelvic regions, partially closed my incision.

For five days after this the patient was in a very critical condition, barely able to stand the dressings which were necessary to remove the immense quantity of discharge from his peritoneum, pleura and subdiaphragmatic space.

On the seventh day, i. e., just a month after the original operation, he seemed to be fairly out of the woods, when his temperature began to rise again. For several days the same rise continued, without pain or demonstrable local tenderness. On the tenth day a doughy mass hardly distinguishable from the right kidney began to appear, and by the fourteenth day was so well marked that I decided to explore it.

Under cocaine I made an incision in the flank and, to my dismay, entered the peritoneal cavity behind the adherent colon. The abscess could then be felt between my finger in the flank incision and the anterior abdominal wall. It was tympanitic in front and behind, due, as I afterwards found, to the ascending colon behind and to the outer side of it, and some coils of small intestine above and to the inner side of it. Following the peritoneum downward I found no pus, but on going upward toward the liver I broke into a pocket which also extended down to the right of my original wound toward the pelvis. This I cleansed thoroughly with gauze and drained.

Between this operation and the first one, the patient's bowels had been quite loose, about four movements in the twenty-four hours.

On Oct. 4, he was improving and went out on the veranda in a stretcher. The sinuses were doing well. On Oct. 5, he had another attack of severe abdominal pain, and the surgeon in attendance explored the left side of the abdomen under cocaine. A large amount of clear fluid was found and the transverse colon appeared the size of a lead pencil. It was considered that there must be an obstruction in the hepatic flexure, so another opening was made over the cecum and a Mixter tube inserted. During the day there was no escape of gas or feces from this opening, so that on the next day another operation was done and a band was found which obstructed the small intestine. This band was removed and another Mixter tube tied into the small bowel. Following this operation the obstruction was relieved, but the patient's strength failed to such a degree that he died on the tenth day following, about eight weeks from the time of perforation.

Perforation, Aug. 22, 1903; first operation, Aug. 23; wicks out and changed and shortened, Aug. 27; second operation, Sept. 12; third operation, Sept. 13; fourth operation, Sept. 27; autopsy, Oct. 17, 1903 (No. 1132).

Anatomical diagnosis. — General fibrinopurulent peritonitis; subphrenic abscess; purulent bronchitis; abscesses of the lungs; empyema; ulcer of the duodenum; edema of the kidneys.

In the wall of the duodenum, antero-laterally and to the right, there are several strands of suture material. On the passage of water, under pressure, through the stomach and the duodenum, the sutures hold, and there is no leakage from the duodenum. On cutting the sutures and then laying the stomach and duodenum open there is seen in the mucosa of the duodenum, at a point beneath the situation of the sutures, an ovoid loss of substance about 6 mm. in greatest dimension, with smooth rounded edges and a base which is very thin and membranous in character. In the central portion of this membranous base there is a small opening about 32 mm. in greatest dimension. The mucosa of the intestines elsewhere presents nothing worthy of note.

(*To be continued.*)

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POINTS IN THE DIAGNOSIS OF INJURIES.

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DEFINITE, positive single "points" are often of the greatest value, both in medicine and surgery, whether they are actually the direct means of establishing a diagnosis or merely the signpost that puts us on the right road.

A few such points are here presented. All are the result of personal experience; all confirmed by repeated observation.

Some of them have no doubt been observed before; most of them I believe to be new.[1] The detailed case-histories and reports will not be given here, in part because notes were often taken only in briefest fashion at the time, in part because the later following up of hospital cases, in such a way as to be able to give full reports, calls for an expenditure of time not now at my command.

Moreover, the value of observations of this sort must always depend, in the end, upon the testing of the individual conclusions of one observer by the "checking" observations of *other* observers, in the nature of things less interested observers, and probably, therefore, more impartial.

I give the following conclusions for what they are worth, adding only that I believe each of definite value and have tested each, not only repeatedly, but through a course of several years on a considerable clinical material.

SHOULDER LUXATION.

After luxation of the shoulder, of subcoracoid or subglenoid type, there are two points that show *localized* tenderness to pressure, and to which much of the pain of motion is referred. The first is a point slightly below the projection backward (behind the acromion) where the scapular spine and the acromion come together. At this point there is usually a sharp spur. The point of tenderness lies just below this spur. The second point is in the region of the coracoid process itself.

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[1] That is, new except as I have mentioned them, *en passant*, in other articles.

Tenderness at these points occurs sometimes with simple "sprains" of the shoulder, but is in some measure confirmatory of the diagnosis of a (reduced) dislocation. So far as my observation goes, *absence* of such tenderness, at least of that below the scapular spine, renders the diagnosis of such a reduced dislocation very doubtful. Presumably these points of soreness correspond to ligament damage; certainly they correspond to the major ligament insertions.

SHOULDER INJURIES.

In injuries of the shoulder, particularly after luxation, there is often during convalescence a consistent complaint of pain referred to the region of the deltoid insertion on the humerus. Sometimes, but *not as a rule*, there is sensitiveness on pressure at this point. I have not been able to make any definite use of this point in diagnosis, save that it seems more common in luxation than in the shoulder fractures. It has no obvious bearing on final prognosis of usefulness.

BICEPS RUPTURE (RUPTURE OF THE LONG HEAD).

This is not the rare injury that one might suppose from the literature. Favored by the atrophic and erosive lesions of chronic arthritis, it occurs often with but slight trauma; most of those cases seen are in joints that we can hardly call normal.

The signs given for diagnosis, usually, are the pain on active supination or passive pronation of the flexed forearm, but besides these, we have:

(*a*) A slight forward displacement of the humeral head, due to the lack of the restraint normally exercised by the tendon as it crosses the joint.

(*b*) The characteristic deformity of the muscle on attempted flexion, a bunching of muscle below the break (*A*, Fig. 1) and an abnormal hollow above. (*B*, Fig. 1.)

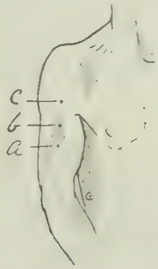

Fig. 1. Biceps rupture. *a*, bunching of muscle below the tear; *b*, hollow above the tear; *c*, loss of resistance on palpation, also the site of ecchymosis.

(*c*) Tenderness along the course of the long head.

(*d*) Ecchymosis along the same course.

(*e*) Disappearance of the long head on palpation. On comparison with the sound arm, we may very readily feel the absence of this tense tendinous origin on active resisted flexion. This is felt at the point marked *C* in Fig. 1.

ELBOW FRACTURES.

Loss of supination and pronation (with extension and flexion normal or nearly so) means damage, not to the humerus, but to the neck or head of the radius.[2]

Loss or limitation of flexion and extension (with rotation undisturbed) means damage to the humerus, not to the bones of the forearm.

Loss of flexion *alone* (with the sharp check obviously due to contact of bones on bone) *can only* result (1) from supracondylar fracture with forward displacement of the shaft; (2) from supracondylar fracture with rotation about a vertical axis; (3) from luxation of both bones of the arm backward; (4) from luxation of the radius forward.

Loss of extension *alone* may mean a supracondylar fracture with forward displacement of the lower fragment (Kocher's "supracondylar from flexion"), or more commonly it may mean a chip of bone (oftenest from the face of the external condyle[3]) getting in the way in the joint (between olecranon and either condyle) like a stone in a hinge, or in the front of the joint acting similarly.

A hollow *directly* above the olecranon behind can mean only a backward luxation; a hollow *slightly higher* means supracondylar fracture. In the luxation the hollow of the sigmoid cavity may be palpable; in the fracture the abnormal mobility forward and back is little limited, and crepitus is usually obtainable.

Pain limited to *passive* flexion or *active* extension means damage to the olecranon — either a fracture of the bone or (rarely) an epiphyseal separation.[4]

Marked *lateral* deviation of the forearm means supracondylar fracture or total epiphyseal separation (or possibly a lateral luxation, which is relatively rare). It does *not* occur with fractures of either external or internal condyle, despite the great mass of literature, beginning with Allis, alleging that it does occur.[5]

Elbow landmarks. The classical picture of the elbow landmarks is false. The two condyles and the tip of the olecranon do *not* form an equilateral triangle in *any* position. The internal condyle is distinctly nearer the olecranon than is the external.

Lameness, ecchymosis and, later, atrophy (often very sharply marked) along the course of the flexor and pronator muscles having their origin in the internal condyle of the humerus indicate either fracture of the *internal epicondyle*[6] or severe strain affecting these muscles or the tendinous insertion of their origin from the elbow.

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[2] I cannot agree with Mouchet, who finds such limitation indicative of damage to the external condyle. In external condyle fractures I have found it but once in about thirty such cases examined with this point in view. In fractures of radial head or neck there seems to be a *constant* limitation of rotation, usually permanent.

[3] Cotton and Sylvester: Fracture of the Capitellum. Boston Med. and Surg. Jour., Dec. 31, 1903, cxlix, p. 734–6.

[4] Cotton: Separation of Olecranon Epiphysis. *Ibid.*, June 28, 1900.

[5] Cotton: Ann. Surg., February, 1902.

[6] Cotton: *Ibid.;* Mouchet: *Loc. cit.*

The most *constant* and *recognizable* landmark at the elbow is the ulnar nerve.[7]

WRIST.

Tenderness on pressure on the radius above the joint is significant *only* if it extends round *about the circumference* of the bone. If it does, that is proof presumptive (only negatived by a *good* x-ray) that we have a cracked radius without displacement, such as we see to-day in the "automobile" fracture, and also in injuries from many other causes. Mere *tenderness* at *one* point on the circumference proves nothing. Fractures *with* displacement are, of course, to be recognized by the grosser tests, commonly described.

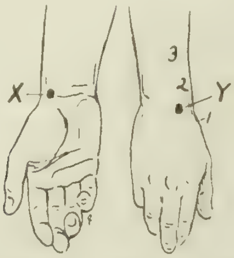

Fig. 2. 1, 2, 3, region of tenderness to pressure in tenosynovitis of thumb tendons. *X* and *Y*, sites of tenderness, often with thickening, in scaphoid fracture.

"Crepitus" due to *tenosynovitis* of the thumb extensors (1, 2, 3, Fig. 2) *almost precludes fracture or sprain;* the tenosynovitis is (almost invariably, I think) due to the repeated slight trauma of overwork, a trauma which is at no single moment adequate to produce fracture or even sprain.

Tenderness on pressure over the sheaths of the thumb tendons, or effusion of blood and serum into their sheaths, may accompany wrist fracture, but such swelling and tenderness from a single trauma is not followed by a tenosynovitis that will give grating on motion of the tendon.

Loss of extension and of radial abduction at the wrist, with other motions free, *suggest* fracture or luxation of carpal bones. Ordinarily we are dependent for confirmation of this diagnosis on the x-ray.

Tenderness on pressure over the radial side of the carpus, front and back, at the points shown as *X* and *Y* in Fig. 2, *suggest* scaphoid fracture but *do not* prove it, even if there is limitation of motion in the wrist. X-ray confirmation is usually essential.

RIBS.

Tenderness of the ribs alone is *not* a reliable sign of fracture; to be of any use as a sign the tenderness must be *sharply localized* at a definite point, and must be accompanied (in my belief) by crepitus, or at least by pain *referred to this one point* on pressure being exerted on the rib at some distance away. Contusions from direct blows in which there is no evidence of even a crack of the rib, are common. Possibly some of these are fractures, but we have no real ground for making the diagnosis.

Sharp pain toward the latter part of *expiration*, pain limited to a single, sudden, very painful catch, is at least very strongly suggestive of fracture. Lame muscles, etc., are apt to give pain on *inspiration*.

The presence of lung or pleural complications are of course *suggestive* of fracture — they do *not* prove it.

ABDOMEN.

Tenderness alone means little or nothing if confined to the point struck. Spasm of muscles at the point struck is *not necessarily* important.

Spasm of rectus muscle or other muscles *not directly damaged* means damage underneath, with rare exceptions.

Spasm of *loin muscles* (with recti uninvolved, or less involved) means damage to kidney as a rule.

Spasm of the *whole* abdomen after trauma means, usually, the beginning of general infection from rupture of one of the hollow viscera, or at least free bleeding from one or another source into the unprotected peritoneal cavity.

Spasm of abdominal muscles, *single or general*, in cases of spinal injury in the dorsal or lumbar region, proves nothing as to intra-abdominal conditions; it may be, and frequently is, simply an expression of nerve-root irritation.

KNEE.

Fracture of the patella gives an *even* distention of the knee-joint, with flotation of the fragments and distention of tissues in front of the ruptured and open capsule. (Fig. 3, *B*.)

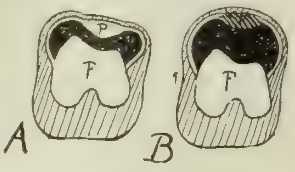

Fig. 3. Diagrammatic section of knee-joint in synovitis. The patella (*P*) held down against the femur (*F*) limits the upward expansion of effusion. *B*, like view in patella fracture; the patella is gone and there is no resistance to symmetrical, almost spherical, swelling from effusion.

Synovitis of the knee gives a distention of the knee at the sides, limited in the median line by the intact patella and the extensor tendons.[8] (Fig. 3, *A*.) In cases of an effusion so great as to make it impossible to feel the patella fragments, it is often of great use to have this differential sign, and I have not yet seen it fail in a considerable series of such cases.

ANKLE SPRAINS.

Almost all ankle sprains are sprains from *inversion* of the foot. In these sprains we often have considerable swelling, often with ecchymosis of the outer side of the foot. There are very often two points tender to pressure.

(*a*) The course of the peroneal tendons (see Fig. 4, *A*.)

(*b*) The anterior tibio-fibular ligament. There is in almost all sprains a point of especial, often extreme, tenderness at a point shown as + in Fig. 4. In one case observed, this point afterward became the site of a moderate callus, persisting long after function was restored. The skiagraph showed only a slight roughening of the tibia at the ligamentous insertion. Evidently a small scale of bone had been torn loose. As a rule there is no such thickening; the lesion must be merely a tearing of ligamentous fibers. All that can be said is that this localized tenderness occurs *almost constantly* with the usual sprain; it has nothing to do any damage to the fibula and *means nothing in prognosis*.

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[7] Cotton: The Ulnar Nerve as a Landmark of the Elbow. Boston Med. and Surg. Jour., 1906, clv, p. 37.

[8] Fiske, of New York, has called attention to the bulging of the distended joint at the sides *in flexion*. I think the different cross-section of the joint *in extension* has remained unnoted.

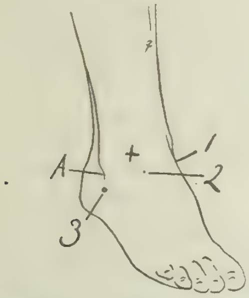

Fig. 4. *A*, peroneal tendons and anterior tibio-fibular ligament. 1, 2, neck of astragalus; 3, outer surface of os calcis.

ANKLE LUXATION.

Inversion of the foot *without shortening* of the foot means (in the absence of well-marked malleolar fractures) luxation of the foot *at the ankle*, or *beneath* the *astragalus*.

Inversion of the foot *with shortening* means fracture or luxation farther down, usually in the medio-tarsal joint. Luxation in the medio-tarsal joint in the cases I have seen has given a shortening, measured from heel to the tip of the great toe, of nearly an inch. The *visible* deformity in these cases is curiously slight.

ASTRAGALUS.

Swelling and tenderness at the points shown at 1 and 2, Fig. 4, suggests, especially if there is pain on dorsal flexion, a fracture of the neck of the astragalus.

OS CALCIS.

Thickening *below* the external malleolus on the outer side (Fig. 4, point 3) with disappearance of the projection of the malleolus, means comminuted fracture of the os calcis.[9] This thickening is the result of the forcing outward of the outer cortical layer of the os calcis. Its bony character is usually clear enough; if there is doubt, massage and pressure will bring us down on unmistakable bone. *I have never found this sign save in os calcis fracture, and have never found it absent in such fracture if of the comminuted type.* Often the spreading of the bone is such as to give an entire effacement of the prominence of the external malleolus.

In this broadening that has been less precisely described as a "broadening of the heel." It is *the* reliable sign of the fracture, regularly present; the shortening and raising of the heel are often not present in appreciable degree.[10]

Loss of *lateral* motion of the foot with preservation of flexion and extension in the ankle usually means interference with the joints between astragalus and os calcis, *not* damage at the medio-tarsal joint. In default of obvious displacements this means, *in the rule*, a fracture of the os calcis, comminuted, involving this joint.

FOOT.

Localized tenderness in the region of the metatarsals means little; often there is no fracture.

Tenderness on pressure exerted on the ball of the foot, thrusting upward, in the line of the bone, on the metatarsal head, means trouble; as a rule it means metatarsal fracture.

Tenderness on *lateral* compression of the ball of the foot means little if confined to the region pressed on. If, however, pressure in this region gives pain, *not* at the point of pressure, but on the outer side of the foot *higher up*, it is presumptive proof of a fracture at this higher point. As met with in practise it is a usual sign of the fracture of the fifth metatarsal (at the base) by inversion, with which Jones, of Liverpool, has made us acquainted.[11]

The diagnostic signs here given are presented with some confidence in their essential accuracy, but subject, as hinted above, to confirmation by others.

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VARIATIONS IN THE POSTERIOR HORN OF THE LATERAL VENTRICLE, WITH NOTES ON THEIR DEVELOPMENT, AND SUGGESTIONS AS TO THEIR CLINICAL SIGNIFICANCE.

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If we study a number of brains by the section method, or even glance through some good works, such as Dalton's "Atlas" or Fraser's "Morphology of the Brain," which show photographs of brain sections, we cannot fail to observe the great variations in length and shape of the posterior horn of the lateral ventricle. Nowhere in the literature is there sufficient stress laid upon this obviously important characteristic, and although it must in some measure be well known to all anatomists, in only three works could there be found any mention of the fact that the posterior horn varies in length, and no reference to other anomalies which, when fully understood, must be of great clinical importance.

I have recently studied a series of brains in the Medical School of Harvard University, and rarely found what is usually represented as the normal posterior horn. Out of sixty-four adult brains not specially chosen, all grades of variation were met with from the dilated ventricle of hydrocephalus internus to complete occlusions of the posterior horns, and these were numerous. Observations on brains coming, as dissecting-room subjects usually do, from institutions of various kinds, including insane asylums, cannot make them any the less valuable, although they may not represent, statistically, the condition to be found in the brains of the community. In the small number of presumably normal brains which I have been able to observe at autopsy since taking up this subject as a study for the purpose of this paper, there were the same kinds of variation to be found, but not in the same numerical proportion. Whether those of certain forms, which shall be described later, suffered from any cerebral discomfort or mental deficiency could not be ascertained, owing to the absence of the history of these particular cases. That there is sufficient reason to make one suspect that some of the variations are a predisposing, if not the actual cause of some of the unexplained cerebral symptoms and so-called idiopathic diseases is suggested by the structural defects or variations themselves.

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[9] Cotton: Boston Med. and Surg. Jour., 1906, clv, p. 645.
[10] Cotton and Wilson: *Ibid.*, October, 1908.

[11] R. Jones: Ann. Surg., 1902, xxxv, p. 697.
Cotton: Boston Med. and Surg. Jour., December, 1903, cxliv, p. 737.
Cotton: (More cases of same) *Ibid.*, 1906, clv, p. 229.

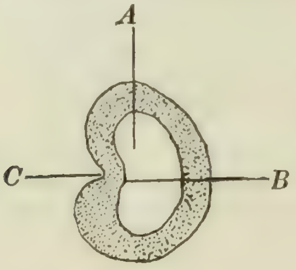

Fig. 1

Fig. 1. Vertical transverse section of occipital lobe, six to seven months' fetus, at junction of occipital and parietal lobes, showing condition of posterior horn at this period. Natural size. *A*, posterior horn; *C*, calcarine fissure; *B*, calcar avis in cross section.

The anatomy of any part of the body is best understood by following the developmental changes which have taken place from fetal to adult life, and this is especially the case with cavities, one of which is the lateral ventricle. The posterior horn of this ventricle — the only part with which we are now concerned — seems to have been almost neglected from a developmental point of view, while the calcarine fissure with which it is so intimately associated, and upon which, to a great extent, depends its ultimate form, has received much attention from eminent workers. For fetal brains used in this study, I am indebted to Dr. Warren of this department. The story of the development of the posterior horn from the time of the infolding of the calcarine fissure is a simple and straightforward one and is practically the history of the growth of the calcarine fissure. At the beginning of the development of the calcarine fissure (about the fifth month of fetal life) the posterior horn is a comparatively large, open space, extending backward to within ½ cm. of the extreme end of the occipital pole. Its walls are thin and smooth. As the calcarine fissure develops further, the infolding begins to make its appearance on the inner aspect of the ventricular wall, and the beginning of the calcar avis is formed in this way. (See Fig. 1.) It is well developed at about the sixth or seventh month of fetal life. In some of the brains at this age there may be seen another prominence, running at an acute angle and almost vertically from the end of the anterior calcar avis. This is due to the infolding of the parieto-occipital fissure. It is often found in adult brains, and sometimes, when the calcar avis is not well marked, this parieto-occipital eminence on the inner wall of the ventricle is mistaken for it. The eminentia collateralis which develops at about the same time and in a similar manner, by the infolding of the collateral fissure, has no very marked effect, beyond a slight protuberance in the floor wall, in modifying the form of the posterior horn; and consequently we may for the present dismiss it with this mention. Between the sixth and seventh month of fetal life, the posterior horn is comparatively and perhaps actually larger than at any other time during life; and from the time of the infolding of the calcarine fissure, unlike other cavities of the body, it is peculiar in that it begins to grow less capacious. Rapid growth of the cerebral tissue is taking place all around it; further folding of occipital fissures are taking place; the walls are thickening with white matter of the cerebrum; the calcarine and parieto-occipital fissures are growing; and, with the expansion of cerebral substance around them, are pressed in so that they encroach very much upon the once spacious posterior horn. In addition to this, the cerebellum, which was exceedingly small before birth, and especially in early fetal life, expands very rapidly during infancy, and by its upward growth indents the under surface of the occipital lobe, which pressure is, in turn, conveyed to the inner wall of the ventricle. All these factors are at work in making the posterior horn of the ventricle smaller, and

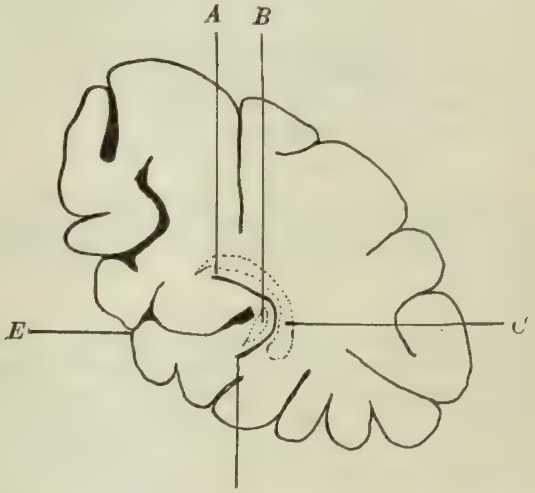

Fig. 2

Fig. 2. Vertical transverse section of occipital lobe of adult brain at junction of occipital lobe with parietal. The black line *A–D* shows where the posterior horn has closed and become adherent; *E*, calcarine fissure; *B*, bundle from c. callosum; *C*, position of fasc. occipito-frontalis inferior, optic radiation and inferior longitudinal bundle.

in modifying its shape, but the most apparent of them are the infolding of the calcarine and the lower end of the parieto-occipital fissures when the latter develops in such a way as to encroach on the space of the posterior horn. The calcarine fissure, however, is the more important, for its effects are always to be seen at any stage. Furthermore, the outer wall of the posterior horn, although it thickens greatly, changes but little in shape in the course of development from six months (fetal life) on to adult life. Almost all the change takes place on the inner wall, by the invagination of the calcarine fissure. The greater part of this wall remains almost as thin as it was before birth, and is consequently easily folded and easily pushed or drawn in by any slight difference between the internal and external pressure. The floor, in the course of development of the cerebellum, is pressed on from below and is pushed up. The outer wall, however, is always concave internally and of almost the same curve as before birth. The inner one — the opposite half of the ellipse (Fig. 1) — is folded back as the brain grows, and its curve becomes convex internally; the upper and lower parts always lie adjacent to the opposite wall, and adhere to it, while sometimes the whole of it becomes adherent, as will be seen later. In my series the adhesion in the upper limb (see *A*, Fig. 3) was always longer than that in the lower, and the open part of the posterior horn was always lower than the deepest infolding of the calcarine fissure, especially in the occipital lobe. In other words, it lies more against the deep white substance of the lobus lingualis, and rarely, if ever, adjacent to that of the cuneus. These characteristics are well shown in Fig. 3. I have pointed out that the calcarine fissure (and in rare cases the parieto-occipital) is responsible for the meeting of the opposite walls of the posterior horn. After a time, in many cases these walls grow together; and when the fissure is fully invaginated, and the meeting thus completed, there is a total occlusion of the occipital part of the posterior horn, as shown in Figs. 5 and 6. In both of these figures the tip of the posterior horn is patent, while its communication with the ventricle proper is cut off absolutely. Often the occlusion is complete so that the ventricle ends on the parietal side of the calcarine fissure, and we thus have a short posterior horn. In my series, the short posterior horns were always broad, curved and wedge-shaped, with the edge vertical and convex on the outer side. This is what one would expect from the development. The posterior horns met with in this investigation may be classified under the following heads: *A*. The horn which is patent to a point in the occipital lobe beyond the calcar avis. Under this head come the ordinary or normal horn, the dilated horn, as in hydrocephalus internus, and the horn with varying degrees of constriction. Twenty-two out of 64 fell under this head, of which 3 were dilated, 11 normal, 3 with a moderate constriction and 5 markedly constricted, having only an aqueduct between the normal tip of the horn and the rest of the ventricle. *B*. The constricted horn with adhesion, as in Figs. 5 and 6, shutting off a part of the posterior horn completely so that although this part is patent, it cannot receive the cerebrospinal fluid in the ordinary way, being cut off from communication with the rest of the ventricle. These were met with having isolated open tips of the horn varying in size from a pinhead to a pea. It will be noticed in Figs. 5 and 6 that the calcarine fissure has not extended its

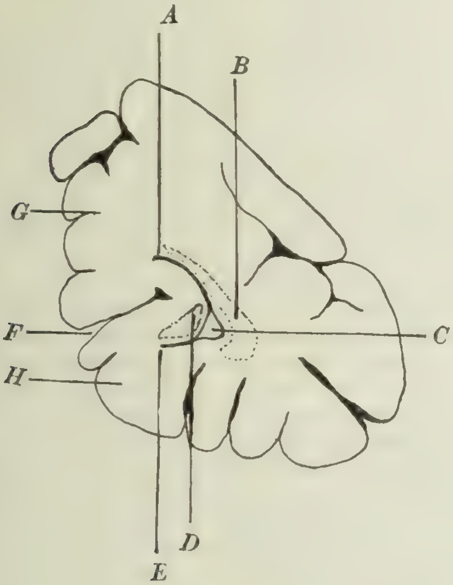

Fig. 3

Fig. 3. Cross section from same brain as Fig. 2, but cut 2.5 cm. further back. *C*, open tip of posterior horn which, as seen by reference to Fig. 2, cannot communicate with the remainder of the lateral ventricle; *B*, position of optic radiation, fasc. occipito-frontalis inferior, inferior longitudinal bundle; *A*, upper limb closed by adherent walls; *D*, large bundle from c. callosum; *E*, lower limb, — adherent walls; *F*, calcarine fissure; *G*, cuneus; H, lobus lingualis.

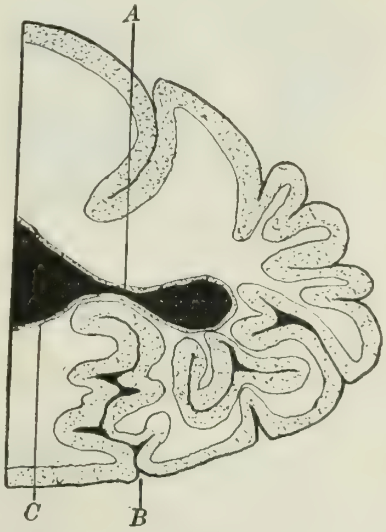

Fig. 4

Fig. 4. Longitudinal horizontal section of occipital lobe, showing marked constriction. *A–B*, calcarine fissure; *C*, ependyma lining ventricle.

pressure influence to the open tip of the posterior horn; thus it remains open and in such cases could be described as a separate occipital ventricle. There were 24 of Class B among the 64 brains. *C.* Complete closure of the whole of the occipital part of the ventricle, described above as the short posterior horn. Of these there were 18.

In the others, under Class C, in which there is complete closure, it will be found that the folds of the calcarine fissure encroach on the tip as well as on the anterior part. In all cases the ventricle at some time in its development was open to the end beyond the calcar avis and near the occipital pole, and in all cases in which there was a short horn it came about by constriction and fusion of the walls. The ependyma can always be found far into the occipital lobe to the natural tip of the ventricle, where it sometimes proliferates and forms a spongy closure of the tip. In some cases of constriction there is merely an aqueduct left, while the tip is quite capacious. It is conceivable that any slight variation in external or internal pressure could cause a temporary closure of this aqueduct. Such a temporary closure would bring about two conditions — strain on the white substance and pressure on the cortex — which might cause such disturbances as vertigo, epileptiform convulsions, etc. While there is no clinical evidence to support these contentions, it is obvious that the ventricular wall in its thinnest place about the calcarine fissure would, in being drawn in, be curved upon itself so that the cortex would receive extra pressure, while the inner part would be strained. What the amount of this would be, or what the results of comparatively sudden change of this nature would produce, can only be conjectured. Possibly such an irritation, brought about by pressure on the sensitive cortex, might produce convulsions or epilepsy. While it is well established that great areas in the cerebrum can be mutilated without pain to the subject, it is by no means proved that special kinds of stimuli cannot cause cerebral pain. The strain on the inner part of the wall, consisting of white fibers and ependyma, might cause pain, as nerve strain would do elsewhere. Then, again, there would be a stagnation of the cerebrospinal fluid. Some of it would be held in the open tip of the posterior horn of the ventricle and could not circulate in the normal way through the lateral ventricle. What the result of this would be if retained long is not known, since it has not been demonstrated that the cerebrospinal fluid does not possess a nutritional as well as a pressure-regulating and protective function, and it is probable that it carries with it also much of the products of brain metabolism. It is quite clear, however, that the cerebrospinal fluid should not be locked away in an isolated part of the ventricle. It could not be expected to remain long in that condition and still be normal. There is ample room for speculation as to what happens when the walls, after having been either pushed or drawn in, or having grown in by an over-development of the calcarine fissure, etc., have finally adhered to each other and permanently shut off a part of the ventricle in the occipital lobe at the tip of the posterior horn. In my series of brains there were no histories of the cases, and whether any of them were subjects of constant or periodical headaches, migraine, vertigo, epilepsy, etc., or were without symptoms, could not be ascertained.

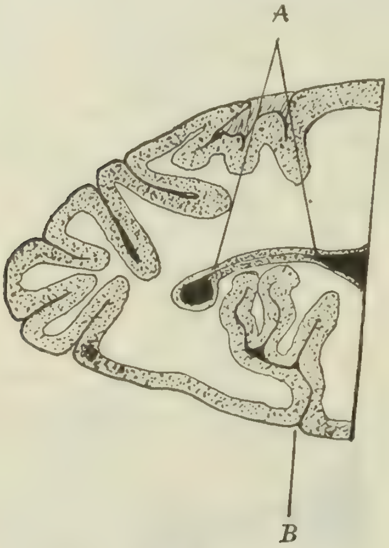

Fig. 5

FIG. 5. Longitudinal horizontal section showing an adhesion of walls of posterior horn at *A*. Tip of the posterior horn is open. *B*, calcarine fissure.

The most suggestive case coming under my observation was that of a baby of three weeks who died of convulsions. Autopsy showed, in both posterior horns, a yellow concretion of a cheesy consistence which filled the whole of the tip of each posterior horn, which was occluded by the ingrowth of the calcarine fissure. No other lesion was found.

In the so-called short posterior horns one can understand another condition arising which might produce pain, viz., in case of a rise of internal pressure, there would be a strain on the adherent walls tending to tear them apart and re-establish the normal opening into the occipital lobe, and from this condition pain and other symptoms might be expected. There are several important structures in relationship with the posterior horn which could be interfered with by the result of malformations, and perhaps the most suggestive of trouble arising in these is the proximity of the optic radiation, considered in connection with migraine. It is possible that the visual sensations arising in this syndrome may be ascribed to one of these variations in the horn, causing temporary interference with normal pressure or nutrition of parts of the optic radiation. This would account for scotoma in migraine. The tapetum, the fasciculus occipito-frontalis, the inferior longitudinal bundle, the occipital vertical transverse fasciculus, and the fasciculus occipito-frontalis inferior[1] are also in close relationship with the posterior horn, as will be seen by reference to the accompanying Figures, 2 and 3.

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[1] Curran: Jour. Neurol. and Psychol., 1909.

The accompanying figures show typical variations, and are exact tracings from brains used in this study. They will serve to illustrate the more common variations.

Fig. 1. Vertical transverse section of the occipital lobe of a fetal brain of about six to seven months. Section made at the junction of the occipital lobe with the parietal. *A*, posterior horn of the lateral ventricle, which had been oval in shape of cross section a short time previously, before the infolding of the parietal fissure at *C* had caused the prominence on the ventricular wall at *B*, and thus reduced the cross section to a kidney shape, as shown in the drawing. This posterior horn, as indeed all such at this age, extends to within 3 mm. of the occipital pole. The infolding continues as the calcarine fissure develops until finally it reaches the opposite wall and, as previously mentioned, adheres to it, usually in two places — the upper and lower limb, as shown by the black curved line running down from point *A*, Fig. 3, and the line from point *E*, Fig 3. In comparing Fig. 1 with Fig. 3, which, however, is taken from a section further back in the occipital lobe, an idea is conveyed as to the manner in which the ultimate form is arrived at. The external curve of the ventricle in the fetal brain is almost the same as that of the adult, Fig. 3, but the lower part of the curve in Fig. 3 is sharpened by the upward pressure of the cerebellum, formerly mentioned.

Fig. 2. This is a tracing of a vertical transverse section of an occipital lobe, taken at the junction of the parietal with the occipital lobe. It shows a complete closure of the posterior horn of the ventricle, the walls of which are also adherent, shutting off communication with the part behind in which there is a space having a capacity of 1 ccm., as shown at *C*, Fig. 3, a section taken from the same brain, but 2.5 cm. further back.

Fig. 3. Tracing of a section from the same brain as Fig. 2, but 2.5 cm. further back. It happens to be cut in the middle of the tip of the posterior horn *C*, which lies lower than the level of the deepest fold of the calcarine fissure *F*. This is the usual position for this portion. It will be observed that it is adjacent to the deep white substance of the lobus lingualis *H*, and does not lie adjacent to that of the cuneus *G*.

Fig. 4. Tracing of a longitudinal horizontal section of the occipital lobe, showing a marked constriction, *A*, of the posterior horn, but no shortening. In this case the tip of the posterior horn is about twice the normal size.

Fig. 5 is a tracing of an occipital lobe (horizontal and longitudinal) showing an obliteration of a large part of the posterior horn at *A*, leaving the tip isolated from the remainder of the lateral ventricle. Note the extra folds in the depth of the calcarine fissure *B*, and the manner in which they have missed the tip of the posterior horn. The ependyma remains in the obliterated part, *A*. Cross section of this at *A* would show a picture similar to Fig. 2, and cross section at the tip would show a picture similar to Fig. 3.

Fig. 6. This figure, with the foregoing one (Fig. 5), are perfect examples of what is to be met with in 33% of the brains from institutions. This one, like the former, shows a great part completely obliterated, and also, like the former, the tip of the posterior horn a receptacle for fluid — a ventricle in itself, but with absolutely no communication with the cerebrospinal circulation through the lateral ventricle. The adhesion is perfect. These small pockets are usually overlooked, and the case is put down as a short posterior horn. Very often the tip is not open, but there will still remain traces of its having existed. Careful examination will reveal a very minute tip in most cases of supposed complete obliteration.

In conclusion, I wish to emphasize the following points:

1. In a large percentage of brains the tip of the posterior horn of the lateral ventricle is cut off from communication with the rest of the ventricle by a constriction and adhesion about the calcar avis.

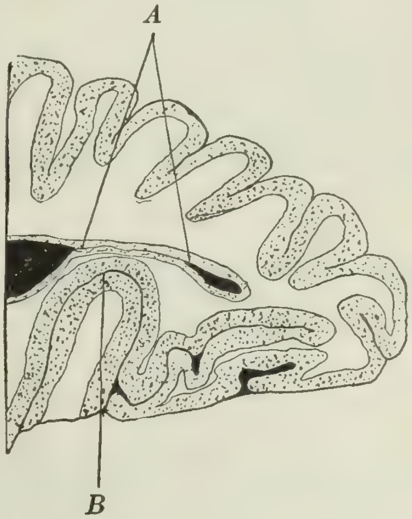

Fig. 6

Fig. 6. Cut similar to Fig. 5. *A*, long adhesion. Tip of posterior horn is open because it is beyond the influence of *B*, calcarine fissure.

2. In a large percentage of cases the adhesion of the walls is complete throughout the occipital lobe, making the so-called short horn. The ependyma, however, remains on the two adherent walls and can always be seen in this position, proving that this part at one time during development was occupied by the cavity which has since become obliterated.

3. In a large percentage of cases the tip of the posterior horn has a very narrow communication with the rest of the lateral ventricle, and, on account of the thinness of the wall about the calcar avis, any change in pressure is likely to close this aqueduct and produce a temporary disturbance in the circulation of cerebrospinal fluid, and might it not give rise to pain or other symptoms?

4. Any of the above conditions would obstruct the circulation of the cerebrospinal fluid.

5. When the posterior horn is entirely or partially closed by adhesion of the walls, any in-

crease of internal pressure would tend to break the adhesions and re-establish the normal posterior horn. Might not such straining on the adhesions give rise to pain or other symptoms?

6. That the calcarine fissure and the cerebellum, which modify so much the shape of the posterior horn, are developing rapidly about the time of the appearance of convulsions in infants is an interesting coincidence, especially taken in consideration with the case briefly mentioned in this paper.

7. The large proportion of anomalies in the posterior horns of brains from institutions is significant.

8. In all cases the ventricle should extend far into the occipital lobe, and traces of its having been there at one time during development are always to be found.

9. The relationship of the optic radiation and other structures to the posterior horn are important facts for consideration in connection with the causes of temporary scotoma and migraine, and possibly other conditions.

10. The condition of the posterior horn should be examined in all cases of obscure cerebral diseases or mental disorders.

I wish to thank Professor Dwight and Dr. Warren for the material used in this study.

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CHEMICAL EXAMINATION OF THE FECES OF INFANTS AND CHILDREN AFTER GASTRO-ENTEROSTOMY.

BY FRITZ B. TALBOT, M.D., BOSTON.

(From the Department of Theory and Practice of Physic, Harvard Medical School.)

THE following investigation was undertaken, at the suggestion of Dr. Charles L. Scudder, upon specimens obtained from cases operated upon by him and upon other material collected from a wide territory. The object of this study was primarily to determine whether or not gastro-enterostomy, performed on babies with benign pyloric stenosis, modified the digestion of fat, starch and protein. It was hoped that accurate data of the amounts and quality of the food could be obtained. The patients, however, were not under the writer's control, and it thus was impossible to make this a metabolism experiment. The parents or physicians in charge of the patients were requested to collect all the stools, free from urine, passed during a period of three days. There was no attempt to mark off the beginning and end of the three days with carmine. The specimens were placed in glass jars and sent to the writer by express, some of them arriving the next day, and the most distant one taking five days. They were all collected during the cold weather of the winter of 1908–1909, and were, therefore, chilled or frozen when received. They were thawed out, thoroughly mixed up, and examined microscopically for muscle fibers, connective tissue, starch and fat. Muscle and connective tissue were looked for in an unstained cover glass specimen, and starch in a specimen stained by Lugol's solution. The estimation of fat under the microscope will not be recorded, because the chemical examinations recorded in the accompanying table give accurate figures.

The character but not the quantity of the food during the three days was known in all but two instances. These were two five-months-old babies which were probably fed on milk in some form. The diets of Case 3 and Case *a* included all kinds of meat, and Case *e* and Case 2 chicken only. None of the stools from these contained an excess of muscle fiber or connective tissue. All but Case 6 and Case *f* took starch in some form, and none of the stools showed starch either by the macroscopic or microscopic test with Lugol's solution.

Cases 1, *f* and 4 were said to be "constipated, but otherwise well." The rest were reported "perfectly well."

In spite of the fact that the data were not as accurate as could be wished, because the patients were not under the writer's control, because the quantities of the food components were not recorded, and because the urine was separated from the feces by untrained observers, the stools were dried down and examined chemically for fats and nitrogen, according to a modification of Fr. Müller's method, described in the BOSTON MEDICAL AND SURGICAL JOURNAL, June 11, 1908, page 906.

The work of Camerer, Hartmann, Escherich and Rubner shows that the quantity and quality of the food ingested may cause wide variations in the amounts of feces excreted. The weights of the stools of these patients after gastro-enterostomy when compared with these figures all come within the normal limits. In comparing the total weight of stools passed per day with those for corresponding ages collected by Schmidt and Strassburger, the results do not show a great variation from the normal.

The percentage of nitrogen is also influenced by the quality of the food given. According to Biedert, it varies from 4.23% of the dried stool in bottle-fed babies to 5.28% of the dried stool in breast-fed babies. The percentages are somewhat higher on the average adult diet, ranging from 5 to 8%. If these figures are representative of all normal conditions, the percentages of nitrogen in the above table are within the variations of the normal. Three only approach the highest limit. It is safe to say, therefore, that none of these specimens show a marked increase in the amount of protein excreted.

Cases *c*, 1 and *d* contained a higher percentage of total fat in the dry stool than would be expected in normal children of the same age. The others were well under the normal limits. According to Fr. Müller, 75% of this fat should be split into fatty acids and soaps, or, in other words, less than 25% of the total fat of the dried stool should be in the form of neutral fat. Cases 6, *f*, *b*, 4, *e*, *a* and *d* were very close to or within this arbitrary limit of 25% of neutral fat; on the other hand, Cases *c* and 3 were considerably above the normal, and Cases 1 and 2 were markedly above the normal. The splitting of the fat is not completed in the usual manner in these four cases, and the percentage of nitrogen, though not outside of normal limits, was close to the high limit. In Case 1 the fat alone was apparently at fault.

The writer was fortunate enough to get all the stools excreted by a five-weeks-old baby from the time of his operation, Jan. 24, to Feb. 3, 1909. The baby was fed almost immediately after the operation on breast milk in increasing amounts and did perfectly well.

In this instance the total fat in the dry stool, which was at first over 50%, quickly fell to normal. The splitting of the fat was complete only in stool No. 2 and the percentage of nitrogen does not suggest a deficient utilization of the protein. I have no normal stools of the first days of life with which to compare these figures. They show, however, marked improvement during the ten days under observation.

According to clinical reports all these children are perfectly well and have gained weight satisfactorily. The chemical and microscopic examinations of these stools show that in the majority of cases the digestion is normal. It is evident that if there is any indigestion it is more probably of the fat, and that chemically and microscopically there are no signs of marked protein or starch indigestion.

Table I.

Name.	Age at operation.	Age at time specimen was sent.	Total weight.	Total dry weight.	Per cent nitrogen in dry stool.	Per cent total fat in dry stool.	Per cent neutral fat in dry stool.	Per cent fatty acid in dry stool.	Per cent soaps in dry stool.	Per Cent of Total Fat of		
										Neutral fat.	Fatty acid.	Soaps.
(6) Nutting	7 wks. 5 days	5 mos.	64	13.503	2.80	38.0	10.8	7.2	20.0	28.4	18.	53.6
(*f*) Thomas	5½ wks.	5 ,,	75	11.004	3.10	34.4	6.6	4.0	23.8	19.1	11.3	69.6
(*b*) Burke	3 ,,	1 yr.	155	34.484	2.90	20.8	6.2	4.0	10.6	29.8	19.1	51.1
(4) A. F. S.	14 days	1 ,, 4 mos.	250	34.935	3.78	17.6	2.4	5.2	10.0	13.	29.0	58.0
(*c*) Martin	50 ,,	1 ,, 6 ,,	85	18.344	5.20	44.0	16.4	20.4	7.2	37.2	46.3	16.5
(*e*) Smith	72 ,,	1 ,, 6 ,,	135	30.334	4.06	38.2	10.6	14.2	13.4	27.7	37.1	35.2
(3) Colby	22 ,,	2 yrs. 5 mos.	180	34.8	6.10	16.6	6.0	6.2	4.4	36.1	37.2	26.7
(*a*) Arnold	10 wks.	3 ,,	240	51.004	4.80	37.8	11.2	7.4	19.2	29.6	19.6	50.8
(1) Wales	14 days	3 ,, 5 ,,	205	32.308	4.80	49.4	22.4	14.8	12.2	45.3	30.0	24.7
(2) Larrabee	24 days	3 ,, 8 ,,	185	42.865	5.60	26.8	11.2	8.4	7.2	41.4	31.3	27.3
(*d*) Sawyer	....	....	280	75.288	2.40	42.2	10.4	5.0	26.8	24.6	11.9	63.5

Table II.

(7) Mathews (1)	5 wks.	5 wks.	5	.876*a*	4.40	57.8	29.2	17.4	11.2	50.5	30.1	19.4
,, (2)	5 ,,	5 ,,	?	3.649*b*	5.46	37.0	10.2	20.8	6.0	27.5	56.2	16.3
,, (3)	5 ,,	5 ,,	?	.802*a*	5.86	12.2	5.2	3.6	3.4	42.6	29.5	27.9
,, (4)	5 ,,	6 ,,	15	2.335*b*	6.06	21.6	7.0	7.4	7.2	34.2	33.4	33.4
,, (5)	5 ,,	6 ,,	19	2.990*b*	5.23	21.2	7.6	6.4	7.2	35.8	30.1	34.1

(*a*) Excreted during 24 hours. (*b*) Excreted during 72 hours.

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Clinical Department.

CANCER OF THE STOMACH; PYLORECTOMY; REPORT OF CASE.

BY BENJ. B. CATES, M.D., KNOXVILLE, TENN.

In presenting this paper for consideration to the Tennessee Medical Association, it is not my purpose to show anything new in regard to treatment, or to elaborate as to the theories presented by the different schools as to the cause of cancer of the stomach.

Suffice it to say, no known therapeutic agent has ever cured cancer of the stomach, and that all, or nearly all, cancers of the stomach show a precancerous history of derangement of the stomach at some period of the patient's life. Since, then, this being so, it is reasonable to assume that cancer of the stomach is strictly a surgical disease. It is by a knowledge of these things and a proper presentation of the subject to our patients that we may hope to prevent that which we cannot cure. It is relatively only a few years since the world awoke to the evil effects of delayed operation for appendicitis and the many good results following operation for this condition, so that to-day it is rare to find a victim of this malady who dreads surgical measures for his relief. In like manner by agitation may we hope to stimulate the profession to educate the public to the danger of delay and the good results following operation in stomach diseases. In such circumstances I hold that a patient who has for any length of time suffered from stomach trouble, the symptomatology of which points to catarrh or ulcer, and which after a reasonable lapse of time does not yield to therapeutic measures, should be recommended for surgical treatment.

The only apology I have to offer in presenting this case is to substantiate in a measure my preliminary remarks, in that this patient showed a long precancerous period of stomach trouble, and, had he harkened to the advice of his family physician when first told he had cancer of the stomach, would perhaps have lessened the dangers of operation and increased the chances of prolonging his life by removing the sore before extensive infection of the lymphatic system had taken place.

The report, in brief, is a history of a patient of Dr. S. B. Hall, of Clinton, Tenn., who was referred for special examination to Dr. Charles P. McNabb, of Knoxville, Tenn., who, in turn, referred him to me for operation.

The report of Dr. McNabb is also appended; likewise the report of Prof. A. J. Smith, pathologist in the medical department of the University of Pennsylvania.

J. M. C., of Clinton, Tenn., male, farmer by occupation, aged fifty-one.

Family history. — Father died of consumption at fifty-one; mother, aged seventy-six, living and in good health; one brother died in childhood; one sister, aged forty, living and in good health.

Personal history. — Always a hard-workhing man, temperate and irregular at meals; eighteen years ago began having sick spells a short time before meals (occasionally would vomit a slimy fluid, which always would relieve him), which would be relieved on eating. These spells became more frequent and more severe; finally would come on at night — near midnight.

In December, 1907, on account of pain in the stomach after eating, he consulted Dr. S. B. Hall, of Clinton, Tenn. Two or three times a week he would vomit an hour or so after meals; the vomitus looked like the white of an egg. From that time on he declined in health, losing flesh and strength. In November, 1908, he again consulted Dr. Hall, who told him he had cancer of the stomach. Two or three days after he saw Dr. Hall he had a severe vomiting spell, the vomitus consisting of partially digested food, and the quantity seemed to be what he had eaten for several days. He was then easy for a short time. In two or three weeks he again had a vomiting spell of a large amount of undigested and retained food. He had four attacks like this at intervals of two or three weeks between November, 1908, and the time of his operation, Feb. 11, 1909. Feb. 11, 1909, I did a posterior gastro-enterostomy (no loop) with sutures, and pylorectomy by the Mayo or Billroth's No. 2 method. He recovered from the operation and went home in four weeks, gaining in flesh and strength every day. I was assisted in this operation by Dr. J. H. Morton, of Knoxville, Tenn., and Dr. Harry Feagles, of Seattle, Wash.

DR. MC NABB'S REPORT.

J. M. C., farmer, aged fifty-one; examined Jan. 27, 1909; height, 5 ft. 11 in.; weight, 135; emaciated and skin pale; pulse, 95; tension, low; temperature, 98.4; tongue coated with heavy grayish fur; breath, fetid; teeth in poor condition; heart, arteries and veins, negative; lungs, pleura and other organs of respiration, normal; urine, negative; blood examined by Hematokrit: red cells, 3,400,000; white cells, 7,000; differential count not made; hemoglobin, 60.

Inspection and palpation of abdomen showed a hard, nodular tumor in pyloric region, which was movable to some extent. Peristaltic waves from left to right were visible and showed outlines of stomach with descent and dilatation.

Gastric analysis showed dilatation and motor insufficiency and absence of free hydrochloric acid and decided lactic acid reaction. Boas-Oppler bacillus not observed.

Examination for " occult blood " negative.

Examination of bowels, rectum and anus, negative.

Fecal analysis not made.

Diagnosis. — Scirrhous carcinoma of pylorus and lesser curvature. Referred to Dr. B. B. Cates for operation.

PROFESSOR SMITH'S REPORT.

No. 2514. A specimen received from Dr. Benjamin B. Cates, 508 West Clinch Ave., Knoxville, Tenn.

Source. — Operation.

Name and address of patient. — J. M. C.

Clinic data. — Cancer of stomach, pylorectomy.

Operation. — February, 1909. The patient got well and is gaining flesh and strength every day.

Has been examined in this laboratory and presents the subjoined features.

Diagnosis. — Adeno-carcinoma of stomach with metastases of the lymph nodes of the greater and lesser curvature.

Gross and Minute Appearances.

Specimen consists of lower end of the stomach removed by operative procedure. The segment of the stomach including pylorus is 11 cm. in length, the transverse diameter of the upper portion measuring 7 cm., the wall at this point being but 6 mm. thick and the mucosa showing here a mosaic-like appearance of hypertrophy of the epithelium and shows but few rugæ. The tumor mass begins 3 cm. from the line of incision and rapidly swells up so as to apparently completely obliterate the lumen of the organ. The mass as it reached this laboratory in formalin shows a rough, apparently ulcerated, dirty gray granular surface. The intestinal end of this specimen is 3 cm. in transverse diameter and shows a markedly thickened mucosa; the peritoneal surface shows the tabs of numerous adhesions and about the greater curvature the adherence of a moderate number of distinctly enlarged lymph nodes. Consistence of the entire substance is firm, possibly as a result of the preservation.

Sections for microscopic study made from stomach and two lymph nodes.

Section of stomach shows none of original cellular arrangement of a normal stomach, the tissue being made up of a mass of connective tissue, the fibrillæ of which are fairly widely separated by a moderate amount of edema. This connective tissue is poor in nuclei but richly infiltrated with lymphocytes and plasma cells. Supported by this connective tissue recticulum is an irregular mass of epithelial cells arranged for the most part as irregular acini which show the epithelial lining made up in some parts of a single layer of columnar epithelial cells, but more often by several layers of epithelial cells which are generally of oval and columnar type. In part these acini are fairly well defined within a basement membrane, but in numberless instances penetration of the basement membrane has taken place and the growth has taken the form of an epithelioma and the formation of irregular areas of epithelial cells devoid of any semblance of the acini arrangement are to be found. The lumina of the acini show granular detritus made up largely of fragmented nuclei, chromatin and, to a certain extent, a pink-stained material and in a few cases of finely granular blood-stained mucinous material. The cells throughout show evidence of active proliferation, karyokinetic figures being frequent. A few fuchsin bodies are also noted. The tumor is but poorly vascularized and shows only a few vessels here and there in the section.

Section of lymph nodes, one from the lesser curvature, the other from the greater curvature of the stomach.

They both show essentially the same arrangement; there is a thickened, fibrous capsule, which has undergone hyaline transformation and shows a few nuclei, but is moderately richly infiltrated with lymphocytes and plasma cells. The lymphocytic elements of the nodes have been almost completely replaced by an irregular acinous epithelial formation similar to that described in the stomach wall, but somewhat richer in connective tissue. Here and there a few islands of lymphoid tissue are to be found showing an arrangement so loose as to be suggestive rather of lymphoid pulp than of follicles or of germinal centers. These are not sharply outlined and are encroached upon by a glandular proliferation. Karyokinetic figures are not so common in these metastases as in the primary growth.

A second section of lymph node is like the first except that a few more lymphoid cells remain in the body of the node than in the other section.

Reports of Societies.

AMERICAN LARYNGOLOGICAL ASSOCIATION.

Thirty-first annual meeting, held in Boston, May 31, June 1 and 2, 1909, **A. Coolidge, Jr., M.D.**, President; **James E. Newcomb, M.D.**, Secretary.

NERVE DISTRIBUTION IN RELATION TO NERVE REFLEXES SIMULATING LOCAL INFLAMMATION.

By **Dr. Arthur Ames Bliss**, Philadelphia.

The fifth and eighth cranial nerves, by their distribution, and the intercommunication of their branches and sympathetic ganglia, are responsible for the " reflexes " of the head and throat that lie in wait to deceive the rhino-laryngologist and aurist. The paper outlines the distribution of these various nerves, cites clinical cases where errors have been made or might be, and warns, especially, against the danger of operative work on the ethmoid sinuses or frontal or sphenoidal sinuses, without first excluding the possibility that in acute influenza, for instance, the apparent sinusitis may not be a neuralgia or neuritis of the trifacial nerve; more particularly, of its ophthalmic or superior-maxillary divisions. Reference is made to the rare but troublesome cases of mastoid soreness caused by irritation of the auricular branch of the pneumogastric nerve, Arnold's nerve, joined by filaments from the glossopharyngeal nerve. Reference is made, also, to the so-called " laryngeal coughs " of purely otic or nasal origin, due to irritation of the otic ganglion, Meckel's ganglion, or the naso-palatine nerve. " Reflex " cough caused by enlarged or diseased tonsils is explained by the relation of the external laryngeal nerve as a sympathetic to the glosso-pharyngeal and pneumogastric nerves conjoining in the pharyngeal plexus. The paper refers to the distressing cough occurring in some cases of enlarged cervical lymphatic glands caused by irritation of the superior laryngeal nerve from pressure of these glands on the nerve in its passage along the side of the pharynx behind the internal carotid artery. The paper closes with a warning against a too-excessive zeal for operative surgery, which may lead the physician astray in diagnosis, when he fancies that all symptoms must be based alone on the existence of local inflammation or suppuration.

Dr. Otto T. Freer, of Chicago, considered this paper the clearest and best presentation of the subject from an anatomical and general standpoint which he had encountered. He also wished to confirm some of the statements. He considered that pain in the region of the frontal sinus was more often due to suppuration of the antrum of Highmore than to suppuration of the frontal sinus. He stated that it had been his experience to find a rise of temperature in these cases. He has found very trivial catarrhal conditions to produce very obstinate nasal coughs. Dr. Freer wished to know which was the correct term, " sinusitis " or " sinuitis."

Dr. W. L. Ballenger, of Chicago, said that in reference to the word " sinuitis," in writing his textbook he had had a letter from Professor Duane stating that sinuitis is the more correct term, although the other has been used so long that it might be regarded as correct.

HEMOPHILIA WITH REMARKS ON THE HEMORRHAGIC DIATHESIS. CASE REPORTS.

Dr. Hubbard reported a case of post-operative hemorrhage following tonsillectomy and adenectomy which presents clinical picture of hemophilia, and later evidence of heredity were discovered.

Boy of four bled on and off for fourteen days, both tonsillar fossæ, epipharyngeal space and nares taking part. Compression forceps were used in all fourteen hours in tonsillar fossæ, and adenoid region was treated with Monsel's solution on cotton swab, using Killian self-retaining speculum to aid in locating bleeding area. Hemorrhages were finally controlled by the method of anticipating the bleeding and making application of Monsel's solution on swab.

Treatment included administration of lactate of calcium 30 to 90 gr. daily. Gelatin solution a pint daily.

Case report: Scorbutus epistaxis.

Girl of ten, scorbutic for months. General symptoms and local hemorrhages. Epistaxis for three days to extreme exsanguination. Local treatment useless until general treatment, especially liberal diet, brought her out of state of malnutrition.

Diagnosis involved hemophilia, scorbutus and purpura hemorrhagica.

Hemorrhagic diathesis represented by purpura, scorbutus and hemophilia. The two former distinctly pathologic, probably due to micro-parasitic agency, and hemophilia non-pathologic. An intensely hereditary and permanent condition.

Females are conductors and males are " bleeders." Proportion: 1 female to 13 males manifest the tendency. Difficulties of getting accurate family histories.

Serum treatment highly extolled; fresh horse serum helps to maintain circulation medium and restores to a degree the coagulability of blood. Trial dose of 1 ccm. recommended as test for idiosyncracy.

Transfusion after method of Crile, as described in his book " Hemorrhage and Transfusion," may be specific in true hemophilia.

CLINICAL EXPERIENCES WITH CALCIUM LACTATE IN HEMORRHAGES OF UPPER RESPIRATORY TRACT.

By **Dr. W. K. Simpson**, of New York.

Based on the experience of Wright, of London, and others who by laboratory tests and clinical use found that the calcium salts, especially the lactate, had a decided influence in increasing the calcium content of the blood, thereby hastening the period of coagulation both in normal and hemophiliac patients, the author decided to try its efficacy in hemorrhages as they might present, and also with the idea of trying to lessen the dangers of bleeding from operations, especially in the operations for removal of tonsils and adenoid vegetations. The cases treated were mostly severe forms of epistaxis wherein there was a lengthened period of coagulation, one case particularly in which the patient had been the subject of severe forms of epistaxis for many years, and with whom all known measures had been carefully tried with but temporary effect. This patient came from a family of bleeders. The effect of the calcium lactate in this patient was immediate and very marked indeed, both in shortening the period of coagulation, as shown by tests, and controlling the bleeding. The control effect has continued over a period of three and a half years, during which time he has almost continuously taken the calcium salt with an almost constant freedom from hemorrhages, save as they may occur as result of accident or diet. The mucous membrane of the nose in the meantime has improved greatly in its appearance, being at the present time of a more or less homogeneous healthy type, in contrast to the former unhealthy condition; at present it may be manipulated with the cotton applicator with comparative impunity, whereas formerly the slightest touch would bring on severe hemorrhage.

The control of hemorrhage from operations for removal of tonsils and adenoids was based on a series of seventy-five cases in which the calcium lactate was given before and after the operation, with the result that there was a decided effect in the major number of instances at the time of operation, and in preventing or lessening the danger of after-bleeding. Especially was this noticed in those cases wherein a general anesthetic was given, it being a well-known fact that bleeding from these operations is much more profuse when a general anesthetic is used than when they are done without anesthesia. In a very large number of these operations in hospital and dispensary practice, not including the above, it was a fact, much stronger than coincidence, that serious hemorrhages occurred only in those cases in which the calcium salt was not used. These were five in number, one of them occurring, as it was subsequently found out, in a patient in which there was a family history of bleeding under a similar operation. The bleeding was profuse and extended over a period of days and was decidedly controlled by the lactate; the rapid coagulation could be plainly seen occurring on the surface of the tonsil during the term of treatment.

The author realizes the fact that both epistaxis and hemorrhages from these operations may cease spontaneously, but nevertheless the cases cited were such that there is no doubt whatever of the effect of the calcium lactate in the hemorrhage control. The continued use of the lactate does not seem to have any untoward effects.

The dose in an adult may be 60 gr. as an initial dose, repeated once in twenty-four hours, or 30 gr. three times a day, to be taken in half glass of water, and best taken when the stomach is free from food, and continued or varied as effect may determine. In children the dose may be proportionately lessened according to age, giving 30 or 20 gr. as a first dose, and then continuing with 20 or 10 gr. three times daily.

In operative cases it is best to give the salt three days previous to and three days after the operation. A reliable preparation is very necessary, and that prepared by Merck seems to be the best.

Despite the favorable results in the author's experience, as well as in the experience of others, contrary and negative results are recorded, and the author gives somewhat in detail the confirmatory and opposing views and results as gleaned from the literature.

The author's conclusions are as follows:

1. That calcium lactate has an influence (perhaps variable in some instances) in diminishing the period of coagulation.
2. That it is efficacious in controlling hemorrhage in normal as well as hemophiliac patients.
3. That it is beneficial in the control of hemorrhage for operations for the removal of adenoids and tonsils.
4. That it should always be given in the conduct of these operations.
5. Inquiry should always be made relative to the hemorrhagic diathesis before these operations are performed.
6. In cases of a hemorrhagic diathesis it is questionable, if not contra-indicated, whether the operation should be undertaken.

Dr. G. Hudson Makuen, of Philadelphia, said there was nothing which excited more interest than hemorrhage, whether occurring during or after operation. It has been his experience that the more radical the operation upon the tonsils, the more copious the bleeding. He does not fear this contingency, however, since he has found it easy to control the hemorrhage by catching the bleeding point and putting a ligature around it, or even a suture through the pillars. He is of the opinion that for a tonsillectomy all patients should be given a general anesthetic, as it is then easier to control the hemorrhage if it occurs, and makes the operation easier of performance. He reported a case illustrating this point in a patient who was not known to be a bleeder, but where the hemorrhage was so profuse that he had to be sent from his office to the hospital, as, on account of the patient's gagging and coughing, he was unable to catch the bleeding point to place a ligature around it.

Dr. George B. Wood, of Philadelphia, mentioned a recent case in which the hemorrhage was stopped by sewing together the pillars by two or three stitches, and the administration of thyroid extract. He has been much impressed by the value of this agent in cases of hemorrhage, and is now in the habit of giving it two or three days previous to operation on all suspicious cases of hemophilia.

Dr. G. L. Richards, of Fall River, said that as a result of an investigation regarding the usefulness of calcium lactate he could report that the general opinion was that it was valuable.

Dr. C. G. Coakley, of New York, cited a case of a woman with a large adenoid who presented a history of hemophilia. Before removing the adenoid he gave her 30 gr. of calcium lactate every four hours for forty hours, and there was no more bleeding than one would generally expect in such an operation.

Dr. N. H. Pierce, of Chicago, said he thought great care should be taken in all tonsillar cases to obtain as careful a history of a tendency to hemophilia as possible. He referred to a case operated upon by him in which the clotting time of the blood was lowered, and which he treated prior to operation with calcium chloride for a week, with the result that at operation there was even less hemorrhage than is usually found. He mentioned a second case of a woman whose tonsil he removed with subsequent profuse bleeding, but who returned to him for the removal of the other tonsil, and in whom he used calcium chloride for ten days, with the result that there was but slight hemorrhage at the time of the second operation. He believes that calcium, either lactate or chloride, has a distinct influence in lessening the hemorrhage in tonsil and adenoid cases.

Dr. J. O. Roe, of Rochester, said that, long before calcium chloride was brought forward, he had been in the habit of using chloride of sodium on the theory of the lowered specific gravity of the blood. With reference to hemorrhage following operations upon the tonsils, this he has always been able to control by thorough packing, even in hemophiliacs.

Dr. Emil Mayer, of New York, said that, unfortunately, the histories given by patients could seldom be relied upon as to the tendency to hemophilia. He referred to a case many years ago in which he, with the late Dr. Ash and Dr. C. H. Knight, spent twenty-four hours in relays in digital compression after the removal of a tonsil. He believes that much is now being done to alter the coagulability of the blood, and that very soon it will be possible to so regulate this as to do away with the danger of hemophilia.

Dr. A. A. Bliss, of Philadelphia, considers it a question whether it is justifiable to operate in cases where hemophilia is suspected for such conditions as hypertrophied tonsils and adenoids. He also referred to the great difficulty in obtaining a history of hemophiliac tendencies.

Dr. W. E. Casselberry, of Chicago, stated that in his experience chloride of calcium had been without the slightest effect in several cases. He suggested the probability of a local influence in these cases of hemorrhage aside from hemophilia, scorbutus or the coagulating rapidity of the blood, in the form of a small arterial twig which fails to cicatrize with solidity. He advocates the precaution of being provided with every appliance and enough manual dexterity to cope with hemorrhage in such cases where calcium lactate proves of no avail. He has had no experience with lactate of calcium, having only administered chloride of calcium, from which he had no brilliant results.

Dr. H. L. Swain, of New Haven, said that he was of the firm belief that every hemophiliac had a different variety of blood vessel from the ordinary person. If the case be one of hemophilia due to irritability of the vessel wall, and not to lack of coagulability of the blood, calcium lactate can be given without effect, while in other cases, such as those mentioned by Dr. Simpson and Dr. Roe, there will be an immediate effect from the administration of the drug.

Dr. R. C. Myles, of New York, considers there are different types of hemophiliacs; in other words, that one is not a true hemophiliac until he has lost a certain amount of blood. He has found that, in cases of hemorrhage, instead of packing with gauze, if a smooth material such as gutta-percha tissue is used, the bleeding will stop. He believes the lack of proper and early control of hemorrhagic conditions has been a large factor in the serious after-effects so often encountered. He firmly believes in the principles of pressure and ligature for the arrest of hemorrhage.

Dr. Thomas Hubbard, of Toledo, called particular attention in his remarks to the fact that there is no pathological anatomy of hemophilia up to date, it being simply considered an hereditary condition.

Dr. W. K. Simpson, of New York, stated that in reading over the subject of calcium lactate he found mention of an opposite condition. Citric acid is said to produce just the opposite condition from calcium salts, and this he found borne out by the experience of two patients of his, who, after eating plentifully of grape-fruit, which contains a great deal of citric acid, had frequent and alarming hemorrhages.

THE ETIOLOGY AND TREATMENT OF DENTIGENOUS CYSTS.

By Dr. D. Crosby Greene, Jr., of Boston.

The etiology of dentigenous cysts is explained by a study of the development of the teeth. The anlage of the tooth is an ingrowth of the epithelium of the jaw into the mesoderm. A bit of this epithelium is to be conceived of as being pinched off from the rest and becoming thus an island of isolated epithelial tissue, which later starts to grow in an atypical way, forming a fibro-epithelial cyst.

The treatment based on the histogenesis of these tumors consists in the thorough removal of the epithelial lining and subsequent drainage. In the case of small cysts this may be satisfactorily done by incision and thorough curettage and packing. In large cysts it is more satisfactory to close off the mouth opening and drain into the nose by way of the antrum. The writer reports a case in which the cyst was enucleated almost intact.

Dr. George B. Wood, of Philadelphia, referred to a case of dentigerous cyst of the upper jaw almost as large as a hen's egg, which he enucleated completely. The cyst took the place of the floor of the nose, was covered above by nasal epithelium and below by the mucous membrane of the roof of the mouth. After its enucleation the mucous membrane of the nose came in apposition with the mucous membrane of the mouth, almost obliterating the cavity. The wound healed in about two months.

Dr. W. E. Casselberry, of Chicago, referred to the question of differentiation in the diagnosis between dentigerous cysts and hydrops antri, stating that several years ago he had reported some cases before the association under the name of serous disease of the antrum. He has been greatly puzzled by this differential diagnosis.

Dr. N. H. Pierce, of Chicago, said that dentigerous cysts are divided histologically and pathologically into two divisions, one class arising from inflammation and the other from errors in embryology. The former type are usually removed early by the dentist, while the latter type may take on the most remarkable and various shapes. He did not believe such a condition as hydrops of the antrum existed.

Dr. J. H. Bryan, of Washington, did not agree with Dr. Pierce in regard to the non-existence of hydrops of the antrum, for he had been able to prove its existence. In this case there was a closure of the maxilla and marked destruction of the antrum wall and decided crepitation on palpation; under aspiration serous fluid was withdrawn and no connection found with the teeth.

Dr. D. Bryson Delavan, of New York, thought it would be interesting to learn what relation dentigerous cysts bear to the unusual expansion found in the ethmoid cells and middle turbinated body.

Dr. D. Crosby Greene, Jr., of Boston, said with regard to the differential diagnosis between cyst and hydrops that washing out of the cyst by puncture under pressure would probably clear up the diagnosis. In case of cyst you will get no fluid from the nose through the bulging in the mouth; if necessary, a puncture could be made into the antrum intranasally, and then if the puncture did not result in fluid coming from the nose one could see the cavity was not the antrum. With regard to transillumination in cases of dentigerous cysts, he stated that here the bone is paper-like, and transillumination is very light in comparison with the unaffected side. He stated that there are a great many varieties of cysts of the jaw due to irregularities in the development of the teeth, and dentigerous rather than dentigenous is considered the correct name for these cysts, as it implies arising from the teeth, or cystic odontoma.

A NEW METHOD OF PACKING THE NOSTRIL, DESIGNED TO PREVENT POST-OPERATIVE HEMORRHAGE, AND A NEW QUADRIVALVE SELF-RETAINING NASAL SPECULUM.

By Dr. W. E. Casselberry, of Chicago.

The fact that plugging the posterior naris will succeed in stopping a nasal hemorrhage of dangerous degree, even though an anterior pack alone may have failed to do so, is due to the ring-like conformation of the choana, against the bony edge of which the posterior nasal artery and its branches will be compressed by any plug which firmly fills the choana, but the painfulness of bare gauze, during insertion and withdrawal; its adhesiveness, which tends to cause hemorrhage anew if removed under forty-eight hours, and its liability to favor infection, leading to an abscess of the ear, precludes its use excepting to meet an urgent necessity. It is obvious, therefore, that a preventive tampon of a form which, while affording safety from hemorrhage, would be in itself safe, and which, though inserted by the easier route from in front, would embrace the merits without the demerits of the posterior plug, would serve to extend the benefits of nasal surgery and to lessen the anxieties of the surgeon. In seeking to meet these requirements I gradually developed the following method: The tampon is composed of a rubber finger cot or, preferably, as I have now perfected it in shape by a bulbous expansion of its closed end, or what might be called a club-finger cot, which, after insertion into the nostril, is filled by means of an ordinary tubular gauze packer with a strip of sterile gauze one and a quarter inches in width by a yard or more in length. The packer ready armed with gauze is used first as a stem on which the rubber case is carried into place, extending from front to back in the nostril with the closed bulbous end overlapping the choana, into the nasopharynx. Then at the start it should be packed with special firmness in order to form the posterior plug by an overdistention of the closed expanded end of the special club-finger cot. An ordinary finger cot of large size, or one cut from a surgeon's rubber glove, can be made to serve the purpose almost but not quite as well by extra firmness albeit gentleness in packing the rear end.

Not only does the encasing of the gauze in rubber render the tampon comparatively free from the pushing and pulling requirements of uncovered gauze during its insertion and withdrawal, but its smooth surface permits of a ready detachment from the wound usually by the end of eighteen hours, and being for the most part non-absorbent, it resists putrefactive changes, experience indicating its use for this brief period to be free from danger to the ear or nasal accessory sinuses.

Its efficiency will be found to vary as with other tampons in accordance with the degree of compactness and dexterity with which it is inserted. I have employed it in about 75 private cases, consisting mostly of operations on the turbinals, septum, ethmoid and other accessory sinuses, which number ordinarily would have given occasion for several emergency calls to stop hemorrhages more or less severe, whereas in only one of them did the tampon fail to fulfill its purpose, and in that one for the reason that, in order to minimize the discomfort, the filling of gauze inside the cot had been left too loose. It was this incident which led to perfecting the plain finger cot then used into the club-finger pattern, in order that its bulbous extremity when overdistended with gauze might compress the posterior vessels against the ring-like boundary of the choana in the same manner as a regular posterior plug.

The primary purpose of this method of packing the nostril is to prevent hemorrhage. Not being equal to free gauze in coaptability to a highly irregular surface, nor in extreme power of compression, one can see that it might not be capable of stemming the tide in full flow; nevertheless, it is confidently expected that in the majority of cases experience will prove it to be capable of control as well as prevention.

A NEW NASAL SPECULUM.

The nasal speculum shown is the first presented to have four connected blades instead of two or three, and is strongly self-retaining. While generally useful it is particularly adapted for operating under general anesthesia, as it retains itself persistently despite the manipulations of the anesthetist and assistants.

The two pairs of blades are detachable, but before insertion, and while *in situ*, they are securely linked together, which has the effect of each holding the other in place. Leverage on either one of the arms suffices to slant all four blades at once, but no amount of leverage will cause any blade to slip out of the nostril. The blades fit between each other when open and lock compactly when closed for introduction. The key to the device lies in the revolving movement given the two connecting links attached to the arms of the vertical spring, and success in its use depends on the unequal turning of the links each to the site suitable for passing through it the corresponding connecting bar of the other pair of blades.

SURGERY OF THE ESOPHAGUS. THREE ESOPHAGEAL CASES.

By Dr. H. P. Mosher, of Boston.

The author presented three cases, two cases of stricture of the esophagus and one of diverticulum, in order to illustrate modern methods of diagnosis and treatment as carried out by means of the esophagoscope.

Case No. 1. Three months after drinking a caustic solution a boy two years old developed marked difficulty in swallowing. Only the smallest bougie could be passed, and this was introduced with difficulty. Under ether a stricture was found at the cardiac end of the esophagus. Through the esophagoscope this was dilated up to 20 F. with soft bougies and then from 20 to 35 F. with the mechanical dilator. Since the dilatation under ether a 35 F. soft bougie has been passed regularly without ether. The boy is now well nourished and swallows everything without difficulty except meat.

Case No. 2. A young woman of thirty had difficulty in swallowing for fifteen years. For this period the greater part of everything which she ate was regurgitated about an hour and a half after it was taken. The fluoroscope and the x-ray showed a stricture at the lower end of the esophagus and a dilatation above it. Under ether the whole esophagus was found to be dilated, especially the lower end. The opening into the stomach was easily discovered and easily dilated with the mechanical dilator to 45 F. A small bullet was then wound with thread and carried directly into the stomach and left there. The upper end of the thread was brought out of the mouth and retained against the cheek with adhesive plaster. In forty-eight hours the perforated olive pointed bougie of Mixter was passed on the thread and then the two largest olives of the set carried down on the metal guide. In ten days the metal guide was passed without the string and the olives run down upon it. The regurgitation of food stopped after the third day. In two weeks the patient was eating everything, only taking care to chew her food thoroughly. This case of fifteen years' standing was diagnosed under ether in as many minutes, and the necessary steps for the relief of the condition which was found were carried out before this time was doubled. The time consumed is given only to emphasize the ease and directness of the examination and the treatment.

Case No. 3. A woman in the cancer age gave a history which dated back a few years and suggested a small pouch. For at least a year she had suffered from a fermentative disorder of the stomach which called for the passing of the stomach tube. At the last attempt to pass the tube the maneuver failed. Under ether, both small and large esophageal tubes were passed without giving a satisfactory examination. Finally, the esophagus was ballooned with air. When this procedure was tried the opening of a pouch leading from the left side of the esophagus about an inch and a half below the cricoid cartilage was discovered. By ballooning it with air the size of the pouch was easily made out.

After citing these illustrative cases the writer dwelt on the instrumentation of the esophagus and on the methods of examination. The following were the principal points: The examining table should be on a platform and the examiner on the floor in order to allow him to work standing instead of kneeling. It is essential to use as large a tube as the esophagus under examination can be made to take. A negative examination with small tubes amounts to but little. In order to use large tubes the patient's teeth should be protected with a dental impression tray, and the introduction of the tube should be started in the lateral position with the open speculum.

The writer said in conclusion: Strictures of the esophagus are best diagnosed and best treated by means of the esophagoscope, and instruments used by sight through it. Ballooning the esophagus is a help in finding the opening of a pouch and in determining its size. Opening the stomach for the relief of non-malignant strictures should become a rare operation. Opening the esophagus from the side of the neck for the removal of smooth foreign bodies is already obsolete surgery.

In cases of tight strictures the ideal method of treatment is to find the opening of the stricture through the esophageal tube, and, where possible, to dilate this to its maximum, first with soft bougies and then with the mechanical dilator, and then with forceps to pass a a gelatine capsule filled with thread into the stomach and to bring the end of the thread out of the mouth and retain it there. This done, the further treatment of the case should be carried on by means of the olive pointed guide run down on the thread, and graduated olives run down on the metal guide. After a short time the metal guide and the string can be dispensed with and soft bougies substituted. These are to be passed at regular intervals by the physician or by the patient himself.

The method of sawing a stricture with string is destined to be superseded by direct cutting under vision through the esophagoscope. The anatomical structures which surround the esophagus are such that it is never permissable to cut through the esophageal wall.

The three cases cited by the writer show the ease, often the great ease, as well as the directness with which many esophageal cases can be treated by means of the esophagoscope.

Dr. Emil Mayer, of New York, said that twenty years ago he presented the history of a child with congenital stricture of the esophagus which was at that time the third case in the world's literature. This child had lived to be ten years of age without being able to swallow a morsel of solid food, taking liquids only by the tablespoonful. She required the passing of but a single large-sized bougie under anesthesia to be able to swallow food, which she did immediately after recovering from the ether, and has been able to continue doing ever since. Dr. Mayer referred to a second case, the patient having a pouch of the esophagus about nine inches from the teeth. Dr. Mayer questions the safety of using bismuth in these cases preceding the taking of x-ray pictures, fearing the possible formation of a metallic substance in the esophageal pouch.

Dr. J. O. Roe, of Rochester, reported in 1888 two cases of intra-esophagotomy, the first which had been done in this country; one was a case of stricture occurring in a boy of eight years; the other was a case of stricture of the esophagus following the lodgment of a chicken bone in this area in a woman about thirty years of age. He also referred to a case now under treatment of a pouch of the esophagus in a woman sixty-five years of age, who, by the occasional dilatation of the stricture, gets along very comfortably.

Dr. G. L. Richards, of Fall River, referred to the great disadvantages of the coin-catcher, citing a case in point.

Dr. D. Bryson Delavan, of New York, laid emphasis upon the necessity of men operating upon the esophagus being skilled in and especially qualified for this work.

Dr. A. Coolidge, Jr., of Boston, brought out the fact that the laryngologist and the general surgeon were slowly but surely coming together in the methods of treatment of the esophagus, and not drifting further apart, as some operators would try to make one believe.

Dr. Chevalier Jackson, of Pittsburg, said that he was very sorry not to be able to call the coin-catcher an obsolete instrument, but that recent experience with this instrument made this impossible.

(To be continued.)

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Book Reviews.

A Textbook of Pathology. By Alfred Stengel, M.D., Professor of Clinical Medicine, University of Pennsylvania. Fifth edition. Illustrated. Philadelphia and London: W. B. Saunders Company.

The earlier editions of this standard work have been reviewed in these columns. The present edition has been extensively revised and improved. It is a good book and we commend it especially to practitioners who wish to keep in touch with the advances in pathology. The author presents the subject from the point of view of the clinical pathologist. For this very reason the work will be found less useful to the student in the laboratory of pathological histology than to the general practitioner or the worker in the clinics. In the present edition much new matter has been added in the chapters dealing with inflammation, immunity and animal parasites. The description of the histological changes in disease is totally inadequate. There are many excellent illustrations of gross pathological specimens.

Consumption — How to Prevent It and How to Live with It. By N. S. Davis, A.M., M.D., Professor of Principles and Practice of Medicine, Northwestern University Medical School. Second edition, thoroughly revised. F. A. Davis Company. 1908.

This volume was first issued in 1891, but it has now been partly rewritten and a new chapter added on the sanatorium treatment. It is a well-written book and contains much information that has been of value to consumptives and physicians. The title is rather unfortunate, but it reflects the attitude of even the optimistic members of the medical profession two decades ago. At the present time it is not sufficient that consumptives be taught how to live with the disease. The hope of recovery can now be held out to consumptives, even in the advanced stage of the disease, if they will live the life of rest in the open air for a sufficiently long time.

The author attaches too much importance to climate and too little to rest. These defects seriously impair the usefulness of the book.

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THE RELATIONS OF THE MEDICAL SCHOOL AND THE COLLEGE.

THE relations between the medical schools requiring the A.B. degree for entrance and the colleges granting that degree are not yet in a satisfactory state. According to present regulations a degree granted by a college is accepted as quite genuine in one relation, but spurious in another. In some of the Western colleges the study of the structure and functions of the human body is regarded as not less important and not less certain to provide a rigorous and fortifying discipline than the study of the structure and the functions of the ameba or the cockroach. Students in these colleges who include physiology, biochemistry, histology and anatomy in their choice of courses may be given the bachelor's degree. In the Graduate School of Harvard University, for example, that degree would be accepted at face value, and work once done need not, of course, be repeated. The same would be true of the division of medical sciences in the Medical School. But in the Medical School itself that degree is regarded as improperly obtained. If the student has studied the medical sciences as an academic undergraduate he is not permitted to pass examinations in them and retain regular standing. He may possess abundant knowledge of the subjects and pass the examinations with high credit, but by so doing he loses throughout his course the possibility of ever being classed as a regular student, and is placed under peculiar limitations as a special student. The only way in which he can enjoy the privilege of being classed as a regular student in the Medical School is to repeat courses he has already finished, a procedure involving an unwarranted waste of time. The situation thus developed seems quite anomalous and unfair.

The wide choice of studies in the Western colleges has placed in a definite dilemma the Eastern medical schools requiring the A.B. degree for entrance. If the Eastern universities do not recognize the cultural value of the medical sciences, and yet demand for entrance to their medical schools three or four years of academic work, exclusive of these sciences, they raise serious barriers against relations with the colleges of more liberal election. If, on the other hand, they treat students from these colleges with equal fairness in the graduate and medical schools, and do not require them to repeat in the medical schools work they have already accomplished, then the Eastern universities clearly discriminate against their own collegiate undergraduates who are not permitted the wider choice of courses.

A means of extrication from this dilemma has been suggested recently in a very interesting paper by Henderson and Southard.[1] The argument presented by them, though referred directly to conditions in Harvard University, bears cogently on the relations of medical schools to colleges in general. The writers distinguish carefully between the laboratory and the clinical subjects of the medical curriculum. The clinical subjects train the student strictly for the practice of medicine; the laboratory subjects, of broader nature, provide a discipline and utility with bearings in many diverse directions. The medical sciences, therefore, should be classified with the sciences commonly taught by the faculties of arts and sciences in any college or university. Henderson and Southard urge, consequently, two changes in university administration, which involve an altered attitude toward the laboratory courses of the medical school.

They urge, in the first place, an inventory of the laboratory subjects of the medical curriculum to determine those suitable for credit towards the A.B. degree. Such courses should be included among the possible electives of any undergraduate, though with these courses, as with other advanced subjects, preliminary studies should be required to provide proper qualifications.

The second important suggestion is the relaxation of the rigidity of the medical curriculum and the individualizing of the several subjects. This plan would permit students to take now one subject and now another, among those suitable for the A.B. degree, without following with strict regularity the curriculum as at present enforced for the attainment of a medical education. Thus in the pursuit of his academic and medical degrees a student might spend any number of years, from a minimum to as many as he cared to devote to study, without the ignominy of falling behind his classmates. The plan, in fact, is the natural expression of the university ideal to serve, without restraint, all the studious interests of men who come to learn.

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[1] Henderson L. J., and Southard, E. E.: The Relations of the Medical School and the College. The Harvard Bulletin, xii, no. 5, Nov. 3, 1909.

There is little doubt that, if the medical sciences should receive academic recognition for their economic and sociological values, if they were released from the hard and fast sequence of the medical program, and were given the freedom and opportunity for selection and pursuit possessed by their sister sciences in the university, many important results would follow. As Henderson and Southard clearly recognize this procedure would necessarily admit to the last two years of medical study persons with a wide variety of previous experience. In so doing, however, the plan would merely adapt the opportunities of the university to different conceptions of the proper collegiate training preliminary to the pursuit of medicine that naturally prevail throughout the country. But freedom of migration of students among medical schools and between medical schools and colleges is not the only benefit derived from recognizing the academic import of the medical sciences. The medical sciences themselves would, in all probability, be refreshed with new vigor, for they would attract to their service enterprising youths not intent on finishing a rigid course, but ready to devote their energies to the cultivation of a single field. It might reasonably be expected that the greater freedom which the proposed scheme offers to students, and the cultivation of individual interests which it encourages, would tend to develop leaders and productive scholars, as well as serviceable practitioners, in the various clinical branches.

Other incidental benefits of the plan proposed by Henderson and Southard, and the details of its administration, will be found in the original article, which is well worth the careful perusal of all interested in the progress of medical education.

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ANTERIOR POLIOMYELITIS.

At a meeting of the Massachusetts State Board of Health, held Nov. 4, 1909, it was voted that anterior poliomyelitis be made a disease notifiable under Sections 49 and 50 of Chapter 75 of the Revised Laws.

In view of the epidemic character which this disease has assumed, it must be acknowledged that this action of the board is well justified. As is well known, the State Board of Health has been making special investigation of this disease for the past three years. The epidemic of this year is, however, much the most serious ever studied in this commonwealth. Already there have been reported more than six hundred cases, grouped for the most part in the neighborhood of Boston. It is certain, however, that many cases remain unreported, and for this reason the State Board of Health has sent out this week a postal card to each physician in the state asking for the names and addresses of all patients with this disease, whether they have been in the physician's own practice or not. It is of the greatest importance that physicians should furnish this information. Only by complete co-operation between the practising physicians and the State Board of Health can a rapid increase in our knowledge of this disease be brought about.

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HOOKWORM DISEASE IN PORTO RICO.

In beginning its efforts for the eradication of hookworm disease in the United States, the Rockefeller Commission has a valuable example in the work already accomplished by United States army surgeons in Porto Rico. As early as 1899 it was discovered that many of the natives of that island were infected with uncinaria, and in 1904 Capt. B. K. Ashford, formerly post surgeon at Ponce, was appointed by the United States government, with Dr. W. W. King, of the Marine-Hospital Service, and Dr. P. G. Igaravidez, health officer of Bayamon, to a commission for the study and suppression of the disease. With an appropriation of only $5,000, this commission instituted a systematic though limited campaign of investigation, education and treatment, and their work has been carried on by other army surgeons and by local physicians. Though Porto Rico is far from being rid of the hookworm, it is said that the amount of infection has been greatly reduced and that the condition of health among the inhabitants is correspondingly improved. The Rockefeller Commission might well obtain useful information from study of the methods of these Porto Rican pioneers.

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HIGH SPINAL ANESTHESIA.

Report from London describes the successful demonstration at the Seamen's Hospital lately by Professor Jonnesco of high spinal anesthesia by means of a mixture of stovaine and strychnine. The latter agent, it is claimed, entirely obviates the dangerous cardiac depressant action of the former and makes operations on the chest, arms and neck under spinal anesthesia possible and safe. In a large number of cases, it is said, no ill effects have been noted, except slight headache, and the patient is saved from the subsequent discomfort and dangers of inhalation narcosis. These statements are interesting, and may represent an important advance in surgery. Dr. Jonnesco, who is dean of the University of Bucharest, is soon to sail for the United States, where it is to be hoped further demonstration of his method may be made.

MEDICAL NOTES.

ACTION OF MICHIGAN BOARD OF HEALTH. — A recent ordinance of the Michigan State Board of Health provides that no person known to have pulmonary tuberculosis shall be employed as a teacher in any school in that state. The use of common drinking-cups in all schools and public places in Michigan has also been forbidden. The record of such progress in sanitary requirement is encouraging and should be followed by similar action in other communities.

REVISION OF THE UNITED STATES PHARMACOPEIA. — The committee of The Massachusetts Medical Society appointed to consider the revision of the United States Pharmacopeia has sent out circulars requesting members (1) to mark drugs in an enclosed list which they think should be omitted from the Pharmacopeia; (2) to make mention of the names of drugs which they think should be added to the Pharmacopeia. The committee consists of Drs. Frank G. Wheatley, William P. Bolles and M. Vejux Tyrode.

USE OF OLEOMARGARINE IN NEW YORK. — A general statute in New York state requires "that in every restaurant or public dining-room where oleomargarine is used, a sign stating the fact shall be prominently displayed." The penalty for failure to comply with this law is $50 for the first offense, a higher fine for the second, and fine and imprisonment for the third. As in the case of the labeling of oleomargarine packages for sale, this provision is intended not to warn the consumer against a deleterious product, but to appraise him that he is using an inferior though wholesome and harmless substitute for butter.

BOSTON AND NEW ENGLAND.

ACUTE INFECTIOUS DISEASES IN BOSTON. — For the week ending at noon, Nov. 23, 1909, there were reported to the Board of Health of Boston the following cases of acute infectious diseases: Diphtheria 64, scarlatina 43, typhoid fever 19, measles 64, smallpox 0, tuberculosis 66.

The death-rate of the reported deaths for the week ending Nov. 23, 1909, was 14.56.

BOSTON MORTALITY STATISTICS. — The total number of deaths reported to the Board of Health for the week ending Saturday, noon, Nov. 20, 1909, was 175, against 177 the corresponding week of last year, showing a decrease of 2 deaths and making the death-rate for the week 14.65. Of this number 88 were males and 87 were females; 171 were white and 4 colored; 88 were born in the United States, 85 in foreign countries and 2 unknown; 35 were of American parentage, 119 of foreign parentage and 21 unknown. The number of cases and deaths from infectious diseases reported this week is as follows: Diphtheria, 70 cases and 5 deaths; scarlatina, 41 cases and 0 deaths; typhoid fever, 13 cases and 1 death; measles, 62 cases and 1 death; tuberculosis, 65 cases and 12 deaths; smallpox, 0 cases and 0 deaths. The deaths from pneumonia were 23, whooping cough 0, heart disease 31, bronchitis 2 and marasmus 1. There were 11 deaths from violent causes. The number of children who died under one year was 21; the number under five years 32. The number of persons who died over sixty years of age was 62. The deaths in public institutions were 64.

Cerebrospinal meningitis, 3 cases and 2 deaths.

Of the above infectious diseases the following were non-residents: Consumption: 3 cases and 2 deaths. Typhoid fever: 1 case.

Deducting deaths of non-residents, the total is 154 and the death-rate is then 12.89.

SCARLET FEVER IN MELROSE. — A moderate epidemic of scarlet fever is reported in Melrose, Mass., fifteen cases having appeared there during the past week. The local board of health has instituted measures to prevent further spread of the disease in the public schools.

DEDICATION OF NEW HARVARD DENTAL SCHOOL BUILDING. — The dedication of the new Harvard Dental School building will be held Dec. 7 and 8 with the following program: Dec. 7. The building will be open for public inspection from 9 A.M. to 1 P.M.; reception by officers of instruction and government at the school building to invited friends from 2 to 5 p.m.; reception by officers of instruction and government at the school building to students of the university from 7 to 9 p.m. Dec. 8. Public inspection of new building from 9 to 1; dedication exercises at Sanders Theater, Cambridge, at 2.30 p.m.

The president and fellows, overseers, faculties and their officers will meet the delegates from other institutions and other specially invited guests at 2.15 p.m. in Memorial Hall, whence they will be escorted to Sanders Theater. Academic dress will be worn.

NEW YORK.

Bequest to Lawrence Hospital, Bronxville. — W. V. Lawrence, by whose generosity the Lawrence Hospital at Bronxville, in the Borough of the Bronx, was opened in June last, at an expenditure of $125,000, has just made an additional gift of $150,000 to the institution. Fifty thousand dollars is to be devoted to the erection of a home for nurses and the other $100,000 goes to an endowment fund for the maintenance of the hospital.

St. Luke's Hospital. — At the recent annual meeting of St. Luke's Hospital it was reported that the number of patients during the year was 15,555, of whom 71% were treated without charge. The work of the hospital was carried on with a deficit of less than $10,000, which is smaller than for several years. An addition to the bulldings, now under construction at a cost of $250,000, is the gift of Mrs. Mary T. Hecksher as a memorial to her parents.

Lecture on Sleeping Sickness. — The lecture at the anniversary of the New York Academy of Medicine, which was celebrated on Nov. 18, was by Dr. Louis L. Seaman, on the African sleeping sickness. During the past year Major Seaman spent a number of months in Africa, and the lecture, which was illustrated with many lantern slides, was largely based on his personal observations.

Bequests. — By the will of the late Emmanuel Einstein, of Paterson, N. J., $40,000 is left to five Hebrew institutions in New York, where the deceased formerly did business. Of this amount, Mount Sinai Hospital receives $10,000, and the Montefiore Home and Hospital for Chronic Invalids, $5,000.

By the will of the late John E. Clark, of Paterson, N. J., $1,000 each is left to the Paterson General Hospital and five other charitable institutions of the city of Paterson.

Milk Prizes. — The prizes of two first-class milch cows, valued at $200 each, which President Darlington, of the City Health Department, offered some time ago for the two best essays on "How Clean and Wholesome Milk May be Produced at the Lowest Cost for the New York Market" have been awarded to J. N. Allen, of Union, Broome County, and R. H. Sponenbergh, of Fulton, Oswego County. The donors of the cows were Rufus James Speyer and Archer M. Huntington, and the committee of award included State Commissioner of Agriculture Pearson, Dr. R. G. Freeman, secretary of the Milk Commission of the New York County Medical Society, and Wilbur S. Phillips, secretary of the New York Milk Committee of the Association for Improving the Condition of the Poor. Only those dairymen who ship milk to the city of New York were eligible, but there were a large number of competitors. Most of the essays received showed considerable technical knowledge, but a few of them were fearful and wonderful productions, as the following extracts may demonstrate: "The stable should be cleaned twice a day and drawn into the field." "Milkers should milk cows quietly and rapidly, strain it, and then sit in cold running water for at least an hour." "In summer time cows should be sprayed twice daily from a humanitarian standpoint."

Current Literature.

Medical Record.

Oct. 16, 1909.

1. *King, H. M. *On the Construction of an Efficient and Economic Diet in Tuberculosis.*
2. Chappell, W. E. *Early Diagnosis of Malignant Disease of the Larynx. Pathology, Prognosis and Treatment.*
3. Ziegel, H. F. L. *Precocious Tertiary Syphilis.*
4. Abbott, G. E. *The Care of the Nursing Breasts. Their Development during Neurasthenic Puberty.*
5. Greeley, H. *The Great Improvement in Many Advanced Cases of Pulmonary Tuberculosis under Sanatorium Care.*
6. Braun, A. *Mastoiditis Complicated by Purulent Lepto-Meningitis, Epidural Abscess and Sinus Thrombosis.*

1. The article contains an account of work done in producing an efficient and economic diet in tuberculosis at the Loomis Sanatorium. The author recounts the experiments made on the effect of different amounts of food in the dietary. As is usual, the result of not over-feeding, but giving as much food as the patient can assimilate, resulted in a marked improvement in the general condition. The article contains many useful suggestions and tables illustrating an economic dietary. [W. B. R.]

Oct. 23, 1909.

1. McLaughlin, J. W. *Critical Remarks on Ehrlich's Side-Chain Theory of Immunity.*
2. Freudenthal, W. *Empyema of the Antrum of Highmore.*
3. Pottenger, F. M. *Further Observations upon Rigidity of the Chest Muscles as a Sign of Involvement of the Pulmonary Parenchyma.*

4. Swinburne, G. K. *The Therapeutic Value of the Anti-Gonococcic Serum and Gonococcic Bacterins.*
5. Sill, E. M. *The Use of Ethyl Chloride as a General Anesthetic for Operations in the Throat as Especially Applied to Children.*
6. Phillips, S. L. *Interstitial Keratitis in Acquired Syphilis.*
7. *Pottenger, F. M. *A New Physical Sign, Probably a Skin Reflex, Whereby Solid Organs and Inflammatory Processes may be Detected by Palpation.*

7. The author describes a sign which consists in the feeling of resistance to the palpating finger when pressed gently upon the skin over solid organs or inflammatory processes in the thorax. [W. B. R.]

New York Medical Journal.
Nov. 13, 1909.

1. Henry, F. P. *Historical Sketch of the College of Physicians of Philadelphia.*
2. Peterson, F. *Some New Fields and Methods in Psychology.*
3. Torek, F. *The Technic of Orcheopexy.*
4. Halstead, A. E. *Central Dislocation of the Femur with Fracture of the Acetabulum.*
5. Harris, W. L. *Treatment of Appendicular Collections of Pus.*
6. Wile, V. J. *Pityriasis Rosea with Pseudo-Vesicles.*
7. Schwartz, L. H. *Medical Charity.*
8. Ballagi, J. *"No Free Hydrochloric Acid in the Stomach."*

The Journal of the American Medical Association.
Nov. 13, 1909.

1. Dock, G. *The Advantage of Using Potassium Iodide until we have Something Better.*
2. Wallhauser, H. J. F. *Bichlorid of Mercury in Treatment of Idiopathic Multiple Hemorrhagic Sarcoma, with Report of Two Cases.*
3. *Tait, D., and Russ, R. *Electric Sleep.*
4. *Frissell, M. H., McComb, R. S., De Schweinitz, G., and Pancoast, H. K. *Achondroplasia.*
5. Nydegger, J. A. *Some Reasons Why a School of Tropical Medicine Should Be Established in the United States.*
6. *Carr, W. L. *Transitory Urinary Findings Associated with Some Diseases of Childhood.*
7. *Griffith, J. P. C. *Post Hoc Non Ergo Propter Hoc. Cases in Children Illustrating Conditions Mistakenly Attributed to Injuries.*
8. *Jones, W. A. *Probable Spinal Cord Lesion Following the Pasteur Treatment. Report of Two Cases.*
9. Wallace, G. B., and Ringer, A. J. *The Lowering of Blood Pressure by the Nitrite Group.*
10. Bracken, H. M. *Relationship of the Medical Profession to Preventive Medicine.*

3. Tait and Russ have done some very interesting and practical experiments on sleep or analgesia produced in animals and man by the high-frequency electric currents of Leduc. Experiments tried on themselves produced such intense headache that they were forced to desist. According to the potential used and the position of the electrodes, the Leduc current may produce: (1) Analgesia; (2) respiratory and cardiac inhibition, epilepsy; (3) electrocution. The danger lies in the close interrelation in those conditions. A vast amount of investigation will be required before a safe and reliable agent to replace chemical narcosis will be found in electricity.

4. The authors describe achondroplasia as a disease characterized by interference in the growth of the cartilaginous portion of the skeleton. It is most commonly confounded with rickets, cretinism, congenital syphilis and osteogenesis imperfecta. It is a congenital disease. The lesions are complete at birth. The deformities are present, but exaggerate with the growth of the individual. Rickets is a post-natal disease. The x-ray at once differentiates the two. In achondroplasia the bones are hard; in richets, soft. The chest and trunk are normal in the former, but affected in the latter. There is pug nose in achondroplasia which is absent in rickets. The vault is normal in one, loosed in the other. Achondroplasia is a permanent lesion. A patient with rickets may recover. Cretins lack intelligence, the hair is scant and coarse, the tongue protrudes and there is drooling. Achondroplastics are normal or unusually bright, the hair is normal and abundant and there is no protrusion of the tongue or drooling. The bone lesions in cretinism is simply underdevelopment. Cretins may be cured with thyroid extract, which has no effect on achondroplasia. The x-ray will always make the diagnosis.

6. Carr emphasizes the importance of routine urinalysis in all children with any gastro-intestinal disturbance or influenza, as these are the kinds of cases commonly overlooked in which a nephritis is very apt to develop.

7. Griffith gives six extremely interesting and illustrative cases in which trauma was supposed to have been the cause of a condition later proved in most cases to be infectious.

8. Jones reports four cases in which Pasteur treatment was followed at a certain period in the treatment by certain definite symptoms, running an almost uniform course and ending in almost every case in recovery, in spite of the apparent seriousness of the condition, and failure to identify these symptoms with any other known form of nervous trouble. The symptoms were variable: numbness, loss of sphincteric control, paralyses, pains in lumbar and other regions, great general weakness, alterations in reflexes and other manifestations of some obscure spinal cord disturbance. [E. H. R.]

The Journal of Medical Research.
September, 1909.

1. *Nichols, E. H., and Richardson, F. L. *Arthritis Deformans.*
2. *Floyd, C., and Lucas, W. P. *A Study of Leucocytic Extract and Its Action on the Course of Pneumonia.*
3. *White, W. C., Graham, D. A. L., and Van Norman, K. H. *An Index to Tuberculin Treatment in Tuberculosis by the Minimal Cutaneous Reaction Method.*
4. *White, W. C., and Graham, D. A. L. *Studies on the Reaction of Sera on Tuberculin Cutaneous Reaction.*
5. *Wolbach, S. B., and Saiki, T. *A New Anerobic Spore-Bearing Bacteria Commonly Present in the Livers of Healthy Dogs, and Believed to be Responsible for Many Changes Attributed to Aseptic Autolysis of Liver Tissue.*
6. Saiki, T. *A Device for the Cultivation of Anerobes in Plate Cultures by the Use of Alkali Pyrogallic Acid Mixtures.*
7. *Jackson, H. C. *Concerning the Question of the Rate of Autolytic Reaction and the Appearance of Gases and Acids in the Autolysis of So-called Sterile Livers of the Dog.*
8. McCoy, G. W. *A Preliminary Report of Tumors found in Wild Rats.*
9. *Foster, L. S. *Changes Occurring in the Elastic Fibers of the Aorta with Advancing Age.*
10. Aronson, E. A. *Studies on an Extract of the Kidney.*
11. Levin, I., and Larkin, J. H. *Transplantation of Devitalized Arterial Segments; Morphological Changes in the Implanted Segments.*
12. Cowie, D. W. *A Method of Obtaining Human Plasma Free from Chemical Action. Its Effect on Phagocytosis.*

1. The authors present a very complete article on their exhaustive study of arthritis deformans. The article is filled with plates illustrating the different conditions accompanying the disease. Their study includes an analysis of the pathological conditions in relation to the accompanying symptoms. They conclude that in non-tubercular deforming arthritis there are two pathological types of joints: (1) The proliferative type, which tends to destroy joint cartilage and leads to ankylosis of adjacent joint surfaces; and (2) the degenerative type, which tends to destroy the joint cartilage and produce deformity without ankylosis. These two types do not correspond to two definite diseases, but each type represents reaction of the joint tissues to a considerable variety of causes. In neither type, if the original injury is sufficiently severe, or if the causative factor continues to act, is there likelihood

of the regeneration of a perfect joint. A joint injury of a sufficient degree, even if the primary cause ceases to act, may of itself continue to act in a vicious circle as a cause of continued joint change. Clinically the aim should be to recognize the type and stage of the lesion present, and then to determine and remove the active cause.

2. Floyd and Lucas report a series of forty-one cases of pneumonia treated with "leucocyte extract" according to the method recommended by Hiss. Their mortality was only 12 1-5%, and of the cases which died, two were bronchopneumonias in children, and one a man over seventy. In only two cases were there any complications. No untoward effects were noted from the treatment. Their results seem to show a shortening of the disease, an early crisis and a beneficial effect on toxemia.

3. The authors outline their method of gauging the dose of tuberculin by the minimal cutaneous reaction method. Using various percentages of old tuberculin and a definite quantity of .01 ccm., it is possible to find the least amount of tuberculin which when applied to the skin will produce the minimal cutaneous reaction. They have also found that there is a definite ratio between the amount of tuberculin applied cutaneously and that given subcutaneously for the production of local and constitutional reactions. It is possible, therefore, by their method to determine, first, the borderland of reaction and no reaction to tuberculin which will be the degree of tolerance to tuberculin of the patient; and, second, the dose of tuberculin necessary to give the grade of reaction required.

4. The authors report a number of experiments to show the effect of sera on the phenomenon of tuberculin reaction, i. e., the neutralizing effect of sera from normal and tuberculous subjects on tuberculin.

5. The authors report the finding of a new anerobic bacterium in the livers of healthy dogs. Twenty-one out of twenty-three healthy dogs of all ages, both sexes, and representing many different types, killed during a period of seven months, yielded the same hitherto undescribed bacillus. They find that the presence of this bacillus is in no way connected with the necroses commonly found in the livers of dogs. The presence of the bacillus is not dependent upon age, sex, type of dog or season of the year. The bacillus is a large spore-bearing, non-motile, non-encapsulated, non-pathogenic, facultative aerobe. The reaction to Gram's stain is intermediate. The bacillus has marked powers of splitting proteids and glycogen with gas formation. The cultural characteristics usually determined in the study of bacteria cannot be applied to this organism owing to the difficulty of cultivation. They believe that to the presence of this bacillus in the livers of normal dogs may be attributed many results of so-called aseptic autolysis of liver tissue. They find that this organism can be cultivated in tissues, especially the liver, or in sterile tissue extracts.

7. Jackson's paper deals with an analysis of the rate of autolytic reaction and the appearance of gases and acids in the autolysis of so-called sterile livers of the dog. In the light of the work of Wolbach and Saiki (abstracted above), and using one of the livers found by them to be free from the organism they describe, the author finds that the rate of autolysis usually noted is much too rapid. He believes that the observed rate is due to the presence of this new organism, and that the gas and acid production and alteration in appearance noticed by Magnus-Levy in his aseptic liver autolyses were not the result of autolytic changes, but due to the life activity of this liver organism.

9. The author reports a series of observations on the changes occurring in the elastic fibers of the aorta with advancing age. He reviews the literature on the subject. He finds that the full development of the elastic fibers in the aorta occupies a period of about thirty-five years; that during this period the individual elastic fibers are increased in size, while new elastic fibers are developed from their margins; that about the thirty-fifth year there is a quiescent period of about fifteen years, during which no developmental changes take place in the elastic fibers, and that following the quiescent period degenerative changes of greater or less extent are seen in the elastic fibers up to the end of life. During this period there is no marked diminution in the amount of elastic tissue save in grave sclerosis, but a relative increase. The muscle tissue is diminished in relative and absolute quantity. [W. B. R.]

Bulletin of the Johns Hopkins Hospital.

October, 1909.

1. *Barker, L. F. *On Some of the Clinical Methods of Investigating Cardiovascular Conditions.*
2. *Barker, L. F., and Sladen, F. J. *A Small Epidemic of Jaundice with Symptoms of Gastro-Intestinal Catarrh.*
3. Winternitz, M. C. *Primary Melanotic Sarcoma of the Ovary.*
4. *Baer, W. S. *Some Results of the Injection of Beck's Bismuth Paste in the Treatment of Tuberculous Sinuses.*
5. Amberg, S. *Bleeding from the Intestinal Tract of an Infant in the Course of Alimentary Decomposition in the Sense of Finkelstein.*
6. Perkins, R. G. *Conveniences in Laboratory Technic.*

1. Barker reviews the various clinical methods of diagnosing and studying cardiovascular conditions. He first discusses the various methods of percussion — threshold percussion, palpatory percussion, etc. He then considers the heart sounds and the factors entering into their causation. He mentions the various types of heart sounds, the varieties in rhythm, etc. He discusses the x-ray as an aid to diagnosis, and the errors to be avoided in its use. By means of diagrams he describes the various shadows which the heart may give under different conditions and from different directions. The greater part of the paper is devoted to a description and discussion of the various methods of sphygmography and cardiography. Photographs and numerous tracings illustrate the article. Blood pressure and the methods of estimating it he briefly goes over, ending with a discussion on electro-cardiography.

2. Barker and Sladen describe an epidemic of jaundice occurring in the Baltimore City Jail. They believe this to be of an infectious character as a result of some local infection, probably from meat.

4. Baer believes that the use of Beck's Bismuth Paste is a great advance in making an accurate diagnosis of the disease and the direction and tortuosity of the sinuses. As a therapeutic measure it has greatly increased the percentage of cures in tedious and trying cases of tuberculous bone and joint disease. The treatment is not devoid of danger, and when the paste is used for treatment one must be on the watch for early signs of toxema. There are various x-ray photographs and numerous illustrative cases. [J. B. H.]

The Lancet.

Oct. 30, 1909.

1. Williams, L. *Presidential Address, "To Redress the Balance."*
2. Hewitt, F. W. *The Need for Legislation in Regard to Anesthetics and the Lines upon which it should take Place.*
3. *Briscoe, T. C. *On Certain B. Coli Injections.*
4. Andrew, T. G. *A Critical Review of Some Cases of Perforations of the Stomach and Duodenal Ulcer.*
5. Wood, N. *The Selection of Patients for Spa Treatment.*
6. Burkett, R. W. *Observations on Ankylostomiasis and Its Complications in Eastern Bengal.*
7. Wilson, C. T. *A Recent Case of Typhoid Spine.*
8. Rosewarne, D. D. *A Case of Endemic Cerebrospinal Meningitis Treated by Inter-Spinal Injections of Flexner's Serum; Recovery.*
9. Hirsch, C. T. W. *Motoring Notes.*

3. Briscoe reports some interesting cases of B. coli infections with remarks on diagnosis and treatment, especially the vaccine treatment. The cases he reports consist of recurring attacks of fever, malaise and other signs of an infection, often accompanied by pain or tenderness in the kidney region and pus and bacilli in the urine in varying amounts. Treatment varies according to the severity of the attack; milder forms clear up in a week on rest in bed, purges, etc. Free evacuation of the bowels is important. Urotropine, along with other drugs, citrate of potash, etc., should be given to render the urine alkaline. Should these mild measures prove of no avail, an autogenous vaccine should be prepared and given in an initial dose of 50,000,000. Chronic cases are very refractory.

[J. B. H.]

The Practitioner.
October, 1909.

1. *Brunton, L. *On Being Tired.*
2. Smith, F. J. *Indigestion.*
3. Latham, A. *The Treatment of Lobar Pneumonia.*
4. Harris, W. *Headache.*
5. Rankin, G. *Jaundice.*
6. Campbell, H. *The Common Cold.*
7. Stewart, P. *Neuralgia.*
8. Thursfield, J. H. *Pertussis or Whooping-Cough.*
9. Briscoe, J. C. *Treatment of Bronchitis.*
10. Adamson, H. G. *Boils and Carbuncles and their Treatment.*
11. Palmer, J. F. *Corns and Bunions.*
12. Pringle, J. H. *Fractures of the Upper Extremity of the Femur and their Treatment.*
13. Hicks, H. T. *Pelvic Pain apart from Obvious Lesions.*
14. Nicoll. *The Operative Technic of Piles*
15. Yearsley, M. *Useful Points in Connection with Diseases of the Ear.*
16. Robinson, T. *Common Diseases of the Hair.*

1. Brunton discusses the general subject of fatigue, its causes, the various ways in which it shows itself, its relation to the circulatory and digestive systems and its relation to exercise and athletics. The article is profusely illustrated with photographs and diagrams and is of much practical interest. [J. B. H.]

Edinburgh Medical Journal.
October, 1909.

1. *James, A. *The Infection Element in Consumption.*
2. Lediard, H. A. *On Removal of the Normal Appendix.*
3. Dunlop, G. H. M. *On Treatment of Constipation in Children.*

1. James, in a careful article considering the infectiousness of the tubercle bacillus, is of the opinion that in all probability the tubercle bacillus is a widespread organism performing, as in Timothy grass, etc., a useful function and becoming virulent only when through ignorance, greed or vice man puts man and animals under unhealthy surroundings. He discusses the state care of advanced consumptives and expresses the opinion that this leads eventually to waste and loss to the city without a proportionate amount of good. [J. B. H.]

Deutsche Medizinische Wochenschrift. No. 42.
Oct. 21, 1909.

1. Veit, J. *The Treatment of Contracted Pelvis, especially the Status of Operations for Enlarging the Pelvis.*
2. Hochhaus, H. *Indications and Technic for Puncture of the Pleura.* (Clinical lecture.)
3. Krause, P. *Study of the Westphalian Epidemic of Acute Anterior Poliomyelitis.* (Preliminary communication.)
4. Krause, P., and Meinicke, E. *The Etiology of Epidemic Acute Anterior Poliomyelitis.*
5. Kellner, Clemenz, Brückner and Rautenberg. *Wassermann Reaction in Idiocy.*
6. Brünig, H. *Pneumonia in Children and the Anti-Pneumococcus Serum.*
7. *Roepke, O. *Results of Treatment with Tuberculous Immune Blood (I. K.).*
8. *Weicker, H., and Bandelier, B. *Results of "I. K." Treatment.*
9. Oppenheimer, K. *An Experiment for the Objective Demonstration of the Condition of Nourishment.*
10. Hirsch, M. *Placenta Previa.*

7. Spengler has brought forward the claim that the red blood corpuscles contain a tubercular immune substance. This substance he has designated as I. K. and reports very favorable results. A few other authors have supported this view. Roepke has tried out the I. K. from the diagnostic and therapeutic point of view and considers that it is absolutely useless and that normal salt solution has about the same effect.

8. Weicker and Bandelier have also tried out the value of I. K. treatment on two hundred cases extending over a period of fifteen months, and in none of their cases could they confirm any of the claims that Spengler attributes to the method. [C. F., Jr.]

Münchener Medizinische Wochenschrift. No. 43.
Oct. 26, 1909.

1. *Schlayer and Takayasu. *Studies of the Functions of Diseased Kidneys.*
2. *Engelmann, F., and Stade, C. *Significance of Leech-Extract for the Treatment of Eclampsia.*
3. Beyer, W. *On the Activating Power of Human Blood for Cobra Venom and the Mechanism of Cobra-Venom Hemolysis.*
4. *Scheidemandel, E. *Serum-Therapy and its Dangers.*
5. Lippmann, A. *The Demonstration of Tubercle Bacilli in the Circulating Blood in Phthisis.*
6. Eber. *The Relationship between Human and Bovine Tubercle-Bacilli.*
7. Mandelbaum, M. *New Methods for Detecting Proteolytic Ferments and their Antiferments.*
8. Bucura, C. J. *The Treatment of Climacteric Disturbances and Dyspareunia.*
9. Weinberger. *The Designation of Doses of Tuberculin.*
10. Brewitt, F. R. *Protection of the Wound in Extraperitoneal Cesarian Section, with Technical Observations on this Operation.*
11. Mayer, O. *The Dangers of Tamponing the Naso-Pharynx.*
12. Andernach, L. *A Case of Hysteria with Blue Edema and Difference of the Knee-Jerks.*
13. Weinbrenner, C. *Post-Operative Duodenal Ileus.*
14. Arndt, G. *An Apparatus for Automatic Hardening and Embedding of Microscopic Preparations.*

1. The writers have made some very interesting observations on the excretion of common salt, potassium iodide and milk sugar in experimental nephritis. These substances were injected intravenously in equal amounts. They are not used in the bodies of animals and excreted *in toto* by the kidneys under normal circumstances. The excretion of salt and of potassium iodide is dependent upon healthy convoluted tubules, but is not affected by disease of the blood-vessels, whereas the reverse is true of milk sugar. Injury to the convoluted tubules not only diminished the total quantity of salt excretion, but also kept the percentage of salt in the urine low at all times. These two types of nephritis are described respectively as vascular and as tubular nephritis. Further experiments were performed to determine the causes of a low specific gravity of the urine in nephritis. The conclusion was reached that in certain cases the low gravity was due to polyuria brought about by hypersensitiveness of the vessels of the kidney which responded to any irritation by an increased discharge of water. In another form there is no polyuria and the low gravity is due to diminished excretion of solid. This occurs when there is extensive damage to the convoluted tubules. The first form is called vascular, the second tubular, hyposthenuria. In neither form does the administration of salt cause a rise in the specific gravity of the urine. In the vascular form this is prevented by an increase of fluid excreted; in the tubular form it is impossible because the tubules are permeable only to dilute solutions. The two types may merge so that a clear distinction between them is not always possible in the individual case.

2. By further experiments the writers have supplemented the work on the toxic substance existing in the placentae of eclamptics (*Ibid., No. 16*).

Their conclusions are as follows: That the fatal effect upon animals of injections of placental juice, which results in multiple thromboses, may be prevented by the injection of hirudin (made from leeches) previously or simultanously; that in certain cases of eclampsia hirudin causes cessation of the spasms; that hirudin apparently binds some substances necessary for coagulation; and that human blood containing hirudin shows diminished coagulability.

4. Scheidemandel reviews the present state of knowledge of anaphylaxis and points out the dangers of indiscriminate serum-therapy. He emphasizes the fact that acquired hypersusceptability may last as long as three years and that in some families there is a congenital idiosyncrasy like that to drugs. [G. C. S.]

Deutsche Zeitschrift für Chirurgie. Bd. 101
September – October, 1909

1. Doering, H. *Contributions to Renal Surgery. III. Renal Tuberculosis.*
2. Thöle. *Separation of Both Maxillæ from the Base of the Skull and their Replacement.*
3. Mizokuchi. *Operations on the Stomach.*
4. Landow, M. *Pseudoperitonitis Caused by Addison's Disease.*
5. *Matti, H. *Experimental Surgical Contribution to the Doctrine of the Mechanism of the Anal Sphincters.*
6. *Ledderhose, G. *The Question of the Rupture of the Biceps Brachii.*
7. Luxembourg, H. *The Question of Trephining in Fractures of the Base of the Skull.*
8. Esau, A. *A Contribution to the Doctrine of Subcutaneous Intestinal Prolapse.*
9. Parlavecchio, G. *Contribution to the Knowledge and History of Secondary Abdominal and Thoraco-Abdominal Echinococcus Disease.*
10. Zesas, D. G. *The Implantation of the Ureters into the Intestine.*
11. Creite, O. *The Operative Treatment of Pseudarthrosis after Fractures.*
12. *Shiota, H. *Contribution to the Knowledge of Human Actinomycosis.*
13. Neumann, A. *The Mesenterio-Mesencolic Ligament and Ileus.*
14. Zesas, D. G. *Supplement to the Essay on the Implantation of the Ureters into the Intestine.*
15. Sudeck, P. *Replacement of an Exarticulated Half of a Lower Jaw by the König-Roloff Ivory Prosthesis.*
16. *Nakahara, T. *The Knowledge of Squamous Epithelial Cancers Invading Bone.*
17. Anschütz, W. *Experiences with Nail Extension.*
18. Läwen, A. *The Knowledge of Disturbances of Growth in the Cretin Skeleton.*
19. Burckhardt, H. *A Primary Sarcoma of the Capsule of the Knee-Joint.*
20. Aizner. *A High Carcinoma of the Jejunum.*
21. Lofaro, F. *Two Cases of Primary Gastric Sarcoma.*
22. Enderlen. *A Contribution to the Operative Treatment of Serratus Paralysis.*
23. Licini, C. *The Influence upon the Thyroid of Extirpation of the Pancreas.*
24. Rube, R. *Outward Dislocation of the Lower Jaw.*
25. Thöle. *Abdominal Injuries in the Saxon and Württemberg Army Corps of the Royal Prussian Army in the Years 1896–1906.*
26. *Brunner, F. *Drawing Out the Urinary Bladder in Radical Operations for Hernia.*
27. Boerner, E. *So-Called Calcanean Spur.*

5. From an experimental surgical study of the innervation of the anal sphincters, Matti concludes that the internal sphincter is functionally dependent on the external. In sphincteric repair, therefore, he considers restoration of the external sphincter sufficient to guarantee function of the entire apparatus, since the internal sphincter merely completes the act of control on mechanical stimulation from the external.

6. From extended study of injuries to the brachial biceps, Ledderhose concludes that most cases described as hernia of the biceps, or as ruptures from indirect violence, are really dislocations of the external belly of the muscle, and that these in turn are secondary to pathologic changes in the tendon of the long head from arthritis deformans of the shoulder. Such cases, then, are of the nature of an occupation disease, of which the injury is the occasioning cause.

12. In an exhaustive paper, Shiota presents from the Royal University at Tokio the results of an extended clinical and bacteriologic study of actinomycosis in man, with report of fifty-six cases of the disease in various regions of the body and of many cultural observations. Among his conclusions are the following: That human actinomycosis is produced by at least two species of ray fungus, *Actinomyces Israeli* and *Actinomyces Bostroemi*, and their varieties, but that these species are not transmutable; that the species have a fairly definite geographic distribution, the former being prevalent in Japan; that human infection with actinomycosis usually occurs from vegetable foreign bodies, but that the clinical picture of the disease is essentially the same whatever the infecting species; that microscopic examination of the granules is sufficient for clinical diagnosis; that surgery rather than potasssium iodide is to be relied on for treatment.

16. Nakahara reports from Weichselbaum's laboratory at Vienna a clinico-pathologic study of two cases of squamous-celled carcinoma invading bone. He believes that in such cases the presence of bone-inclusions in the interior of the epithelial pearls is frequent, perhaps typical. Trauma and osteomyelitis, acute or tuberculous, he regards as predisposing causes. In one of his cases the cancer appeared twenty-two years after a severe crush, and he considers that the growth originated, not from the skin covering the scar, but from a traumatic epithelial inclusion deep in the tissues.

26. To the series of 292 cases previously collected from the literature by Eggenberger and others, Brunner adds the report of 44 cases of so-called operative vesical hernia occurring in 775 radical operations for inguinal and femoral hernia in his hospital at Zürich from 1895 to 1909. Analysis of his figures shows that in the Bassini operation the bladder was drawn out through the hernial opening in from 3 to 6% of the cases, according to the experience and technic of the operator. Distinction should be made between cases in which the vesical hernia is thus artificially produced and those in which it was pre-existent. Operative vesical hernia occurs most frequently in direct inguinal hernia, less so in femoral hernia, least often in oblique inguinal hernia. The best and sufficient means of recognizing the bladder is by the appearance of its musculature. If the latter is accidentally cut, the pouting mucous membrane should indicate the condition in time to avoid further damage. [R. M. G.]

Annales de l'Institut Pasteur.
Sept. 25, 1909.

1. Vallée, H. *Researches on Anti-Tubercular Immunization. II.*
2. *Dopter, C. *Preventive Vaccination against Bacillary Dysentery.*
3. Chaussé, P. *Intestinal Tuberculosis in Cattle. (A Study in Comparative Pathology.)*
4. Repin. *Some Experiments on the Biology of Vaccine Virus.*
5. Leger, M., and Mathis, C. *Leucocytozoon in the Partridge of Tonkin.*

2. Dopter brings out the fact that practically no experimental work has been done on the question of preventive vaccination against dysentery. He first experimented with dysentery bacilli killed with heat and found that although they eventually protected the mice, there was an initial negative stage during which time the mice were more susceptible than normally. Vaccination with the products of bacterial autolysis showed practically the same results.

Therefore, these two methods, on account of the negative period, can hardly be used during an epidemic of dysentery as a preventive method. The next experiments were with an anti-dysenteric serum. This was found to offer protection at once, but this protection did not last for more than ten days. He then tried a mixture of the serum and vaccine and found that the serum as a rule annulled the negative phase of the vaccine, but that the mixture only produced immunity for about twenty days, while the vaccine alone lasts from four to six weeks. Finally, he tried vaccine with attenuated bacilli and found that they produced in mice immunity in four to five days without producing a negative phase, and that this immunity lasted four and one-half months. Furthermore, this form of immunization may be obtained by taking the vaccine by mouth as well as subcutaneously. The method of attenuating the bacilli and the practical points for the treatment of epidemics are also recorded. [C. F., Jr.]

Revue de Médecine.
October, 1909.

1. *Laederich, L., and Duval, H. R. *Gilchrist's Mycosis, Blastomycosis, or American Oïdiomycosis. I and II.*
2. *Long, E. *The Prolonged Treatment of Epilepsy with Bromides and the Reduced Salt Diet. I and II.*

3. MOULONQUET AND COURTELLEMONT, V. *Renal Scleroses of Tuberculous Origin.*
4. *LAEDERICH, L., AND DUVAL, H. R. *Gilchrist's Mycosis, Blastomycosis, or American Oïdiomycosis. III, IV and V.*
5. *LONG, E. *The Prolonged Treatment of Epilepsy with Bromides and the Reduced Salt Diet. III and IV.*

1 and 4. Blastomycetic dermatitis, first described by Gilchrist, is a much commoner disease in America than in Europe, where most of the cases reported are of different types and are poorly supported by bacteriological findings. It is most common among farmers and woodworkers, a fact to be expected, as the organisms are found chiefly on living and dead vegetation. Thus direct contact is inferred, although it has been proved rarely. The disease is only slightly contagious, yet auto-inoculation is common. The local process is first that of a papule, becoming a pustule, surrounded by an indurated spreading areola. The central area becomes encrusted and tends to heal, while the disease is maintained in the advancing periphery, where are found minute, yellow points — miliary abscesses. The process is extremely chronic, undergoing alternating periods of activity and indolence. As has been intimated, the diagnosis is often confounded with tertiary syphilis, lupus vulgaris and erythematosus and epithelioma, and can be proved only by growing the organisms, which are most common in the central lesion and the miliary abscesses. General infections are rare, but on record. They are ushered in by the common infectious signs, pointing chiefly to the lungs, so that phthisis is suspected. These cases drag along for eight to seventeen months and almost always terminate fatally. The chronicity of the local process is most characteristic. The lesions very rarely heal, so that sugery has been resorted to. This is far less satisfactory than prolonged treatment with iodides, which effects cures after persistence for several months. Following a minute description of the pathological anatomy of the local and general lesions is a discussion and classification of the different types of organism which is extremely technical and of no great interest to the average reader.

2 and 5. Long describes in detail "the regieme of Richet and Toulouse" in the management of epilepsy. This implies simply the combination of a salt-free diet with the regular bromide treatment. The removal of salt from the diet is found to increase the power of the body to absorb and utilize the bromine, with the result that small doses produce the desired pharmacological action and only moderate amounts bring on signs of bromine poisoning. This has been so well established by the writer that he employs the simple but striking method of adding salt to the diet for several days in order to promote the elimination of bromine if the untoward effects are especially marked. Four cases are cited, in all of whom bromides alone had been insufficient, but who cleared up almost immediately upon the combined treatment and have remained well for from two to four years. The strictest diet, observed in the most severe cases, consists of milk, eggs, greens, farinaceous foods and fruits. But in the majority of cases a more liberal dietary is permitted, the quality of salt ingested being measured by the chlorine in the urine. The object of the treatment is the determination of the individual active dose of bromine and its continued use over a long period of time, the diet acting simply as a means of producing free absorption or elimination of bromine, as is desired at the time. The patients do not suffer except mentally from this diet, but show a marked physical improvement. [L. H. S.]

REVUE DE CHIRURGIE.
OCTOBER, 1909.

1. COUTEAUD. *Postural Treatment of Fractures of the Clavicle.*
2. MOCQUOT, P., AND CARAVEN, J. *Ambulatory Treatment of Fractures of the Leg.*
3. *LE DAMANY, P. *Congenital Dislocations of the Hip.*
4. *PIROVANO, A. *New Procedure in Arterial and Venous Suture.*

3. The author has made an extended study of congenital dislocation of the hip with a view to determining its pathogenic varieties and the periods of intra-uterine life at which they occur. He classes the varieties as follows: (*a*) Teratologic, occurring during the first half of fetal life. (*b*) Of mixed etiology, occuring during the second half of fetal life. (*c*) Anthropologic, occurring immediately or shortly after birth from the mechanical deflection (outward rotation *plus* torsion) which the femur naturally undergoes. The anatomic causes operative in this last group, which he considers the only one of importance, may be: (1) Malformation of the pelvis, giving the acetabulum too great an obliquity forward; (2) deformity of the femur from hyperflexion during the second half of fetal life; (3) deformity of the acetabulum.

4. Pirovano describes and illustrates a new method of anastomosing blood vessels by approximation and suture of flaps formed by two longitudinal slits in the ends of the vessels concerned. He has applied this method fifty times in animals with success and claims as its advantages simplicity, economy, rapidity, facility, perfect hemostasis, minimal alteration of lumen, avoidance of torsion during suture. It may prove a valuable contribution to the technic of vascular surgery. [R. M. G.]

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Miscellany.

REPORT OF DEDICATION OF NEW HALL OF COLLEGE OF PHYSICIANS OF PHILADELPHIA.*

CONFERRING OF ASSOCIATE FELLOWSHIPS.

ARCHIBALD BYRON MACALLUM, M.A., M.B., Ph.D., Sc.D., LL.D., F.R.S., was presented by Dr. Albert Philson Brubaker, and received from the President, Dr. James Tyson, the certificate of the College of Physicians conferring upon him the title of associate fellow.

Oliver Fairfield Wadsworth, M.D., presented by Dr. George E. deSchweinitz as "a pioneer in the early medical work of the country, a teacher who has sent forth students fully equipped, a clinician distinguished for accuracy and keenness of observation, an ophthalmologist, physician and surgeon who has upheld the standard of the profession," was likewise made an associate fellow of the college, as were the following-named gentlemen:

Edward Gamaliel Janeway, M.D., LL.D., presented by Dr. James C. Wilson as "a master clinician, distinguished writer, comprehensive teacher, wise consultant and courteous gentleman."

Charles Loomis Dana, M.D., was presented by Dr. Charles K. Mills: "Exceptional merit is possessed by the candidate whom I have the honor to present. Born among the rugged hills of New England, he has by a life of ever-increasing distinction made faithful return for his inheritance of capacity. His success in neurology, his chosen department of medicine, was assured from the outset. He is the author of one of the best textbooks on neurology and psychiatry ever issued from an American press."

Frank Billings, M.D., was presented by Dr. John H. Musser as "beloved physician of prophetic vision, skillful in interpretation, masterful in treatment; scientist, wise and earnest seeker of truth, you have emblazoned the path of many young men who, inspired by your conceptions, have been earnest workers in medical science.

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* Concluded from page 765.

As president of the State Board of Charities of Illinois you have shattered the political bonds of the various institutions under your care and have brought to the inmates of the institutions careful management and scientific treatment."

Dr. George Washington Crile, M.D., was presented by Dr. William L. Rodman as "a candidate who has placed new paths in surgery and compelled a gratified profession to acknowledge him as a leader, the most noteworthy of whose publications is, perhaps, his work upon hemorrhage and transfusion."

Franklin Paine Mall, M.D., was presented by Dr. George A. Piersol as "one who had rendered conspicuous service in bringing about the larger recognition of anatomy in surgery, and through whose efforts this country now possesses two journals of acknowledged merit devoted exclusively to anatomy."

Cablegrams conveying congratulations were received from the Royal College of Surgeons of Edinburgh, the College of Surgeons of England and from William Osler. Dr. J. Cheston Morris and Dr. Horatio C. Wood, fellows of the college, sent letters of congratulation and expressed deep sorrow at their inability to be present.

DEDICATORY ADDRESS OF THE PRESIDENT, JAMES TYSON, M.D.

Dr. Tyson considered some of the important events in the history of the college, and in conclusion selected a few links from the chain of events binding the past to the present, and which have more or less shaped its course and determined its auspicious present: *First*, a foundation following the example of the best type of the English medical society; *second*, founders, twenty-four in number, most of them trained in the best medical schools in Europe succeeding the best obtainable education at home; *third*, experience either in the field or practice at home during an eight years' war characterized by privation and hardship, which broadened the knowledge, increased the skill and developed the character of those concerned in it; *fourth*, a baptism of pestilence and death, which, by the difficult problems it raised, disrupted friendships and endangered the existence of the college itself; *fifth*, through patience of surviving founders, and other members added, with the lapse of time a revival of life, a new growth of strength and development of service, until, through its various functions, the college has become a great power for the increase and dissemination of medical knowledge and for inspiring the higher aims of the medical life.

The College of Physicians was organized in 1787, and, so far as can be learned, it is the oldest in existence of American societies which is not a state organization. Dr. John Redman was the first president and held office for eighteen years. The vice-president was Dr. John Jones, great-grandson of Dr. Thomas Wynne, who came over with Penn in the ship *Welcome*. The constitution provided that the officers should be chosen annually, and this practice continues to the present day. The first paper read before the college was by Dr. Rush, at the second meeting, Feb. 8, 1787, "On the Means of Promoting Medical Knowledge." The circumstance which made the first decade in the life of the college the most stirring in its history was the prevalence of yellow fever. With directions sent out for preventing the progress of the fever were comments upon the inefficiency of fires kindled as a means of checking the disease, and placing more dependence upon the burning of gunpowder. The further statement was made that "the benefits of vinegar and camphire are confined chiefly to infected rooms, and they cannot be used too frequently on handkerchiefs or in smelling bottles by persons whose duty calls on them to visit or attend the sick." The most important event in the history of the college after its organization was the centennial anniversary, celebrated Monday and Tuesday, Jan. 3 and 4, 1887. One of the most important functions of the college is the stand it has taken against encroachment on the right to use, humanely, animals for investigating the action of medicines and determining the causes, prevention and cure of disease.

The occasion of the centennial anniversary also marked the completion of the *then* new College Hall at Thirteenth and Locust streets, by the addition of the third story at a total cost of $67,256.50, including the site, which cost $14,408. This sum, even so late as 1887, was thought to be very large. Yet the total investment is insignificant as compared with what has been expended for this, our latest home, appointed as no building for a like purpose ever was. The total number of bound volumes in the library Nov. 1, 1909, is 81,018. Of unbound reprints and transactions there are 8,202; unbound theses and dissertations, 23,711; unbound pamphlets, 70,213. Between two and three thousand volumes are purchased annually with funds of the college, and many are donated by authors, publishers and friends of the college.

In the evening a banquet was held at the Bellevue-Stratford, and addresses were made by Dr. S. Weir Mitchell, Mr. Andrew Carnegie and Hampton L. Carson, Esq., former attorney-general.

Dr. Mitchell said: "It was in the halls of the old College of Physicians that young men had the noblest companionship, the companionship of books. Those shelves held the thought of two thousand years of our ancient guild. Two thousand years before Christ was born we had in the creed of Hippocrates the noblest moral code then known to man." Reference was then made by Dr. Mitchell to a tablet to be erected on which would be the names of one hundred and sixty-nine fellows of the college who served on land or sea as physicians during the Civil War.

Mr. Carnegie, in his address, talked about libraries, saying that he was entirely satisfied with the $75,000,000 that he had so invested. He had, he said, two thousand letters from parents, especially mothers, telling of their boys being in the libraries fitting themselves for useful effort. It was Dr. John Shaw Billings, he said, who had walked out of his office with the largest wholesale order for libraries that he had ever had the joy of filling. This was seventy-eight branch libraries for New York City.

Former Attorney-General Carson paid a tribute to the physicians who had contributed to the success of the Continental Army, without whose aid, he declared, victory over the troops of George III would not have been possible. Mr. Carson represented the estate of Mrs. Frederic Courtland Penfield, one of the large donors to the new college building. The toast to which Mr. Carson replied was "The College and Its Civic Relations." He reviewed the work of the physicians in the Revolution, dwelling at length on the medical history of the state and the place which the University of Pennsylvania holds in the great medical schools of the world.

Dr. W. W. Keen replied to the toast "The College Library and Its Treasures." Dr. A. V. Meigs responded to the toast "The College and Its Traditions."

On Thursday, Nov. 11, the new hall was thrown open to the public between the hours of ten and two. In the evening a reception was held, attended by more than five hundred physicians, with their wives and daughters. Preceding the reception, an address was given by Dr. S. Weir Mitchell. Much of Dr. Mitchell's address was a review of the early history of the College of Physicians and the men prominently associated with medicine during that period. Regret was expressed that no monuments were erected to the great physicians of the country. He said that as great service was rendered in war by the doctor as by the general. He felt that the conquerors of yellow fever and other scourges deserved fully as high honor as the men who took life instead of trying to save life.

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Correspondence.

PARIS LETTER.

A Heretical Conception of Rest.

[*From Our Special Correspondent.*]

Paris, Oct. 30, 1909.

Mr. Editor: The summer season is now past, a period of joys without number, when the physician sheds his harness with its weight of care, — the ever-increasing horde of psychasthenics, dyspeptics, broken-down business men and *malades imaginaires,* — and departs to lands unknown, where he carefully drops the "Dr." and masquerades as an ordinary plain "Mr." for a brief period. Oh, the pleasures of travel in a new country, lands where everything is fresh and unknown — people, scenery, language, customs; what a large slice of life people miss who do not appreciate this species of recreation, but who return year after year to the same place, following the line of least resistance, going where the mind gets a small modicum of change, but with as little expenditure of effort as possible. Would that there were a medical journal sufficiently endowed with funds to be able to afford the luxury of a foreign travel correspondent all the year round! That's a place I should apply for with alacrity.

On my return to Paris I went over the medical papers that had accumulated during my absence. I felt a little bit as though I had dropped from the moon, and this was accentuated somewhat by the question put to me facetiously by pretty much every one I saw, "Did you meet Dr. Cook when you were up in the Arctic Ocean?" Some persons have strange conceptions as to humor.

I found the usual dreary reports of scientific congresses, the international one at Buda-Pesth, and various and sundry others, several in Paris itself. Queer, that people can be found in such numbers to attend these congresses, particularly such awful crushes as the international ones. I myself have long been of opinion that there was very little good to be derived from so doing beyond the journey to a foreign country, the meeting with men whom you would otherwise not be likely to run across, and the pleasant social side of such events. But then, my views are by no means always those of other people.

So as chance arranged that this fall I happened to meet the two men, both medical *confrères,* whose opinion I esteem above all others, and who had been, the one to Buda-Pesth and the other to a couple of the congresses here, I seized the opportunity to ask them what they thought of the practical utility of such gatherings. Their replies amused me, so emphatic were they; I could not have done better myself in my palmiest moments. They had both been because they *had* to, — the one to Buda-Pesth because he was sent there; the other here because he held some function in a certain section, — and they both proclaimed the utter futility and boredom of such events and cordially wished they might never have to go to another. So this made me feel better, since, as numbers were so strongly against me, I had seriously wondered whether I was not in the wrong.

Soon after my return to Paris my attention was called by a friend to a book that was published here not long ago, which I was advised to read, as it contained views very adverse to some that I warmly cherish. The title is "*Comment former un esprit,*" and its author is a certain Dr. Toulouse, who holds the position of physician to one of the hospitals for mental disorders. Dr. Toulouse has treated the subject on lines destined for the public, and has produced an interesting little work which, though its views will not be accepted by every one, is likely to be of considerable practical use.

But the chapter that was dangled as a red rag before my mind's eye is the one on page 217 entitled "Rest." In these brief eight pages the author develops such a novel proposition that it may be interesting to submit it to your readers. To me his idea sounds like the rankest kind of heresy; it is, furthermore, in absolute opposition to the general experience of mankind ever since the foundation of the world. But still, neither of these arguments necessarily condemns any theory; the same might be said of anything startlingly new, — the x-rays, wireless telegraphy, etc., — so let the reader judge. Besides, as I remarked once before, a good iconoclast is always interesting, no matter how wild his ideas.

The author's theory, then, is this: That all of our present distribution of work and rest is wrong; that the very most he is willing to admit is the alternative of day and night; that our system of weekly dominical rest, and still more of shorter or longer vacations, Christmas, Easter, Whitsuntide, etc., is antiphysiological; and that the *ideal* would be to arrange life in such a way that each effort, whatever its nature, should be *immediately* succeeded by a period of rest sufficient to make good the cost, and in this way the system be *constantly* kept in first-class working order. And he cites as his ideal the heart, which night as well as day, year in and year out, has its existence laid out on this plan: a brief moment of work, followed by sufficient rest to effect repairs.

This idea is ingenious, there is no gainsaying the fact. But from the very start an objection arises, which is that, after all, the heart is merely a piece of meat, and it does not follow that what is a good diet for a muscle would prove a satisfactory one for the highly organized contents of the cranium! The problem with the nervous centers is different. With the heart it is merely a question of accomplishing a given amount of work; the muscle is more or less a machine, and no one asks it whether *it likes* to do this work or not; it just does it because it can't help it.

But with the nerve centers there is always that knotty problem of getting work performed by a voluntary and resisting agent, and this appears to be the weak point in the author's thesis.

He seems to think his example of the heart such a model. Only think, it doesn't even rest at night! "Let us ponder on this example, which will prove to be a precious guide. Experience has shown me that all activity should conform itself as closely as possible to the conditions under which the heart works. Thus the ideal in walking would be a gait sufficiently slow for one leg to rest from its fatigue after a step while the other was moving."

Again: "We should, therefore, have a period of rest corresponding to each effort, and the closer this period follows the phase of action, the more efficacious it will prove. In this respect a pause during the work itself, provided it is of sufficient duration, will be found to be best."

Further on: "Fatigue accumulates, so that a long phase of rest does not completely make good the results of exhaustion, which short and repeated intercalated periods of rest would have prevented. Our aim should be to insert the greatest possible number of interruptions in our work."

"Let us endeavor to liquidate the fatigue of the day in the night following. If, on awakening, the body is not quite fresh and the mind desirous of effort, the work is too severe. Weekly rest and prolonged vacations will then be in vain; nothing will repair the daily wear that is not made good in a daily manner."

I have given these extracts to show that I have represented the author's idea in a perfectly equitable fashion. There is no mistaking what he means, even if we did not find him expressly state further on that he looks on weekly rest and vacations simply as pleasures, moments when a man, freed from his routine preoccupations, can give himself up to thoughts and amusements for which at other times he would not have leisure.

Now it certainly takes nerve to sit down and propose such a plan as this. From time immemorial it has been found expedient to intercalate periods of rest in our daily vocations, resulting in the biblical Sabbath every seventh day. I once heard it said, but do not know with how much truth, that during the French Revolution, when they were changing the calendar and everything else, they decided to try a week of *ten* days, but ultimately had to give the idea up as they found it did not work satisfactorily.

So apparently the weekly rest and change is an indispensable minimum, to which *hors d'œuvres* of various kinds have been added as sauce, from the innumerable saints days and feasts of the Catholic peoples to the interminable Christmas, Easter and summer vacations of the public schools in the leading Puritan country, Great Britain. The British schoolmaster has now devised a plan whereby a boy is left to recreate his overtaxed mind for *a good one third* of the year. Now it is a curious fact, from which deductions of various kinds can evidently be drawn, that it is precisely this English public school education that has produced the most practical, serviceable, good-all-around type of man that the world has yet seen! Could we not, for instance inquire whether, if the boy's leisure were raised to six months, he would not be even a better type of man still?

But leaving this order of speculation to one side, just fancy our existence if it were combined on the plan suggested by Dr. Toulouse! Would it be possible to devise anything more perfectly insupportable and monotonous? We should then be little better than machines, and all the joy of life would have departed. Strange that a man of some prominence could evolve such an evidently unworkable system as this. I think, however, that he shows the cloven foot in one of his paragraphs, in which he says as follows: "Life in the country sometimes depresses Parisians, who require a certain minimum of excitement to retain their normal condition."

This is altogether true. But the author might have gone farther and said that there is a certain type of Parisian who is profoundly miserable if he is not at least somewhere within the city fortifications, his ideal of bliss being a boulevard café at or after midnight. I once knew such a man. Nothing could induce him to leave town in the hottest summer weather or in the gloomiest days of winter. Once in his life his wife tempted him off to Switzerland, which he stood just forty-eight hours and then took the fastest train back to his native asphalt. I should not be prepared to answer for the consequences to this man if necessity in some way made it obligatory for him to leave Paris for good.

Now I have never met Dr. Toulouse personally, nor do I know anything of his tastes or habits, but it would really not surprise me to learn that he belonged to this type of man, caring for very little outside of a life organized on an unvarying plan in one place, and impervious to the pleasures derived by most people from relaxation and change.

Further arguments against his idea, were they needed, are not far to seek. Thus, take agriculture. Does not everything here argue against the idea of monotony? Has it not been found absolutely necessary to work a farm on the principle of the rotation of crops, and are not fields even allowed to remain fallow at certain intervals? Yet what else is it than allowing the mind to remain fallow, when the brain-worker drops his ordinary wearing occupation altogether for a period and takes himself off somewhere to busy himself exclusively with something quite different? What else is it than putting the mind out to grass temporarily, when Mr. Gladstone started in to cut down trees on his estate, when Mr. Balfour takes the train to St. Andrews and spends days knocking a tiny white ball about the moors of Scotland, or when various and sundry brain-workers grasp a well-worn ice axe and don their shabby old clothes, and proceed to mountain climb with frenzy for a few weeks?

I remember once hearing some railroad men talking about a system that had been started on the Pennsylvania line in regard to handling the locomotives. The usual plan had been to assign one man to a given engine and let no one else touch it; whatever runs that engine did were made under his hand, and the machine was put in the roundhouse and carefully overhauled and attended to during intervals. But along came a superintendent who was going to change all that. His idea was that a great deal of energy was lost and waste entailed by this cooling off and heating up again, a lying by to rest, of these costly machines, and that it would be more profitable to have an engine sent out on another run with a different man as quickly after its coming in as the necessary overhauling could be effected. But experience was not slow in showing that the results of this plan were lamentable and that the locomotives did far better on the original system.

Dr. Toulouse's proposition does nothing less than attempt to upset the universally accepted doctrine of the value of *change* as a remedial agent. His idea of life, which would merely be monotony raised to its highest expression, leaves no room whatever for change. Nor do I mean in any way as a mere pleasure; he admits the existence of change as a means of enjoyment, "when the mind can busy itself with thoughts and pastimes for which it would otherwise not have leisure." I mean change as an almost vital necessity, without which it is not easy to conceive of this life as a workable proposition. What doctrine is more thoroughly inculcated into all medical men of a certain length of experience than that of the value of change? Every physician has seen its beneficial effects over and over again, and in cases where everything else had been tried and failed. And not momentary or unimportant change, but a change radical and protracted.

No, it looks as though the author of this book had started on a hopeless trail, and I am afraid that he will find every one's hand against him. To try, with a stroke of the pen, to upset the accumulated experience of the ages on a given point is a pretty considerable undertaking for one man, and he might have seen from the start that the odds were heavily against him. However, this does not at all change the fact that he has written a very remarkable little book, and that in several of the chapters he has tackled questions which are badly in need of ventilation, among other that of instructing children as to sexual questions. The book is only popular, and possibly lacking in the most elementary thoroughness; but a book cannot have all the qualities at once, and this one will very likely fulfill its purpose excellently. "SPECTATOR."

P. S. Progress in radiology is remarkable. I was shown a negative the other day of the renal regiono f a normal person, on which could be perfectly plainly seen the outline of the kidney, of the adrenal, ureter and of the psoas-iliac muscle!

RECORD OF MORTALITY

FOR THE WEEK ENDING SATURDAY, NOV. 13, 1909.

CITIES.	Reported deaths in each.	Deaths under five years.	CITIES.	Reported deaths in each.	Deaths under five years.
New York	—	—	Waltham	5	1
Chicago	594	156	Pittsfield	6	1
Philadelphia	—	—	Brookline	7	—
St. Louis	—	—	Gloucester	5	1
Baltimore	172	63	North Adams	4	2
Cleveland	—	—	Northampton	4	0
Buffalo	—	—	Chicopee	3	0
Pittsburg	—	—	Medford	5	2
Cincinnati	—	—	Beverly	5	—
Milwaukee	—	—	Leominster	2	1
Washington	—	—	Hyde Park	2	—
Providence	—	—	Melrose	5	0
Boston	173	42	Newburyport	6	—
Worcester	37	8	Revere	2	—
Fall River	56	18	Westfield	1	—
Cambridge	35	9	Woburn	5	1
Lowell	19	5	Peabody	—	—
New Bedford	28	12	Marlboro	6	1
Lynn	23	6	Attleboro	5	0
Springfield	30	7	Adams	3	—
Lawrence	25	12	Clinton	6	2
Somerville	26	3	Gardner	4	0
Brockton	15	3	Milford	3	2
Holyoke	—	—	Watertown	8	0
Malden	10	2	Plymouth	—	—
Chelsea	10	3	Southbridge	3	2
Newton	10	—	Weymouth	1	0
Salem	11	1	Framingham	4	2
Haverhill	9	—	Wakefield	—	—
Fitchburg	10	3	Webster	—	—
Everett	8	1	Arlington	3	—
Quincy	—	—	Greenfield	1	—
Taunton	15	2			

SOCIETY NOTICES.

BOSTON ASSOCIATION FOR THE RELIEF AND CONTROL OF TUBERCULOSIS. — The annual meeting of the Boston Association for the Relief and Control of Tuberculosis will be held at 3 Joy St., Nov. 29.

THE NORFOLK DISTRICT MEDICAL SOCIETY. — A meeting of the society will be held at Masonic Temple, 171 Warren St., Roxbury, Nov. 30, at 8 o'clock. Communications: "Intestinal Hygiene in Gynecology," Charles B. Darling, M.D. "Neurasthenia and Gynecology," Edward Reynolds, M.D. The discussion will be opened by F. H. Davenport, M.D., R. A. Kingman, M.D., and J. J. Putnam, M.D. Refreshments after the meeting.

BRADFORD KENT, M.D., *Secretary*,
798 Blue Hill Ave., Dorchester.

NEW ENGLAND BRANCH OF THE AMERICAN UROLOGICAL ASSOCIATION. — There will be a meeting of the New England Branch of the American Urological Association on Tuesday, Nov. 30, at 8.15, at the Boston Medical Library. 1. Demonstration of patients, specimens and instruments, and the reports of cases. 2. "A Few Observations on Some of the European Urinary Clinics," Dr. A. L. Chute. 3. "Suppurations of the Kidney Other than Those Due to Tuberculosis and Calculus," Dr. E. L. Keyes, Jr., New York. Discussion by Drs. A. T. Cabot, Paul Thorndike, F. B. Lund and others.

R. F. O'NEIL, M.D., *Secretary*,
379 Beacon St. Boston.

BOSTON SOCIETY FOR MEDICAL IMPROVEMENT. — A meeting of the society will be held in Sprague Hall, Boston Medical Library, on Monday evening, Nov. 29, at 8.15. Program: "Hookworm Disease," Dr. M. J. Rosenau. (By invitation.) "Pellagra," Dr. A. W. Balch. (By invitation.) The members of the Suffolk District Medical Society are invited to be present at this meeting.

DANIEL FISKE JONES, M.D., *Secretary*,
195 Beacon St.

BOSTON MEDICAL LIBRARY IN CONJUNCTION WITH THE SUFFOLK DISTRICT MEDICAL SOCIETY. — General meeting, John Ware Hall, Wednesday, Dec. 1, 1909, at 8.15 P.M. "Recent Progress in Anesthesia," James Taylor Gwathmey, M.D., of New York. "Technic of Spinal Anesthesia," Freeman Allen, M.D. "Rectal Anesthesia," John H. Cunningham, Jr., M.D. "Ethyl Chloride as a Preliminary to Ether," Arthur M. Dodge, M.D. Discussion by Drs. A. Post, J. B. Blake, J. T. Bottomley, Hugh Cabot, and others. Light refreshments after the meeting.

WILLIAM H. SMITH, } Committee on Medical and
DAVID CHEEVER, } Social Meetings of the
HORACE BINNEY, } Boston Medical Library.

FIFTH COURSE OF HARVEY SOCIETY LECTURES. — 1909: Oct. 30, Prof. Richard H. Pearce, University and Bellevue Hospital Medical College, "The Problems of Experimental Nephritis." Dec. 4, Prof. Otto Cohnheim, University of Heidelberg, "The Influence of Sensory Impressions on Scientific Deductions." Dec. 11, Prof. T. C. Brodie, University of Toronto, "Renal Activity." Dec. 18, Prof. Carl G. Huber, University of Michigan, "Renal Structure." 1910: Jan. 15, Prof. Ludwig Hektoen, University of Chicago, "On Certain Phases of the Formation of Antibodies." Feb. 19, Dr. Eugene L. Opie, The Rockefeller Institute, "Inflammation." March 5, Prof. Adolf Meyer, Johns Hopkins University, "The Present Status of Aphasia and its Relation to Psychopathology." March 19, Prof. A. Magnus-Levy, University of Berlin, "Pathology and Therapy in Diseases of Metabolism." April, Prof. Jules Bordet, of the Pasteur Institute of Brussels, is expected to deliver a lecture before the society in April. The exact date and title will be announced later. These lectures will be given on Saturday evenings, at 8.30, in the Academy of Medicine, 17 West 43d St., New York.

RECENT DEATHS.

WALTER CHANNING BLAISDELL, M.D., M.M.S.S., died in Everett, Nov. 14, 1909, aged sixty-five years.

DR. F. B. SPRAGUE, of Providence, R. I., a specialist of distinction on the ear and throat, died Nov. 17, at the age of forty-four. His death was due to septicemia, said to have been contracted at an operation upon a charity patient done several weeks ago. Dr. Sprague was a graduate of the Medical Department of the University of Vermont.

DR. WILLIAM A. BELL, a prominent physician of Yonkers, N. Y., died suddenly from cardiac disease, while attending a patient, on Nov. 15. He was fifty-three years of age and was graduated from the College of Physicians and Surgeons, New York, in 1886.

BOOKS AND PAMPHLETS RECEIVED.

Amethyst Tinted Lenses. A Preliminary Communication. By L. Webster Fox, M.D., LL.D. Reprint.

Report of Surgical Operations at the Briggs' Infirmary during its Eighteenth Season, from Sept. 10, 1908, to Aug. 1, 1909. Reprint.

Studies in Rabies. Collected Writings of Nathaniel Garland Keirle, A.M., M.D., D.Sc. With an introduction by William H. Welch and a biographical sketch by Harry Friedenwald. Testimonial edition. Baltimore. 1909.

Otitic Cerebellar Abscess. By Heinrich Neumann. Translated by Richard Lake, F.R.C.S. London: H. K. Lewis. 1909.

Lehrbuch der Krankheiten des Herzens und der Blutgefässe. Von Dr. Ernst Romberg. Zweite auflage. Illustrated. Stuttgart: Ferdinand Enke. 1909.

The Medical Knowledge of Shakespeare. By Albert C. Getchell, M.D. Reprint.

Cancer and Sarcoma. By H. D. Walker, M.D. Reprint.

Simple Refraction for Family Physicians. Its Promotion during 1908–9. By Leartus Connor, A.B., M.D. Reprint.

La Cystoscopie a Vision Directe et ses Applications. Par le Dr. Georges Luys. Reprint.

The Rational System of Medical Education will furnish Physicians Adequate for the Entire Field of Medical Practice. By Leartus Connor, A.B., M.D. Reprint.

Treasury Department. Public Health and Marine-Hospital Service of the United States. The Second International Conference on Leprosy. Held in Bergen, Norway, Aug. 16 to 19, 1909. By Donald H. Currie. Washington, D. C. 1909.

Treasury Department. Public Health and Marine-Hospital Service of the United States. Studies upon Leprosy. V. A Report upon the Treatment of Six Cases of Leprosy with Nastine (Deycke). By Walter R. Brinckerhoff, S.B., M.D., and James T. Wayson, M.D. VI. Leprosy in the United States of America in 1909. By Walter R. Brinckerhoff, S.B., M.D. Washington, D. C. 1909.

The Ultimate Ends of Surgery, with Special Reference to the Surgery of the Pelvic Organs in Women. By W. P. Manton, M.D. Reprint.

The Enzyme Treatment for Cancer. By William Seaman Bainbridge, A.M., Sc.D., M.D. New York. 1909.

Impressibility in Dementia Præcox. By Charles Ricksher, M.D. Reprint.

Index Catalogue of the Library of the Surgeon-General's Office, U. S. Army. Second Series. Vol. LV. Washington, D. C. 1909.

Treatment of the Diseases of Children. By Charles Gilmore Kerley. Second edition, revised. Illustrated. Philadelphia and London: W. B. Saunders Co. 1909.

Original Articles.

A STUDY OF THE FIRST SERIES OF ONE HUNDRED CÆSAREAN SECTIONS PERFORMED IN THE BOSTON LYING-IN HOSPITAL.

I.

INTRODUCTION.

BY CHARLES M. GREEN, M.D.,
Visiting Physician.

The first Cæsarean section in the Boston Lying-In Hospital was performed by the late Dr. George Haven, July 15, 1894; the one hundredth section by the present junior member of the staff, June 29, 1907. Altogether, ten former or present members of the staff have operated in this series of cases, the four former members performing 15, 12, 7 and 3 sections respectively, and six of the present staff performing 22, 19, 14, 4, 2 and 2 respectively.

In some of the earliest operations the surgeon brought his private assistant; thereafter the house physician acted as first assistant, and the nursing staff provided the operating-room nurse. Since the house physicianship has changed every four months, and the nurses' tenure every six months, and since, moreover, the several physicians' terms of visiting service have been for periods of only one to four months in the year, it has been seldom that a given operator has had the same assistance in more than two sections, and the advantages of "team play" have not obtained.

It is of interest to examine results in the several groups of 25 cases. In the first group, 22 sections were performed by two operators, 11 each, and 3 sections, 1 each by three operators, without previous experience with the operation; the two experienced operators, in 22 sections, lost 1 mother and 2 infants, while the three surgeons, each operating on his first case, lost 1 mother and 1 infant. In the second 25 cases seven operators were concerned, five of whom were gaining their early experience; the result was a loss of 4 mothers and 2 infants. In the third group there were four operators, of whom three had had a fair experience with the operation; in this group there was no maternal loss, and only 1 infant, with a congenital heart lesion, perished. The operations of the fourth group were performed by four surgeons, each with an experience of more than 5 cases, and by three surgeons, only one of whom had done the operation before; 2 mothers were lost by one of the more experienced surgeons, and 2 babies died of congenital heart disease and of inanition (on the seventeenth day) respectively. Altogether, in the 100 cases, 8 mothers and 8 infants were lost. The details of the fatal results, with comments thereon, will appear in the following papers written by present members of the staff. It is fair to state that each writer has been free to express his own opinions, which are not necessarily shared by all his colleagues. The papers are offered by the Boston Lying-In Hospital Staff in the hope that the hospital's experience may be of service to the profession in helping to define the indications, technique and post-operative care of modern Cæsarean section. The staff desire to acknowledge their obligation to Dr. John T. Williams for his valuable assistance in preparing the data from the hospital records.

II.

INDICATIONS.

BY FRANKLIN S. NEWELL, M.D.,
Assistant Visiting Physician.

In considering the indications for which the Cæsarean operation is performed, it is interesting to note the changes which have taken place in the attitude of the profession since an increased experience with the operation has demonstrated its comparative safety when certain fundamental laws have been obeyed. At the time when this series of cases was begun, only one legitimate indication for an abdominal delivery was recognized, and that was some definite obstruction to a pelvic delivery which rendered the birth of the child *per vias naturales* either impossible or possible only after the sacrifice of the fetal life.

At the present time the successful performance of a large number of operations for various conditions has led to a gradual extension of the indication for operation until we are now standing on the threshold of one of the most marked changes which has ever had to be considered in obstetrical practice, i. e., whether, when a definite obstruction, even of minor degree, to labor is regarded as probable, it is not wiser to resort to a primary Cæsarean section for the benefit of both mother and child rather than to allow the patient to undergo a more or less exhausting labor, to be followed almost inevitably by a difficult pelvic operation, which is doubtful in its outcome, both to mother and child. Furthermore, the performance of many operations, after the test of labor has been more or less faithfully applied, has given rise to a series of results of a more or less unfortunate nature, which leads to the question whether it is justifiable to perform a late Cæsarean section on any patient except where pelvic delivery by any means whatsoever is impossible.

This change in the status of the Cæsarean operation has not as yet been generally recognized except by the operators who have been repeatedly performing the operation, but must compel in time the attention of the general practitioner and of the non-surgical obstetrician.

Throughout the profession the attitude has been for a long time that, if the mother's life was saved, any other unfortunate results that might ensue could be considered as a matter of more or less hard luck, but to-day it must be recognized that the obstetrician who allows his patient to go into labor without a careful study to ascertain as definitely as possible the probable outcome, both for mother and child, instead of assuming that everything will probably go well, has failed in his professional duty. To-day, however, although errors of judgment, which may result more or less unfortunately, will always be possible, ignorance of the possibility of trouble can no longer be held as an excuse for failure.

Ten years ago Cæsarean section was considered an operation of doubtful expediency, only to be advocated in cases when the birth of a living child was at least improbable. The old statistics based on the operation, performed on exhausted women under inadequate asepsis, were so uniformly bad that before the revised operation could win an established place in obstetrics it was necessary that a large number of favorable cases be obtained in which the operation was absolutely indicated before its widespread application could be advocated. At first the question to be settled was, Can the patient be delivered in any other way? If that question were answered in the negative, Cæsarean section became the operation of choice, but no operator approached an abdominal delivery without great doubt as to what the outcome might be.

With increased experience and improved asepsis the question has come to be, not, Is Cæsarean absolutely necessary? but, Is not Cæsarean safer than the other operative methods of delivery in doubtful cases? To-day this question can be answered so definitely in the affirmative that under proper conditions the patient can be subjected to operation at the time of election, not only with the feeling that all doubt as to the successful outcome both for her and the child have been removed, but also with the assurance that, far from either her life or after-health being compromised by an abdominal delivery, an absolutely favorable prognosis can be given as in other simple abdominal operations, providing certain cardinal principles are followed out.

This change in the views of those best qualified to judge has necessarily led to a good broadening of the indication for operation, and there seems to be little question but that, as time goes on, the indications will become more and more extended, i. e., the indications for the operation at the time of election. It is, however, a different matter when the time of election has passed, when the patient is in labor, and perhaps well advanced in labor, and it is in these cases that the greatest care will always be necessary in order not to subject the patient to an undue risk.

The experience of many operators has shown that operation at the time of election, i. e., before the beginning of labor, after careful preparation of the patient, is accompanied by almost no mortality and can be classed among the safe surgical procedures. On the other hand, the operation performed after the beginning of labor, even though labor be slight and the patient not exhausted, is accompanied by a constant mortality which steadily rises with the length and severity of the labor to which the patient has been subjected, particularly in those cases where aseptic technic has been imperfectly carried out, or in which serious attempts at active pelvic delivery had been made. Associated with this increasing mortality we find that the convalescence among the patients which survived the operation is also less satisfactory, the discomforts suffered by the patient apparently increase in almost direct ratio to the absence of the proper intestinal preparation for operation, and the length of labor to which the patient has been subjected in addition to the graver complications, especially phlebitis following operation, febrile temperature and infection of the abdominal and sometimes of the uterine wound, are increasingly common the longer the labor which the patient has undergone. For these reasons it is necessary to consider carefully in each individual case whether the increased safety of the operation to the child in the face of anything except the absolute Cæsarean indication can be advised when the risk to the mother is unquestionably so much greater. It is evident, therefore, that while the indications are becoming more clearly defined for operation at the time of election, each case must be most carefully considered on its own merits before operation after the beginning of labor can be justified.

In the series of cases reported in this paper the operation has been performed almost entirely for a pelvic indication, there being only four cases in the hundred in which pelvic deformity or the repeated loss of children at previous labors has not been the definite indication. The following table shows in a general way the indications for operation:

Contracted pelves (type of pelvis not given), including 17 primiparæ, with internal conjugate 8 cm. or less,	22
Multiparæ (size of pelvis not stated), but in whom one or more babies have been previously lost by the ordinary obstetric operation,	40
Dwarf pelvis,	2
Deformed pelvis, due to early hip disease,	6
Deformed pelvis, due to rickets,	1
Contraction of pelvic outlet,	2
Distortion of uterus from cicatricial contraction following myomectomy,	1
Distortion of uterus, following ventro fixation,	1
Patients on whom previous Cæsarean section had been performed,	25
Total,	100

The indications which have been present in the cases included in this series may be briefly summarized as follows: There were 22 primiparæ, in 17 of whom the internal conjugate measured 8 cm. or less, and in 5 the comparison between the size of the fetal head to the pelvic brim under ether showed such discrepancy that there was little or no chance for an unmutilated child passing the pelvis. In other words, the relative indication of Cæsarean at the time was definitely present.

In 40 cases, one or more babies had been lost by previous attempts at delivery by the pelvic route, performed by various operators, some of known and some of unknown ability. And although in 31 of these no statement is made in the record as to whether pelvic contraction was present or not, and abdominal delivery was performed on account of the previous history, the suggestion is very strong that in the majority more or less pelvic contraction existed, while in the remainder the determining factor was an unduly large child, or, in other words, relative insufficiency of the pelvis. There were two rachitic dwarfs in this series in whom the degree of pelvic deformity was so marked that the pelvic indication was absolute even for a perforated child.

In 6 cases there was an irregular contraction of the pelvis following hip disease in childhood with ankylosis of one hip which rendered attempts at pelvic delivery difficult or impossible. Contraction of the outlet of the pelvis with the transverse diameter reduced to between 6 or 7 cm. was the indication in 2 cases.

In 25 cases a repeated Cæsarean section was performed, these patients being already included in one of the other groups already mentioned, it being our custom never to subject a patient who has had one Cæsarean section to the strain of labor on account of the danger, which is always present in such cases, of rupture of the uterus through the old scar.

In 96 cases out of 100 included in this series, relative or absolute insufficiency of the pelvis formed the indication, and in only 4 cases was it necessary to consider other indications.

In 1 patient cicatricial contraction of the lower segment following a previous myomectomy rendered the operation necessary, the result of a previous labor having demonstrated the extreme difficulty of delivery through the natural passages. Faulty uterine development during pregnancy, following a ventral fixation, with inefficient labor pains, rendered the operation necessary, in 1 case the cervix being drawn posteriorly so high above the pelvic brim that delivery *per vaginam* offered greater difficulty and danger than the Cæsarean operation.

In 1 case extreme contraction of the tissues, following an amputation of the cervix, with such rigidity of the soft parts that several hours of labor had had no effect in producing dilatation, was the indication for operation, and in the last case an extreme degree of vaginal atresia following an extensive laceration, which occurred at the first labor, rendered the operation necessary.

A study of these cases shows that the great majority of indications for the Cæsarean section are due either to contraction or deformity of the pelvis or the overdevelopment of the child, and only rarely have previous surgical procedures been responsible for undue difficulty. It must be admitted that other indications are possible, but before discussing these it would seem wiser in this paper to study the results of operation which have been obtained in this series in order to deduce, if possible, a fair working rule for future procedure, so that, if possible, a fair assumption can be made as to the justifiability of substituting Cæsarean section for other obstetric procedures in the class of cases in which the indication for the operation is not absolutely clear, but the prognosis of the ordinary operation is at least doubtful.

In summarizing the results which have been obtained from the operation, both from the maternal and fetal standpoint, it is possible to divide the cases into three general groups, and to study the results obtained according to the group in which the patient is placed.

The cases can be divided, according to the classification of Dr. Reynolds, into (1) primary, (2) secondary, (3) late. The primary cases may be defined as those operated on before the beginning of labor. The secondary cases may be defined as those in whom labor has begun, but who have not completed the first stage of labor, who have had slight labor pains for not more than twenty-four hours, or strong labor pains for more than eight hours. The late cases include all other patients. Necessarily the line between the divisions is an arbitrary one, and many cases are classified either as secondary or late who, as far as the general indication to withstand the operation, might well have been classified as either primary or secondary, but, according to the rule adopted, must be placed in one of the more unfavorable classes. For this reason the mortality in the secondary and late classes will be lower than might be ordinarily expected, particularly that of the late cases, since the group contains many relatively favorable cases.

In general the results were as follows: In the series of 100 cases, 8 patients died, a mortality of 8%. This is an unduly high mortality for any abdominal operation which is usually not absolutely necessary and in which the saving of the life of the child is the chief indication for the operation. But when we study the results according to the classification previously given, the results are more significant, and interesting conclusions can be drawn.

Primary. — There were 43 primary operations in the series. One mother died and one baby was lost. The cause of the maternal death was general peritonitis, probably due to some slip in the operative technic.

One child died a few minutes after delivery after breathing well. The cause of death, congenital heart disease. (Case 59.)

Complications (Case 62): One patient ran a moderate febrile temperature for the first few weeks after operation, but recovered without pelvic or other symptoms. In other words, among the primary operations we find one maternal and one fetal death, 2.3%, and one patient who had an abnormal convalescence.

Secondary. — There were 26 cases included in the secondary class. One mother died, on the eighth day following operation, of pyemia. (Case 81.) At the time of operation it was known that she was a poor risk, as she was suffering from chronic nephritis, but the condition which demanded operation was an extreme degree of vaginal atresia following an old laceration, so that abdominal delivery was imperative.

Two children died following delivery. One small, poorly developed child, the mother being a rachitic dwarf, died four hours after delivery (Case 4), and the other died on the seventeenth day following delivery, of inanition (Case 90).

Complications: The complications following operation were distinctly more marked in the secondary cases than in the primary. Three women suffered from phlebitis of one or both legs. One patient ran a febrile convalescence, but eventually recovered completely. In 3 cases the abdominal wound broke down and the convalescence was necessarily prolonged. In the secondary cases, then, we find a maternal mortality of approximately 4% and a fetal mortality of 8%, while the complications which appeared during the convalescence were much more prominent than in the primary operation.

Late. — In the late cases there were 31 operations. Among these there were 6 maternal deaths, approximately 19%. The cause of death in all cases, except one, was general peritonitis. The cases were as follows:

Case 17 had had slight labor for fifty-six hours previous to the time of operation, and when operated on had a foul vaginal discharge. This patient was evidently unfit to be subjected to an abdominal delivery unless absolutely indicated, she being already septic at the time of operation, and, if delivered by the abdominal route, extirpation of the uterus should have been performed, which was not done. The indication for operation in this case being only relative, the child being already dead, the operation was an unjustifiable one from every standpoint.

Case 25. The patient had been in labor twenty-four hours, marked tonic contraction of the uterus being present with a tight contraction ring, and the patient died of general peritonitis on the second day.

Case 32. In this case the operation was performed late, the patient entering the hospital after many hours of vigorous labor. A previous Cæsarean section had been performed and the operation seemed necessary on account of the danger of rupture of the uterus. Death occurred on the second day of general peritonitis.

Case 43. Cæsarean section was performed after a vigorous attempt at extraction with high forceps had failed. The patient died on the seventh day of general peritonitis.

Case 47. A sponge was left in the abdomen at the time of operation. The abdominal wound broke down on the fourth day and the sponge was removed from the abdominal cavity. The patient died on the twenty-fifty day of intestinal obstruction, due to adhesions. This is clearly a case of faulty operative technic on the part of the operator, and the death was not due to poor choice of operation.

Case 83. The patient had been in labor twelve hours at the time of entrance to the hospital, was fully dilated and apparently in good condition for operation, but it was discovered after the operation that the patient was suffering from an acute nephritis which should have contra-indicated the operation. She died on the seventh day of general peritonitis.

Complications: In 4 cases the patient ran a markedly febrile convalescence, evidently being more or less septic, but recovered without serious complication. In 2 cases phlebitis developed, and in 3 cases the wound broke down. In two instances, at least, the uterine suture was discharged through the abdominal wound.

Fetal results. — Five babies were lost, either being dead before operation was begun or dying shortly after delivery.

Maternal deaths. — Of the six mothers who died, three had been in labor twenty-four hours or more. In one, high forceps had been tried and failed. One patient was suffering from acute nephritis as a complication, and in one a sponge was left in the abdomen at the time of operation.

A thoughtful study of these results will show better than anything else what is to be expected from the Cæsarean operation and in what class of cases it may be practically a safe operation and in what essentially dangerous.

The primary operations done at the time of election are attended with little danger to the mother, no danger to the child, and a comfortable convalescence without serious complication can be prognosticated.

In the secondary cases there is evidently more risk to the mother than in the primary cases, although the risk in this class is not excessive. The complications, however, are much more frequent than in the primary operations, a fact which is possibly due to the less careful preparation before operation, and, even if no definite complications arose, the discomfort of the convalescence, particularly the early days, was markedly increased in the secondary and late cases.

In the late cases the showing is much worse than in either of the other groups. The maternal mortality was approximately 20% and there was also an increased morbidity over what was seen in the other groups. Furthermore, the fetal mortality was higher on account of the longer strain to which the child had been subjected than in the other classes of cases.

The fact that previous operative procedures had been attempted on several of the late cases and failed before Cæsarean section was performed makes it interesting to study the results in these cases. In 3 cases a tentative application of forceps was made, and delivery was found to be either unduly difficult or impossible. The forceps were then removed and a living child delivered by Cæsarean section. In these cases the convalescence was uneventful, there being no complications, showing that when merely tentative attempts at extraction had been made, the risk added by the pelvic operation, though definite, is not necessarily serious. In the other 3 cases 2 patients ran a febrile convalescence, probably due to direct infection of the uterus in the application of the forceps, and 1 patient died of general peritonitis on the sixth day. In 2 cases the baby was born dead, probably due to the previous operative attempts. Thus we see that, following attempts at pelvic delivery, 50% of our cases were more or less seriously compromised, and one third of the babies were lost, which must mean that interference with the inside of the uterus before performing an abdominal delivery carries with it grave risks to both patients.

Indications for Cæsarean section. — These results emphasize the attempts which have been made in the past to define clearly the indications and contra-indications for the Cæsarean section.

The first indication for the operation may be briefly stated as follows: The Cæsarean operation is indicated when other methods of delivery afford no hope of the delivery of a living child except at such risk to the maternal life or health that the abdominal route becomes the safer method of delivery.

The conditions and complications which render Cæsarean section unduly dangerous are: Infection of the uterus or genital canal, as shown by rising temperature, or as rendered probable by repeated vaginal examination without perfect asepsis; previous attempts at delivery. Intercurrent disease, exhaustion of the patient by long-continued labor, and uterine exhaustion, as distinguished from general exhaustion by the character of the pains and rigidity of the uterus, are the other principal contra-indications.

In the absence of these conditions, the Cæsarean operation is one of the safest methods of delivery when performed by a competent operator under proper conditions, and guarantees not only maternal and fetal life, but also the maternal health. Failure to regard these principles shows distinctly disastrous results. In our series 2 cases were definitely septic at the time of operation, and 1 patient was presumably so, failure of delivery by forceps being the reason assigned for operation. In 2 cases either acute or chronic nephritis existed as a complication, and 1 patient showed definite evidences of uterine exhaustion at the time of operation, while death in 2 cases was due to failure of operative technic. In the 3 cases in which sepsis was present at the time of delivery, no modification of treatment of the uterus or of the abdominal wound was adopted and the septic uterus was returned uncleansed to the clean peritoneal cavity with the logical result which might be expected in any case when an infected organ is left to drain into the peritoneal cavity.

With regard to the complications which followed the operation, it may be said that they are noticeable by their absence in the cases done at the time of election, and occurred with increasing frequency the longer the patient had been in labor and the more often vaginal examinations had been made. Therefore, it would seem to be definitely proved that the Cæsarean section, while never perhaps a simple operation, can be considered practically safe when the rules which have been laid down to govern its performance are obeyed to the letter, and increasingly dangerous as these rules are transgressed.

Indications for operations. — The favorable results of the operation performed at the time of election have naturally led to extension of the indications for operation, so that we no longer consider the pelvic indication the only justification. Unquestionably the pelvic indication is the principal indication for the operation and will always remain so, but there are other considerations which must be taken into account in certain cases in order to decide the proper treatment. The profession as a whole is inclined to consider the pelvic measurements as furnishing the most reliable guide as to the necessity for the operation, but in considering the pelvis alone we are only dealing with one of the factors to be taken into account in deciding the problem, whereas the size of the child must be considered as carefully as the size of the pelvis, and compared with it; and the means in our possession for settling this question are more or less unsatisfactory.

In addition, there are two other factors which cannot be estimated at all in settling the question, but which must have an important bearing on the results which may be obtained. First, the degree of ossification of the fetal head with the probability of its molding well at labor, which presents a problem which it is impossible to settle. And second, even with a fatal head slightly ossified, the power of the uterus to mold that head by strong pains can never be accurately judged, so that in the minor degrees of pelvic contraction or of pelvic distortion the decision as to operation can only be based on uncertain premises.

In the light, however, of the difference in prognosis in the Cæsarean section at the time of election and after labor has begun, it would seem wise, as far as possible, to come to a definite decision as to the treatment to be carried out before labor begins in as large a number of cases as possible, for it is unquestionably better to perform an operation which carries little or no risk unnecessarily than to apply the test of labor and perform an operation after labor has failed, which carries with it not only a definite mortality, but a considerable morbidity.

If the child is abnormally large, even though the pelvis is normal, the question to be decided is merely the probability of whether that child will pass through the pelvis rather than how large the pelvis is.

In elderly primiparæ, particularly those with rigid soft parts, in whom the damage caused by an operative pelvic delivery is apt to be considerable, possibly resulting in permanent invalidism, and in whom such a delivery carries a distinct risk to the child, whether the presentation be vertex or breech, the Cæsarean section, though not perhaps a necessary operation, will in many cases give much better results, both for mother and child, than the pelvic delivery. The question in these cases should be carefully discussed with both parents, and the choice left in their hands.

A great deal has been written in the last few years about the advisability of performing Cæsarean section in cases of complete placenta previa. My own feeling in regard to this operation in this class of cases is that an abdominal operation on a more or less exsanguinated patient for the sake of a premature child is not advisable, except in the rare cases in which a contracted pelvis or a rigid cervix would render a pelvic delivery difficult and dangerous. The choice of operation, however, must often be made on the familiarity of the consultant with the various operations possible. It is unquestionably wiser in these cases for a trained surgeon who has had comparatively little obstetric experience to operate by the abdominal route, while for the well-trained obstetrician the pelvic route would unquestionably prove the safer method in the great majority of cases.

Eclampsia and chronic nephritis have been cited as indications for the performance of the abdominal Cæsarean section. No surgeon with any regard for the welfare of his patient would perform an unnecessary laparotomy on a patient suffering from serious disease of the kidneys, and if an abdominal section were absolutely necessary under such circumstances, he would fear with reason that the operation might be followed by suppression of the urine. It seems to me illogical, therefore, to perform an unnecessary laparotomy on patients already suffering from marked urinary disturbances with a distinct tendency to suppression. If the cervix is so unnaturally rigid that manual or instrumental dilatation seems unduly difficult or dangerous, the vaginal Cæsarean section offers a comparatively easy method of delivery and one which is much safer than the abdominal operation. In my opinion, however, with care and patience a great majority of eclamptic cervices can be safely and efficiently dilated.

Tumors of the pelvis or of the generative organs may, in rare instances, so fill up the pelvic canal that delivery through the natural passages may be impossible and abdominal delivery necessary. When a bony or cartilaginous tumor of the pelvis is present, the indication for operation is that of ordinary pelvic deformity. Fibroid tumors of the lower segment of the uterus wedged into the pelvis may, in rare instances, make an abdominal delivery imperative, but it must not be forgotten that in the great majority of cases fibroid tumors, being muscular in structure, will soften and retract out of the way after being subjected for a few hours to the influences of labor and will be drawn up out of the pelvis. If good labor pains are present from early in labor this result may be confidently expected, but if the uterine contractions are weak and irregular, the fibroid tumor may be a definite indication for Cæsarean section.

Tumors of the ovary, whether cystic or solid, may become wedged in the pelvis in advance of the presenting part and make an abdominal delivery obligatory, though in many cases, unless adhesions are present, postural treatment and gentle taxis will result in raising the tumor above the pelvis, to be dealt with after the patient has recovered from the labor.

Carcinoma of the cervix, if extensive, may render delivery through the natural passages impossible or so dangerous, on account of the hemorrhage which will necessarily follow the bruising and tearing of the diseased parts, that Cæsarean section offers the only chance of saving the mother from immediate death and may lengthen her life for a few weeks or months. When the disease cannot be entirely removed, no further operation than the conservative Cæsarean section should be attempted. On the other hand, if the disease has not passed an operable stage, the Cæsarean section followed by complete extirpation offers the patient the best chance.

Atresia of the cervix following operation, or injury at previous confinements, may render delivery by Cæsarean section necessary, and the same may be said of atresia of the vagina. In many cases, however, the scar tissue will soften under the influence of labor and the baby will pass through the contracted soft parts with ease, when at the beginning of labor such a result seemed impossible. But in any case, unless marked progress has been accomplished by a few hours of good pains, the abdominal operation offers the safest means of delivery.

Distortion of the uterus following ventral fixation or other operation may result in faulty development of the uterine muscle to accomplish the birth of the child, and a relative insufficiency result, a condition which in an increasing number of cases furnishes a definite indication for the operation.

In simple suspension little trouble is to be expected, but the results of many so-called suspensions are so uncertain that it is impossible to tell, without applying the test of labor in any given case, whether a suspension or a fixation has been actually performed.

Patients who have had repeated obstetric disasters, resulting in the death or injury of the baby, may be properly considered fit subjects for Cæsarean section, even though no definite indications, pelvic or otherwise, can be found.

Patients with organic disease of the heart or in such poor general condition that the result of labor to the mother is doubtful, may, in rare cases, be properly subjected to Cæsarean section, but in the great majority of cases operative delivery through the natural passages in such patients will be found to involve less shock than the abdominal delivery and to be easy of accomplishment.

Indications for removal of the uterus following Cæsarean section. — In certain rare cases it may be found advisable to remove the uterus following Cæsarean section in order to save the patient's life or health. In exceptional cases where uncontrollable hemorrhage develops after incision and emptying of the uterus, removal of the uterus is easy and offers the only chance of saving the patient. When the patient with the uterus already infected is operated on for other conditions which render pelvic delivery impossible, a complete hysterectomy should always be performed as offering the patient the only chance for her life, for the closing of a septic uterus and replacing it in the clean peritoneal cavity practically amounts to signing the patient's death warrant.

If the indication for operation has been an operable cancer of the cervix or a fibroid tumor wedged so tightly in the pelvis that delivery is impossible, removal of the uterus at the time of the Cæsarean section is the proper operation.

When a patient has had a previous Cæsarean section some danger always exists that the scar of the uterine wound may rupture during the pregnancy, and it is very liable to rupture during labor. Therefore, it is not advisable to allow a patient who has had a Cæsarean section to go into labor.

In conclusion, it may be said that Cæsarean section, as compared with the other methods of delivery, offers at the time of election no greater risk for the mother than a conservative high forceps or version and a greatly increased chance of saving the child.

In the secondary cases a certain increased risk to the mother is present and Cæsarean section should only be performed after the patient perfectly understands that, from her standpoint, a certain increased risk is present over delivery with forceps or version and that the justification for operation lies in the greatly increased chance for the child.

The risk to the mother in these cases is comparatively slight, but is constantly present, and it is not fair to operate on these patients without their understanding fully the risk which they are taking in each individual case.

In late cases, particularly those in whom some suspicion of sepsis exists, the risk of abdominal delivery is so great that it is not to be advised when any other means of delivery is possible, for an operation which carries a mortality of from 10% to 20% must always be classed among the distinctly dangerous surgical procedures.

And it is poor surgery to deliberately sacrifice a mother for the chance of a living child, particularly when operation will, in many cases, result in the loss of the child as well as in the loss of the mother.

III.

TYPES OF PELVIC DEFORMITY. TECHNIQUE.

BY LEO V. FRIEDMAN, M.D.,
Physician to Out-Patients.

Pelvic Deformity as an Indication for the Performance of the Operation.

In the series of cases here described there occurred most of the common forms of pelvic deformity, and some of the rare forms. The majority were justo-minor, simple flat and pelvis with a reduced outlet (i. e., male arch). The English, Irish, American, German, Swedish, Italian, Jewish and Negro races were all represented. However, in consideration of Cæsarean indications, it has seemed to me advisable to consider a group of general facts, including the size or estimated size of the child rather than the specific measurements of the individual case. These facts which, I believe, are accepted generally have led me to formulate a practical course of action covering all cases.

Pelvic measurements, internal as well as external, are so far from accurate and so liable to be deceptive, either because of their inaccuracy or because they do not take into account the variable size of the child, that they are to be held merely as generally indicative of a large or small pelvis, the maintenance of relative proportions being fully as important as the approximation to the arbitrary standard. Certain cases in this series after the first Cæsarean being unable to reach the hospital in season delivered themselves of a larger child than had been delivered previously by section. Certain cases which presented, according to their pelvic measurements, either the absolute indication or a conjugate only slightly greater than that accepted as absolute, delivered themselves or were delivered successfully by forceps. Finally, I have seen in private a small series of Nægele pelves where almost complete obliteration of the excavation on one side did not prevent the delivery by forceps without great difficulty of a living and uninjured child.

In these Nægele pelves, I hasten to add, I had given the opinion that a delivery safe for mother and child could not be obtained except by section, and it has been the result in these and other similar instances rather than any prejudice against Cæsarean section which has convinced me that a decision for or against Cæsarean section based on the pelvic measurement or on the type of pelvic deformity is highly unsatisfactory. I hope now to be able to outline a simple method of estimating pelvic relations which shall afford a more practical basis for this important decision.

Nothing is more striking in obstetric literature than the neglect of studies of variation in fetal size. Monographs are written concerning a variation of 0.5 cm. in the conjugate, but little is said of the difference in the size of the head between a child of 6 lb. and one of 11 lb. It is well known that the size of the fetal head does not increase at the same rate as the total weight of the fetus, but this fact need not prevent an *approximate* estimate of the size of the head based on the total weight, and I have found such an estimate of more practical value than an isolated study of the pelvic measurements. Furthermore, in illustration of the import of considering the size of the child, as well as the size of the pelvis, it will not be questioned that in many instances a slightly contracted pelvis has permitted the easy delivery of a small, first child, only to prove an insuperable obstacle even to the delivery by forceps of a larger second or third child.

The approximately correct estimate of the weight of the child is to be attained by practice. Careful palpation with this object in view, followed by subsequent checking of the estimated by the actual weight, must result in greater accuracy with repeated experience.

In making such an estimate, certain factors are to be borne in mind. (1) Deduction must be made for the thickness of the abdominal wall by picking it up between thumb and finger directly over the uterus. (2) Deduction must be made for the amount of *liquor* in the uterus by testing the elasticity of the uterine contents between the two palpating hands. (3) Allowance must be made for as much of the head as lies below the pelvic brim and cannot, therefore, be included in the grasp of the palpating hands. These reservations having been made, the obstetrician places one hand on either side of the uterus, and, with fingers spread, grasps the child and estimates bulk and, indirectly, weight. Approximately normal weight is balanced with approximately normal pelvic measurements. When the child is estimated to be of normal weight and the measurements diminished, or where with normal measurements we find a child distinctly over the normal weight, a second procedure is to be followed. First, a tentative vaginal examination is made with rigid asepsis. If the examining fingers find the head in the excavation, our concern is only with the outlet, even if the conjugate gives the absolute indication for Cæsarean section. But where the head is free above the brim, or lightly engaged, it is wiser to examine under full anesthesia. Now the half hand is introduced, and while the other hand above the symphysis forces the head into the pelvis, the examining hand can determine with greater accuracy the relative proportion between head and brim.

I venture to assert that even after limited experience in this maneuver, more accurate determination of the relative proportion or disproportion can be thus attained than is afforded by pelvimetry.

Where by such pressure as one hand affords the convexity of the head descends well into or through the brim, it usually follows that effective pains drive the head into an intermediate or low position after two to four hours of labor. Where the head refuses to enter the brim and thorough palpation discloses its disproportion, Cæsarean is indicated.

Numerous refinements of this method will suggest themselves to the examiner. The ability of the head to mold or contrawise its ossification can be detected. Osseous protuberances on the inner surface of the pelvic bones may be palpated. The race of the child (tendency to mold) and the age of the mother (amount of ligamentous extension) must receive proper valuation.

In hospital practice where the patient is usually in labor when first seen, the above procedure can be applied immediately. In private practice it involves careful watching of the position of the head during the last month of pregnancy and examination under ether whenever the head fails to pass the brim or become firmly engaged a week before the expected labor, except where a large pelvis and small child permits ballottement to the end of pregnancy.

This simple but practical procedure is obviously not an original one. It has long been in use among obstetricians, but I have been led to give a brief outline of it because of the present tendency to make the decision for or against Cæsarean section rest wholly upon the pelvic measurements. The proposal to turn to Cæsarean section in every case where the head is not in the excavation at the beginning of primiparous labor is, I believe, over-radical. Admitting the low mortality of early section, it does not seem to me that the prevention of maternal pain and the ease of the operation (from the point of view of the obstetrician) compensate the mother for either of the two sequels necessitated by Cæsarean section, i. e., operated sections or her limitation to one child.

Finally, lest the above statements be construed to indicate opposition to Cæsarean section, I wish to emphasize my enthusiastic preference for it over any other substitute whenever it is really necessitated by disproportion between child and pelvis.

Technique of the Operation.

The preparation of the patient is discussed elsewhere. In regard to this I will only say that in recent years it has been the custom to reduce to a minimum whatever preparation has to be done before the beginning of the anesthesia.

The instruments are such as would be selected for any abdominal operation — knife, two pairs scissors, two pairs mouse-tooth or anatomical forceps, twelve hemostats and a needle holder. But in addition to the above-named it is well to have four broad ligament clamps, should it be necessary to proceed to a complete hysterectomy. Other instruments are frequently used for convenience and time saving. Thus I have found Reynold's right and left curved needles (somewhat like aneurism needles) very good for passing the sutures through the uterine muscles. It is also well to have two hemostats with long jaws (at least two inches) to facilitate clamping the cord. In this series of cases it has been the rule for the operator to employ four assistants: (1) To assist directly at the wound; (2) to make pressure on the uterine arteries so as to control hemorrhage; (3) to thread needles and to pass sutures and instruments; (4) to take charge of the baby. All of these assistants present themselves " sterile " in gown and gloves. Each is competent to perform any part of the operation. Especially has it been the custom to select an experienced assistant for the care of and, when necessary, the resuscitation of the baby.

The anesthetist, not a novice, has full responsibility for the general condition of the patient. He gives subcutaneous stimulation if it be needed, and at a selected time the subcutaneous injection of aseptic ergot.

The operator stands on right or left, according to his custom, the first assistant opposite him, the second on the same side as the operator and facing him at the patient's thighs.

The operation is begun at the earliest moment of full surgical anesthesia. With one stroke of the knife the operator cuts through the abdominal wall, making a vertical incision about eight inches long, equally above and below the umbilicus. This incision is usually made in the median line, sweeping to the left in a small curve at the umbilicus so as to avoid that structure.

The uterus is now delivered through the wound and supported by the hands of the operator, while the two assistants wall off the peritoneal cavity with dry sterile towels. This being accomplished, the second assistant places one hand on each side of the cervix and makes moderate pressure on the uterine arteries. The operator makes a short incision through the uterine wall with a knife, if possible avoiding injury to the membrane so as to protect the child. This incision is enlarged with the scissors so as to extend in the median vertical line from the fundus well down to the cervix in its lower portion, carefully avoiding the bladder. The membranes are then ruptured and the child delivered. The child is seized by whatever part presents in the incision, but care is used to deliver either head or feet first, so as to avoid tearing the uterus by dragging it through transversely.

Up to this point the operator works quickly so as to avoid lengthy etherization of the child or its asphyxiation if the placenta is found under the incision. The operator thus far requires from one to three minutes. It was formerly the custom to complete the whole operation with great speed, but as there is no logical reason for haste after the delivery, the repairing sutures should be placed carefully, since without any haste the whole operation can readily be completed in the best manner in thirty or thirty-five minutes.

When the placenta is found directly under the uterine incision, it is pushed to one side by the hand as it grasps the presenting part. Attempts to locate and avoid the placenta before making the uterine incision are time-consuming and usually unsuccessful. In these cases it has been the custom to deliver the uterus instead of incising it *in situ*. But in some instances where the uterus was found firmly held by adhesions, the result of a previous Cæsarean or other laparotomy, it was incised without being delivered. However, the former method has been found more satisfactory where practicable, partly because it affords better control of the uterine arteries, partly because it allows more thorough protection of the general peritoneal cavity by walling off.

In one or two instances where the scar of a previous Cæsarean was found adherent to the abdominal wall throughout its length, the whole operation was performed extra-peritoneally by going directly through the old scar. The uterus usually contracts well immediately after the delivery of the child, and to assure this closing down the anesthetist has orders to give the ergot when the operator begins the uterine incision.

The child having been handed to the fourth assistant, the operator carefully removes placenta and membranes. If there is much bleeding, in spite of the pressure on the uterines made by the second assistant, a large gauze sponge is packed into the uterus and the placing of sutures is promptly begun.

In the early cases of the series the cervix was dilated from above so as to insure drainage, but this has been omitted for some years without any bad results. Likewise the elastic ligature for the lower segment has been omitted, being replaced by the hands of the second assistant, which method has been found equally satisfactory in controlling hemorrhage and less likely to cause delayed retraction of the uterus as a whole.

The choice of suture material for the uterus has varied greatly with the individual operator. At first all used silk, and there were many patients with sinuses persisting until a stitch was fished out with a crochet needle. At present, chromicized or plain catgut is used by most of the operators. A former member of the staff condemns vigorously the use of catgut of any description on the ground that the knot is always liable to slip during the contraction of the uterus and permit the uterine wound to open. I believe this can be obviated by tying a careful knot and by placing three knots on each suture. Two tiers of sutures are used. The first passes through the whole of the uterine musculature, but carefully avoids the inclusion of the peritoneum above or the mucosa below. It is well for the first assistant to tie these stitches as they are placed so as to control the bleeding from the uterine incision. If a gauze pack has been placed in the uterus, it must be removed, of course, before these stitches are all tied. The sutures of the first tier are usually placed at intervals of 2 cm. These sutures having been placed, there is little further bleeding; a fresh towel is laid under the uterus; the soiled towels used in "walling off" the peritoneum are removed and the operator places the second tier of sutures (about 1 cm. apart). These sutures pass through the peritoneum only, and draw together its cut edges so as to bury the uterine sutures from view.

This being accomplished, the assistant lifts the uterus, while the operator, using a gauze sponge on a long clamp, cleans the peritoneal cavity, scrupulously removing any blood or liquor which may have filtered through the towels. Frequently a little pool will be found, either in the prevesical space or in Douglas' cul-de-sac.

In closing the abdominal wall, it was formerly the custom to use mass sutures of silkworm gut, each of which passed through the entire thickness of the wall from the peritoneum out. This is still used where there is some especial reason for bringing the operation to a speedy end, and the results have been good, probably because the absence of tension in the relaxed walls after labor permits firm union and so prevents subsequent hernia.

More recently, the abdomen has been closed in layers, the mode varying with the individual operator, but usually providing a running or continuous suture of fine, plain catgut for the peritoneum, interrupted sutures of strong chromicized catgut for the fascia and silkworm gut through the subcutaneous fat and skin. The recti are not usually sutured; where it seems advisable, they are bound together with a few sutures of catgut.

Hemorrhage, except for the few minutes elapsing between the incision of the uterus and the suturing of the uterine muscle, has generally been negligible, the pressure on the uterine arteries being efficient to control it. Occasionally a vessel must be ligated. In my first Cæsarean, in delivering I tore the lower angle of the uterine incision about 1 cm., and thereby wounded a large caliber artery (possibly the circular) which required ligation.

The *Fundal-Schnitt* has been tried and abandoned because its advantages seemed slight, while its greater liability to cause subsequent intestinal adhesion seemed probable.

Prepared linen (celluloid linen) sutures have been used in recent years for the uterine muscle sutures.

A number of these cases have been "repeated" Cæsareans. I believe it must be admitted that repeated Cæsarean has greater dangers than the first operation. Adhesions to the abdominal wall and to the bowel necessitate slower operating and increase the risks of the operation.

IV.

THE PREPARATION OF THE PATIENT.

BY NATHANIEL R. MASON, M.D.,

Physician to Out-Patients.

If the Cæsarean section is performed at the time of election, the general preparation of the patient should be commenced as soon as the operation is decided upon. The aim of the obstetrician should be to bring his patient into the best possible general physical condition, and with this end in view she should be encouraged to lead a hygienic life. The diet should be nutritious and easily digestible. As much time as possible should be spent in the open air, and a moderate amount of light exercise should be taken. Walking is the best form of exercise, and it may be carried to the point of slight exhaustion. The more vigorous forms of exercise, such as swimming and golfing, should be forbidden. She should obtain a maximum of sleep, retiring early at night and not rising until late in the morning. The bowels should be kept free, preferably by ingesting large quantities of fluids, mainly water, and by a diet containing an abundance of fruit. If necessary, cathartics should be given. The best cathartics are the fluid extract of cascara sagrada and the saline aperient mineral waters. A daily warm bath is advisable in order to maintain free excretion through the skin. With this treatment of the bowels and skin, the kidney excretion will ordinarily take care of itself.

The preliminary preparation for the operation should be commenced seventy-two hours before the date set. The diet should be restricted to articles of food which have little residue, i. e., clear soups, oysters and meat jellies. The diet on the day before operation should consist of liquid food without milk. On the morning of the day of operation, several hours before the appointed time, the patient should be given a cup of coffee or tea without milk, or a cup of beef tea. She should thoroughly flush out the gastro-intestinal and urinary tracts by ingesting large quantities of water (fifteen to twenty glasses) daily. If there is any tendency toward constipation, on the third and second days prior to the operation a wineglassful of Hunyadi water or a teaspoonful of Karlsbad Sprudel salts in a cupful of hot water should be taken before breakfast. Twenty-four hours before operation, an ounce of castor oil should be given. If the patient finds the taste of the oil disagreeable, it may be administered in the form of small gelatine-coated capsules. On the evening before the operation, a copious suds and glycerine enema should be given and this should be repeated on the morning of the operation.

The local preparation should be commenced twelve to twenty-four hours before the operation. A full bath should be given and the abdomen and vulva shaved. The field of operation should be thoroughly scrubbed with sterile gauze soaked in a strong solution of green soap. It is essential that this scrubbing should be over an extensive area, passing up to the ensiform cartilage above, to the midaxillary lines on the sides, and over the vulva and one half the way down on the anterior and internal surface of the thighs below. The soap should be thoroughly rinsed off with sterile water and the entire area cleansed should be covered with sterile gauze. Under ether the final preparations should be made as follows: The entire area previously scrubbed should again be cleansed with a strong solution of green soap and a soft brush for ten minutes. The soap should be rinsed off as before, with sterile water, and finally the abdomen should be gently scrubbed with 70% alcohol and sterile gauze for three minutes. Extreme care should be employed throughout the preparation, after cleansing the area where the incision is to be made, not to pass the sponge or brush back over it again which has been used for scrubbing in another place.

Many of the patients in the early part of the series of the hundred cases had an elaborate local preparation of the field of operation carried out, both on the day before and just prior to the operation. This consisted of a prolonged scrubbing with green soap, corrosive sublimate, alcohol, ether, potassium permanganate, oxalic acid and finally again with corrosive sublimate. The results obtained were not as satisfactory as with the present method, the abdominal wall not infrequently being macerated and irritated from the effect of the prolonged scrubbing, and subsequent infection of the wound occasionally occurred.

The patient well prepared for the elective Cæsarean section presents a striking contrast in the convalescence when compared with the emergency case operated upon without such preparation. In the patient upon whom the section is performed at the time of election after a thorough general and local preparation, the results are distinctly better than in the case where this has not been done. If the intestinal tract is not well emptied prior to the operation, vomiting and distressing abdominal distention are apt to result, and the chance of the complication of a postoperative peritonitis is increased. Where inadequate preparation of the field of operation is carried out, as must necessarily happen in emergency Cæsarean sections, subsequent infection, both in the wound and within the abdomen, is more likely to occur. The patient without a thorough preparation suffers during her convalescence from a disagreeable taste in the mouth, thirst, nausea, vomiting, tympanites and more or less abdominal pain, while her stay in bed is apt to be prolonged. Where the preparation is adequate, these symptoms do not appear, the convalescence is comparatively comfortable and the stay in bed is shortened.

If no vaginal examinations have been made, or if they have been few in number and have been conducted under the most rigid aseptic precautions, no vaginal preparation need be performed.

But if the patient has been examined several times, or if there is any question in regard to the asepsis attendant upon an examination, the vagina should be thoroughly scrubbed with sterile gauze soaked in green soap, washed out with sterile water, wiped out with 70% alcohol and then finally flushed out with an eight-quart douche of sterile water.

It is essential that the bladder be emptied by catheter just before the operation. If this is not done it may be opened on making the incision through the abdominal wall.

The selection of the proper time of day for the operation is an important element in adding to the comfort of the patient. Whenever it is possible, the section should be performed early in the morning in preference to later in the day. When this is done, the patient has less opportunity to suffer from apprehension because of the impending event, and faintness and headache are prevented. In the summer time, especially, operating early in the morning adds materially to her welfare.

The temperature of the operating room should be kept between 80 and 90° F. If it is not possible to obtain this, the patient during the operation should be covered with a sterile blanket and surrounded by heaters.

V.

THE CONVALESCENCE.

BY JAMES R. TORBERT, M.D.,
Physician to Out-Patients.

The convalescence of a Cæsarean section is for the most part that of any clean laparotomy case, to which must be added the obstetrical phenomena of uterine drainage and lacteal action.

It has seemed best here to give in general the routine treatment of the cases, which varied somewhat in detail with the various operators, and then to give some of the most interesting complications, of which there were many.

From the character of the operative risk, one depends largely for the possibility or no of post-operative complications, and in this series of cases were many poor operative risks, a number of whom, with our present knowledge, would not be considered fit subjects for Cæsarean section, and the convalescence of this type of case was stormy, to say the least.

Directly after operation, the patient was returned to bed and watched closely by a special nurse until she was well out of the anesthetic. Especial stress was laid upon the possibility of hemorrhage, and although the lochia was profuse in most of the cases at first, we had no real trouble from this source.

It was constantly noticed that the pulse-rate was high, running around 120 the first twenty-four or forty-eight hours, then coming down to normal. The temperature also was slightly elevated to 100 or 101°, but this came down inside of twenty-four hours. Nausea was not excessive, except in the cases who had no preparation whatever. The early treatment consisted of nothing by mouth for a few hours, then the administration of liquids gradually as the patients could take them. If they were unusually uncomfortable coming out of ether, morphia in small doses was given subcutaneously with excellent effect. Some of the cases received water *ad libitum* as soon as they wished it. This answered the purpose of a stomach wash out where they vomited it, and in some of the most uncomfortable ones the stomach tube was passed; but this was necessary in but a few cases. In most of the cases saline solution was given by rectum in six-ounce amounts every four or three hours, and this always relieved the thirst.

Four-hourly charts of pulse, temperature, respiration and the dejections were always kept for the first few days, after which time but twice a day.

Bladder distention was a common cause of early discomfort, and the bladder was watched most carefully; this type of a laparotomy case seems to have unusual bladder activity, and as soon as they are conscious every effort is made to have the patient void naturally. This was repeated several times, and if there was no result the patient was catheterized after using extreme aseptic precautions. Where the catheter had to be used, urotropin in doses of 7½ gr. b.i.d. was administered for forty-eight hours as routine. In but a few of the series were we compelled to use the catheter more than a few times and the importance of avoiding frequent catheterization is emphasized. With regard to the bowels, the one important fact brought out was the importance of early catharsis. Enemata of soap suds were given at any time within twenty-four hours, and catharsis by mouth started within twenty-four hours and always continued long enough for the patient to receive a thorough cleaning out, and incidentally it may be remarked that in many of the cases it was days in being accomplished. One form of catharsis was 4 gr. of calomel and soda in divided doses, followed in an hour by 2 oz. of magnesium citrate solution, and one or two hours later by an enema of suds and glycerine, the main point being to give a sufficiently strong cathartic to clear out the entire intestinal tract. In some cases catharsis was not instituted by mouth till the second day. The diet was liquids until the bowels moved, then gradually soft solids, and the patient was back on house diet with care at the end of a week.

The lochia in all of the cases was in large amounts at first, the uterus always filling up with blood during the operation, and the excessive contractions of the uterus stimulated by the suture material accounting for it.

Occasional stopping of the lochial drainage was noted, and this could always be renewed by changing the posture of the patient. This subject of posture was considered important and the patients were frequently changed from one side to the other, and this kept up throughout the entire convalescence. This had a great influence on drainage and involution, and is emphasized. As regards the infant nursing, no change was made in the routine of getting in an occasional nursing on the second day, again on the third day, and by the fourth day, with the establishment of the milk flow, the ordinary nursing schedule was observed.

Nearly all of the patients were kept in bed four weeks, then they were allowed one week to get up and around in preparation for leaving the hospital. Some were allowed out of bed at the end of two weeks. If the convalescence was normal, the abdominal wound was left alone for a week, when the superficial stitches were removed, the deep ones remaining in for two weeks. If there were no deep sutures, the superficial ones were removed by the end of a week and a crêpe-lisse dressing applied. An abdominal binder was kept on while the patient was in bed, and in most of the cases an abdominal supporter was fitted to the patient and she was sent home in it, and instructed to wear it for several months.

The patient receives a final examination at the end of the convalescence, special attention being paid to the scar, the position of the uterus, the possibility of adhesions to the abdominal wall, the involution, and a careful examination of the pelvis is made. As far as possible, the patients are examined six months later.

Outside of the fatal cases, among the 100 cases of Cæsarean section, there was a pyrexia in 29 cases. There were 4 cases of phlebitis, 2 of sapremia, 2 of tonsillitis, 1 of tubercular sinus of the hip, 1 hematoma of the wound, 1 breast complication, 2 cases of pleurisy, 2 of bronchitis, 3 cases of stitch abscess, 1 alveolar abscess, 6 unaccounted for, 1 attributable to extreme nervousness, 1 subcutaneous abscess and 1 diphtheritic patch on the cervix. There was 1 case of delirium tremens, out of bed on the second day, which was difficult to restrain.

Those of our cases coming into the hospital for an elective section, and who had a thorough preparation, made much the better convalescence. The drinking of large amounts of water was a feature of the preparation and was followed, as far as possible, in all of the elective cases.

VI.

THE CÆSAREAN BABY.

BY ROBERT L. DE NORMANDIE, M.D.,
Physician to Out-Patients.

The primary object of Cæsarean section is to obtain for the patient a living baby, with the lowest possible mortality and morbidity to both mother and child. If for any reason we do not obtain this object, then the operation should justly be regarded as a failure. In this series of cases we lost eight babies. Eighty-eight went out of the hospital well. One went against advice, with the mother, well at the time of discharge, and she was lost trace of after leaving the hospital. Three were sent to other institutions, from which they were discharged at some later period as well.

The mortality of 8% in such a series of cases as we here report is not a bad result, and if we analyze the causes of these deaths we shall see that the mortality from the operation itself is materially reduced and that the result is excellent. Several of the deaths can in no way be laid to the Cæsarean section itself, for the loss of the child would have occurred without doubt had the delivery taken place by the vagina.

The mother of the first baby lost (Case 4) was a Cretin dwarf three feet seven and a half inches tall. The baby weighed but 3 lb. 10 oz.; was well formed, but very feeble. It survived but four hours after birth.

The second baby lost (Case 17) was in a case that had been in labor of varying severity more than three days. The membranes had been ruptured thirty-six hours, and the uterus had been tightly contracted on the baby for twelve hours. The baby gasped, but could not be resuscitated. At the present time no obstetrician should even consider a Cæsarean on such a case unless it was impossible to deliver the baby in any other way.

The third death (Case 21) was where a high forceps operation was unsuccessful and the Cæsarean followed, but resuscitation also failed. Labor in this case was only of nine hours' duration, and the membranes had been ruptured three hours.

The fourth case (Case 33) was again an unfavorable one, for the patient had been in labor thirty-five hours, twenty-four of which were active, with the membranes ruptured twenty-five hours. The baby gasped once or twice and then died.

The fifth death (Case 43) a Cæsarean was done as the only possible way of delivering the woman. High forceps had been tried ineffectually several times by the family physician. The soft parts were so badly bruised and so edematous that no vaginal examination could be made, and the patient's condition was such that a Cæsarean, or nothing, must be done. The fetal heart was not heard, and presumably the baby was dead before the operation was started.

These five deaths were all in the first fifty of the series. In no one of them can it be fairly said that death of the baby was caused by the operation performed.

The sixth baby lost (Case 59) was in a case done on an appointed day before labor began. The heart beat strongly at birth, but respiration was never established, and gradually the heart ceased to beat. Unfortunately there was no autopsy.

In the next (Case 76), done also on an appointed day before labor, the baby was malformed, a cleft palate, shortening of the arms and legs, and webbed fingers. Cyanosis was marked from birth, and the baby died in twenty-two hours. There was no autopsy, but a congenital heart or atelectasis is suggested.

The eighth (Case 90) and last was a baby born of a tuberculous mother who had consolidation in both lungs and discharging sinuses from the left hip. The pelvis was so narrowed by the tubercular process about the left acetabulum that a Cæsarean here became the operation of necessity. The baby was a small, puny thing, weighing 4 lb. 11 oz. It gradually failed and died seventeen hours after birth.

To sum up, then, one baby was dead before the operation was begun. Two were in cases done early in the series before the contra-indications for a Cæsarean section were so clearly defined as they now are. In two, the babies were so small that it is doubtful if they would have lived under any circumstances, and further, Cæsarean was the operation of necessity rather than of choice. In one, high forceps, not tentative traction, was attempted and failed. Cæsarean section was done with the loss of the baby.

Here are seven deaths where there were distinctly other causes than simply the Cæsarean operation *per se*, leaving but one without a sufficient cause for death other than the operation.

Fifty-nine cases were operated upon after labor progressed varying lengths of time, and forty-one before labor had begun. Four cases (Cases 17, 21, 33 and 43) in the above-analyzed deaths were done after labor had been well established and the membranes had been ruptured a considerable length of time. The mere length of time is not the important point in determining the condition of the baby. The fetal heart, when carefully watched, and the rate recorded by a competent observer, gives the best guide to the baby's condition, but it must be remembered that a hard labor with the membranes ruptured for some hours jeopardizes the baby's chances, and the result of the operation will many times be bad. Many times the operation has been done later than any of the staff would have elected because of various uncontrollable conditions.

There were eight cases where operative attempts by the vagina were made, seven of them by members of the hospital staff, and of these, one baby alone failed resuscitation. The eighth was the case that had such edema that the Cæsarean became the operation of necessity.

The question whether the location of the placenta can have anything to do with the result to the baby cannot be answered statistically by this set of cases, as in many cases there is no record of the placental site. In by far the majority of the cases where it is recorded, the placenta was on the anterior wall, and, therefore, probably torn directly through. With reasonable speed on the operator's part when the placenta is beneath the uterine incision, there is no real danger, and when away from the incision of course there is no danger whatsoever.

There seems to be in this vicinity a rather definite feeling that Cæsarean babies cannot nurse, or rather that mothers who have had Cæsarean section do not have milk for the baby. In this series, 52 babies nursed, and of these, 38 gained, 10 lost, 3 remained stationary and in 1 the weight is not recorded. Twenty-four babies had combined nursing and the bottle. Eight of these gained, while 14 lost, 1 remained stationary and 1 is not recorded. There were only 11 babies which were fed entirely upon the bottle. Eight of these lost and only 1 gained, and in 2 the weight is not recorded. In 5 cases the kind of feeding is not noted. From these statistics it seems fair to say that we can give the parents every assurance that the baby will be born alive, and the only risk is the accidental one which must necessarily be present in any surgical procedure.

VII.

THE REPEATED SECTIONS.

BY CHARLES M. GREEN, M.D.,
Visiting Physician.

Of the 100 sections embraced in this series of cases, 25 were repeated operations. The reason for this large proportion of repeated sections is that it is the policy of the Boston Lying-In Hospital never to remove or impair the function of healthy organs with the object of preventing subsequent pregnancy. The judgment of the obstetric surgeon is left free to deal with pathological conditions of the uterus and appendages at the time of performing Cæsarean section, but the hospital considers sterilization unjustifiable.[1]

The 25 repeated sections were performed on 17 women; that is, second sections were done on 17, third sections on 6, and fourth sections on 2. Three of the 17 women had their first section outside the hospital. The repeated sections were performed by nine former or present members of the staff: one each by four members, two each by two members, three each by two members, and eleven by one member.

Indications. — The indications for the repetition of section were the continuing indications for the primary sections, — pelvic contraction, relative disproportion between pelvis and fetal head, cicatrices of soft parts, history of fetal loss in earlier deliveries by the pelvic route. Personally, I do not share the view of some obstetric surgeons that in subsequent pregnancy and labor there is immediate danger of uterine rupture at the site of the Cæsarean cicatrix provided that uterine suture has been skillfully performed. Consequently I do not consider the presence of a Cæsarean uterine scar in itself an indication for repeated section. Brodhead,[2] among others, has made a study of this subject and concludes that rupture of the uterus through the Cæsarean cicatrix is of rare occurrence. Of course, in the presence of absolute indications, repeated section must be performed, but if the indication is relative and the disproportion of minor degree, a woman in succeeding pregnancies may be safely delivered of living children by the pelvic route, or she may indeed safely deliver herself. The experience of two women in the list of repeated sections is of interest in this connection. Each had had three sections, and had been discharged well, with living children. The first had a justo-minor pelvis, with a c. v. of 7.8 cm., and after eleven and a half hours of ineffective labor she was delivered by section of a 6-lb. child; entering for the second time, after nine hours of active labor she was similarly delivered of a larger child; the third time, with a still larger child, she was delivered by section before labor began. She entered in her fourth labor with strong pains, the head was molded and driven through the pelvis, and she delivered herself of a living baby weighing the same as the first child for which section had been performed. The second woman, with an irregular pelvic contraction from hip disease, whose first three children, weighing 8 lb., 7.5 lb. and 7.5 lb. respectively, were delivered by section, entered in active labor and delivered herself of a living child weighing 13 oz. less than the child for which section was originally performed. A further experience with a multipara, who entered the hospital with a spontaneous, complete rupture of the uterus, with the child largely in the peritoneal cavity, whose rupture I closed by suture, and who was subsequently safely delivered of a breech presentation in the out-patient department, convinces me that if a uterine rent or incision is carefully sutured, rupture at the site of the scar is not a cause for apprehension in subsequent labor, and that the presence of a uterine cicatrix is not in itself an indication for Cæsarean section.

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[1] See a paper by Dr. Green in the American Journal of Obstetrics, vol. lix, No. 6, 1909, in reference to the justifiability of sterilizing a woman after Cæsarean section with a view to preventing subsequent pregnancies.

[2] Rupture of the Uterus through the Cæsarean Cicatrix. Am. Jour. Obstet., vol. lvii, No. 5, 1908.

Adhesions. — " The only condition that can make a repeated section more difficult and dangerous than a primary section is the existence of adhesions, the separation of which may lengthen the time of operation, may result in subsequent oozing of blood, or possibly lead to more extensive adhesions," with a possibility of intestinal obstruction. Of the 25 repeated sections under consideration, in only one or two cases were no adhesions found; in most cases there were adhesions varying from slight omental attachments or peritoneal bands to, in a few cases, dense adhesions of omentum and intestine. In 1 case there was an adhesion of the uterus to the anterior abdominal wall sufficient to permit extra-peritoneal section. In 16 cases the adhesions were separated and the uterus was eventrated before incision; in 6 cases there was no eventration, and in 3 cases the record is not explicit in regard to eventration. As a result of my own experience, I have reached the conclusion that it is best not to eventrate the uterus as a rule, even in primary sections. Careful technic will protect the peritoneal cavity from invasion, the parietal incision is shorter without eventration, and adhesions, if present, need seldom be separated. There is also less shock in non-eventration. I also believe " that if the operator will abandon the common ambition to close the abdomen in less than half an hour, if he will protract his operation long enough to make a careful sero-serous suture, if he will take the same pains in his Cæsarean sections as in his other abdominal operations, there will seldom be adhesions."

Abdominal incision. — In regard to the abdominal incision in repeated sections, practice has varied. In most cases incision has been made through, or near to, the earlier incision, and the old scar sometimes excised. In other cases the incision has been somewhat removed from former incisions. In one case three incisions were made through the primary scar and the uterus opened without entering the peritoneum. As far as can be learned, hernia has resulted in only 1 case, and that after a third section.

Uterine incision. — In all cases the uterine incision has been longitudinal through the anterior wall. In a few instances the site of former uterine incision was visible. Occasionally small portions of silk or linen suture have been found in a repeated incision, and in 1 case the track of the earlier suture was resected. Generally, however, the site of former incisions has not been noticed.

Results. — Of the 25 cases embraced in this series, 23 were discharged well and 2 have since delivered themselves of living children. There were 2 maternal deaths, both after a second section; 1 died of probable acute dilatation of the stomach after thirty-six hours, and 1 of pyemia on the eighth day. There was no fetal mortality.

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THE DIAGNOSIS OF ULCER OF THE DUODENUM.

BY E. A. CODMAN, M.D., BOSTON,
Assistant Visiting Surgeon, Massachusetts General Hospital.

(Continued from No. 22, p. 774.)

Case II. Mr. M. D., aged thirty-two. Laborer. April 3, 1904. Massachusetts General Hospital. Vol. 472, p. 243.

Entered the Accident Room with temperature of 102; pulse, 70; respiration, 35. Thirty hours before vomited and had much pain. Drank two or three glasses of beer in the morning and went to work, but felt sick, with pain rather high in abdomen, which rapidly worked down on the right side and now is most severe in appendix region. Has vomited several times. Has always been well except five years ago had severe abdominal symptoms lasting several hours. The clinical signs were typical of perforation of the duodenum or acute appendicitis.

Operation showed a much inflammed appendix, which was removed, and, after removal, examined. The mucosa was normal. Search then revealed a perforation in the anterior wall of the duodenum just below the pylorus. This was closed with silk sutures. Convalescence was normal except that it was complicated with influenza and bronchitis. In April, 1909, he writes, " I have been fairly well since you operated on me; only occasionally a pain in my side and a very bad spit."

Case III. Mr. R. L., age twenty-two. Shoe shop. Nov. 15, 1906. Massachusetts General Hospital. Vol. 554, p. 197.

Five days ago patient was taken with cramp-like pain in the epigastrium which persisted about the same until last night, when the pain became suddenly very intense, and patient vomited and had a severe chill.

At operation, about thirty hours later, I found the typical signs of perforated duodenal ulcer and could make the diagnosis before the incision. The condition at operation was in every way typical. On May 27, 1908, he was examined by the surgeon on duty and the following note made: " Now states that, except for occasional pain in the epigastrium and constipation (more than before the operation) he has been well. Has gained 12 lb. and been able to work. Hernia, $1\frac{1}{2}$ inches by $\frac{3}{4}$ inch, at lower end of scar. Marked impulse on cough."

Case IV. Mr. J. W., age forty-nine. Dec. 22, 1907. Massachusetts General Hospital. Vol. 594, p. 121.

A strong muscular man in very bad shock, but evidently suffering greatly, with typical signs of violent general peritonitis. For the past three or four years has been treated for digestive disturbance by local doctor. Has never been jaundiced. Had complained of belching a good deal for the past two or three years. Had noticed each autumn a pain in the epigastric region which had been severe, but never kept him from his work. Inclined to be constipated. For the past five days had suffered from pain in the same region and has vomited twice, but been able to keep at his work. This morning he had a severe, sudden exacerbation of this pain, and a doctor was called, who gave him morphine.

Operation fourteen hours after this sudden pain showed a perforation in the first part of the duodenum just below the pylorus, with tremendous extravasation of bile-stained dark-colored fluid. About the region of the duodenum there were adhesions and thick pus suggesting that there had been a subacute perforation followed by a complete one. Patient died the next morning. The shock was so intense in this case that, although diagnosis was made and the operation conducted more rapidly than usual, the pulse never recovered after the operation.

No autopsy.

Case V. Mr. G. C., age, twenty-two, Greek. Laundry work. Dec. 26, 1907. Massachusetts General Hospital. Vol. 594, p. 145.

Never had trouble with digestion or jaundice or similar attack of pain before. Two hours before entrance sudden sharp abdominal pain. Vomiting, contracted abdomen, etc.

Operation. — Perforation in anterior wall of duodenum just below pylorus. Convalescence normal except complicated by influenza.

June, 1909. I have recently learned that this patient has returned to Greece because of sickness.

Case VI. Mr. N. J. T., age eighteen. Clerk. Private practice. Referred by Dr. N. W. Cousens. Nov. 23, 1907.

Was always well until five or six years ago, when he had "hunger pain" severely between his meals. Used to have to take something to eat in the middle of the morning and at night before going to bed. Had "typhoid pneumonia" five years ago, etc. The night before the recent acute symptoms came on he went to bed feeling well, although during the whole week before he had had a feeling of stiffness and weakness in his abdominal wall in the epigastric region; he also thought he had indigestion. Fifteen hours before I saw him he awoke about 1 A.M. with violent abdominal pain. He presented the picture of acute general peritonitis, and operation showed a typical perforation in the anterior wall of the first part of the duodenum just below the pylorus. The perforation was infolded. He had a normal convalescence and has remained well since.

He was heard from about June 1, 1909, and stated that he was well.

Case VII. Mr. R. P. J., age thirty-eight. Shoe factory. Dec. 30, 1907. Massachusetts General Hospital. Vol. 594, p. 193.

Slight, anemic, tire-looking individual. Four years ago had a tapeworm and did not get entirely rid of it for a year. Since this experience he has had attacks of epigastric pain, with vomiting, occurring about once in two months. These attacks are often associated with jaundice. They are apt to follow over-fatigue from work. If he rests he has no pain. Between the attacks he is troubled with sour stomach and hunger pain. Eight days ago he was seized with an especially severe pain in the epigastrium which was relieved by vomiting. Attacks of this pain occurred five times in one day. He spent the next day in bed, but worked on the third day. Pain and vomiting returned. His pain is always associated with work. Vomits greenish fluid, never blood. He was considerably jaundiced with last attack.

On examination the abdomen is not abnormal except for slight tenderness on deep pressure over gall bladder. At operation on Jan. 1, 1908, a button-like area was found in the anterior wall of the duodenum just below the pylorus. It was exactly similar to the induration seen about several of the cases of perforated ulcer which I have operated on, and in every respect resembled a perforated ulcer except there was no perforation. There were light adhesions between the duodenum and gall bladder which was normal. The ulcer seemed so surely below the pylorus that I did not do gastro-enterostomy, and merely closed the abdominal wound, being satisfied with having made the diagnosis certainly, and thus being prepared for proper treatment.

The patient made a good recovery and was discharged with careful directions as to diet and rest. In spite of injunctions not to work, and to rest, etc., he went to work again at his business almost immediately. On Feb. 3, 1909, he reported that he has worked eleven hours a day practically steadily since the operation. Once in three or four weeks he has had a day or two with poor appetite and slight nausea, but never any vomiting or severe pain. The bowels have been slightly constipated. His weight is the same. On March 16, 1909, he wrote: "I have had good days and some quite bad ones. My stomach has bothered me some and I have been very nervous. If there is anything the matter with me, it goes right to my stomach. A cold will settle there. I have been to business every day except three weeks since I left the hospital."

Case VIII. Mr. J. S., age twenty-five. Machinist. Jan. 4, 1908. Massachusetts General Hospital. Vol. 594, p. 235.

A perfectly healthy looking young Irishman. Up to the fall of 1906 thinks he was perfectly well except for hunger pain in the morning at about 10.30. In fall of 1906 was working in damp basement and had pain in right side which doctor said was sciatica. All that fall was feeling poorly but worked. About Christmas time had attack of pain and vomiting, with diarrhea and weakness. Since then he has had recurrent attacks of epigastric pain, vomiting and tenderness.

Operation, Jan. 4, 1908. Adhesions between gall bladder, hepatic flexure and duodenum seemed light enough to be recent, others old. Foramen of Winslow closed. Gall bladder normal. Mass size of button on anterior wall of duodenum just below pylorus adherent to pancreas. (In the record it is noted as being in the second part of duodenum, but to me it seemed higher.) I felt sure that it was far enough away not to involve the pylorus and did not do a gastro-enterostomy. The laparotomy wound was closed and the patient made a normal convalescence. I have been unable to trace the ultimate result in this patient, but I know he was practically well for several months after the operation.

Case IX. Mr. H. L. G., age forty-seven. Farmer and potato buyer. Private practice. Referred by Dr. M. P. Smithwick, July 25, 1908.

A thin, sallow, almost cachectic man of light wiry physique. Has always been very nervous. Ever since he could remember troubled with wind in his stomach, but as a boy considered himself strong and well. When a young man, working in the woods lumbering, used to have heartburn severely. It would come about an hour after noon meal and last from an hour and a half to two hours. This came off and on for eight years before severe attacks began. During these years he also had attacks of diarrhea, with cramps and sometimes a little blood. For the last fifteen years, besides the sour stomach and indigestion, he has had relatively acute attacks coming on every four to five months.

These attacks would last several days, and during them he occasionally vomited a " yellowish stuff." He has never seen any blood in his vomit or stools. Pain seems in the epigastrium rather to the left than right. Thinks the pain something like a severe heart burn only " sickisher," more cramp-like, more paroxysmal. Had used stomach tube a great deal during the last year, but without real relief. There have been transient attacks of slight jaundice.

On examination by Dr. Smithwick the stomach contents were nearly normal. There was a question of slight dilatation and loss of motility. The guaiac test of both stomach washings and feces was negative. Examination showed a distinct spasm and tenderness in the gall-bladder region, although these signs were so slight that it required a careful comparison with the other side to make them out. There was also well-marked right-sided costal rigidity.

Although it seems inexcusable to me now, I considered gallstones as more probable than duodenal ulcer. As I look at it now, the history is absolutely typical except that no blood appeared at any time in the vomitus or feces.

On July 27, 1908, I did a laparotomy and found an indurated area in the duodenum on the anterior wall just below the pylorus and merging into the pancreas. Gall bladder was normal. By mobilizing the duodenum I was able to dissect the pancreas away from the induration so that I could do a Finney operation at the same time, excising the ulcer. Convalescence was normal except that during the first few days there was apparently post-operative gastromesentery obstruction which was relieved by washing out the stomach. The stomach washings contained much blood.

The patient made a good recovery and gained rapidly in weight and strength and the pain entirely disappeared. On May 31, 1909, he wrote as follows: " I have been getting along fairly well. Have not had a very good appetite and have been troubled with my stomach this spring. Do not feel as I did before the operation." He has gained 30 lb. and is said by his family and friends to be in better health than he ever was before.

Case X. Mr. F. D. Massachusetts General Hospital. Nov. 15, 1908.

This young man is a chauffeur who, immediately previous to the attack, had been perfectly well except for more or less constipation. We found later by careful questioning that, two years before he had had for some months " hunger pain " an hour or two before his meals. At 8 p.m. Nov. 15, he turned on a faucet in his garage and was seized by a sudden sharp abdominal pain which was so severe as to double him up and start a profuse sweating. Shortly afterward he vomited. He was taken almost immediately to the Massachusetts General Hospital, where I saw him at midnight. The pain had by this time somewhat abated, the pulse was good and his general appearance not then one of shock. The abdomen was contracted, concave, boardlike. Tenderness was greatest in the right iliac fossa, but there was almost as much tenderness over the whole abdomen. The upper half was more rigid than the lower half and the right half than the left half, although this difference was one of very slight degree. The liver dullness was normal. Rectal examination was negative.

Under ether a high appendix incision was made which might allow enlargement either downward or upward. There was no gas in the abdominal cavity, but a slightly yellowish or greenish-tinged clear fluid escaped when the peritoneum was opened. The cecum was movable, but the appendix was adherent to the posterior edge of the liver and immediately over the right kidney, its base being just under the incision. It was faintly reddened and showed in one or two places adherent fibrin.

Since the appendix was not more definitely involved than the adjacent peritoneum the incision was carried upward to the costal margin and the duodenum drawn down into the wound. The manipulations attending this destroyed recent adhesions of fibrin, and as soon as the duodenum was exposed a perforation with necrotic edges and about the size of a slate pencil was seen on the anterior wall about a half inch from the pylorus. Through this opening deeply bile-stained fluid welled up under considerable tension. The stomach was distended considerably so that a stomach tube was passed and withdrew about a pint of pea-green fluid. There was a slight induration about the margin of the perforation which could be felt through the wall of the duodenum. In other respects it was not greatly inflamed or indurated.

The perforation was closed with a purse string silk suture and infolded with an additional row of silk sutures. The abdomen was then flushed out with salt solution. The appendix, although flecked with fibrin and held high in the right upper quadrant, was not obviously abnormal. It was not removed because the operation would have been unnecessarily prolonged. During the operation the first and second parts of the duodenum were carefully examined and were found to be considerably larger than normal. The lower part of the second portion and the third portion were not examined for fear of prolonging the operation unduly. It was noteworthy that the stomach was distended with gas and fluid, although no gas and only fluid escaped into the abdominal cavity.

At the present date he is well and free from symptoms, although for several months after the operation he was annoyed by hunger pain.

Case XI. Mr. R. W. M., age forty-two. Private practice. Referred by Dr. C. O. Thompson, Jan. 14, 1909. Milk dealer.

A large, fine-looking man except for pallor and the appearance of suffering. Always was inclined to diarrhea and stomach trouble. In childhood bowels have always moved readily and there has been no trouble with them at any time. Usual weight, 220, is now 204. At twenty had an attack of epigastric pain which confined him to bed for two weeks. This was severe and continuous and accompanied by tenderness — even moving caused pain. He had another milder attack a few weeks later. Has always had " belly-aches " and " sour stomach." Four years ago had rheumatism in his legs and thought it went to his stomach. For two years his pain in stomach has been worse. For past three weeks has had much pain in epigastric region, which begins quietly and goes to a maximum and leaves similarly. It goes through to back and left side. Comes on two or three hours after meals and is diminished by food. Small amounts diminish it for a short time, and it is less after meals.

Last May, after a prolonged muscular effort, had several large, bloody stools. Has recently been under the care of Dr. M. P. Smithwick, who made a diagnosis of duodenal ulcer and found blood in the stools. Under rest in bed and proper diet he apparently recovered completely, but on going to work again his pain has returned. His pain was relieved by soda temporarily. Recently there had been a considerable amount of blood lost by stool.

At operation on Jan. 15, 1909, I found a mass about the size of an egg in the duodenum just below the pylorus and involving the latter. It seemed to me too adherent to justify pylorectomy or pyloroplasty and I accordingly did a posterior gastro-enterostomy. Just before closing the abdominal wound I noticed that the small intestines in the neighborhood of the gastro-enterostomy appeared more than naturally distended. I suspected hemorrhage from the mucous membrane of the gastro-enterostomy wound, but decided to take the chances of its stopping. Within a few hours after the operation the patient vomited large amounts of almost pure blood, became collapsed, in spite of the use of rabbit serum, rapidly became worse and died about midnight.

At autopsy the gastro-enterostomy was found in perfect condition. Just below the pylorus was a duodenal ulcer 1 or 2 cm. in diameter. In its center the pancreatico-duodenalis artery was lying exposed with an open rent in it. The ulcer had perforated also through the wall of the intestine and was plugged on the peritoneal surface by a finger-like piece of omentum. The mass "the size of an egg" was merely inflammatory tissue capable of absorption.

Case XII. On Aug. 13, 1908, I saw in consultation with Dr. Fernald, of Cohasset, a man of about fifty years who was a Portuguese by birth, but had live most of his life at Cohasset. He had been well until the spring of 1908, when he called Dr. Fernald for abdominal pain which was severe enough to require morphine and confine him to bed. There was vomiting and much abdominal rigidity and tenderness. In the course of a few days the abdominal symptoms subsided and thoracic symptoms took their place. The diagnosis of a left-sided pneumonia was made, but as the temperature persisted and the dullness did not disappear from the lower portion of the left side, Dr. Fernald suspected empyema and tapped a number of times without obtaining pus. The patient's condition continued grave and he ran a typical hectic temperature. Dr. Fernald came to the conclusion that an abscess of the lung must be the cause of the trouble. This diagnosis was made certain in July, when the patient began raising large amounts of foul-smelling sputum. After this his condition began slowly to improve until the latter part of July when he was able to get out on the piazza. Although the purulent sputum, pyrexia and weakness still continued, the patient appeared to be gaining, until Aug. 11, two days before I saw him. On this date he was suddenly seized with pain in the left leg. This was followed in a few hours by complete paralysis of the left leg and partial paralysis of the right. At the same time the pulse and temperature ran higher than before and the patient showed a slight delirium. The abdomen became much more distended and the respiration more rapid.

The day before I saw the patient another surgeon had been called, and, in the hope that the paralytic symptoms might be due to a toxemia like post-diphtheritic paralysis, had done an exploratory operation on the left side of the chest, but did not succeed in establishing good drainage.

When I saw the patient he was too far gone to make operation justifiable. It seemed to me that the main symptoms were due to cerebral abscess and that the pneumonia had been caused by a subdiaphragmatic abscess which had perforated the diaphragm and eventually discharged through a bronchus. Retroperforation of a duodenal ulcer was suggested as the original cause, although appendicitis followed by pylephlebitis could not be excluded.

Autopsy by Dr. Fernald and myself on Aug. 18 demonstrated multiple cerebral abscesses, multiple abscesses of liver, subdiaphragmatic adhesions and, in the left side, the remains of a subdiaphragmatic abscess communicating through the diaphragm to the adherent left lung and discharging through one of the bronchi.

About the duodenum the adhesions were very dense and walled off an abscess which lay behind the pancreas through most of its extent, but in the head came forward between it and the duodenum. It was difficult to be sure whether this abscess originated in the pancreatic tissue, most of which was not abnormal in appearance. Dr. Fernald thought that it was independent, like the liver abscesses, but to me it seemed more like a phlegmon extending behind the gland and occasionally in among the lobules. In the head of the gland the abscess embraced the duodenum like two arms of a Y. There was no fat necrosis.

On opening the duodenum and stomach the mucous membrane was found to be normal except for a purplish area and two cicatricial looking areas just to the duodenal side of the pylorus. On microscopic section these areas proved to be distinct cicatrices which involved the muscular coats. A section from one was published in my recent paper.

Case XIII. Mrs. L. G., age sixty-nine. Dec. 22, 1897. Massachusetts General Hospital. Vols. 21 and 22, p. 66.

Attacks of pain similar to the present one have been suffered for the last twenty years, but never so severe. She has vomited at times and had some pain in the right side. Five days ago she ate a hearty dinner and afterwards had a heavy sensation in the epigastrium. That night she did not sleep well and vomited the next day. Vomited again on the next day, but not since. Has had general abdominal pain which has become localized in the gall-bladder region, where there is an indefinite mass to be felt. Never had jaundice.

She was not operated on and soon failed and died.

Autopsy showed both duodenal ulcer and gallstones. Autopsy No. 190.

Anatomical diagnosis. — Round ulcer of the duodenum with hemorrhage; cholelithiasis; arteriosclerosis; arteriosclerosis of kidneys; edema and congestion of lungs; small cyst of broad ligament.

Stomach: The mucosa reddened and the organ contains about a liter of dark fluid and clotted blood. In the duodenum just below the pylorus is a circular loss of substance about 1 cm. in diameter passing into the muscular coats of the intestine and sharply differentiated from the surrounding mucosa. The mucosa of the intestine from the pylorus for about 50 cm. is pale, with occasional slight reddish stains. From this point downward through both small and large intestine the mucosa is stained a livid red color. This is most marked about the head of the cecum. The degree of lividity varies somewhat in different parts of the intestine. In the large and lower part of the small intestine is a considerable amount of a clotted blood-like material.

Case XIV. Mr. C. H. M., age forty-four. Policeman. April 7, 1901. Massachusetts General Hospital. Vol. 458, p. 48; vol. 52, p. 82.

Was formerly sailor and drank more or less when on sprees. He was operated on for stricture at the Massachusetts General Hospital about 1895. Five weeks ago caught cold and had a cough. Began to have foul mucus rising in his throat which got worse. One night, after eating roast beef, gas kept coming up from his stomach and a burning sensation. Kept getting worse. About two and one-half hours after eating would have "burning" sensation and "phlegm," had some shooting pain in the pit of the stomach and nausea in the morning. Two weeks ago began to vomit about an hour after meals. Vomitus very sour and of a chocolate color. He had to quit work and send for a doctor, who put him on a strict diet. Got a little better, but this week has been worse again. Has vomited everything, even water, up to last night. Has lost 40 lb. in six weeks. Complains chiefly of the vomiting.

Examination shows a tender point in the epigastrium three inches below ensiform. There is much splashing. Area of tympany is normal.

On March 14, 1901, he entered the medical service and was put on rectal feeding. There was no vomiting, his pain in epigastrium was relieved by soda bicarbonate. On March 24, when they gradually began to give him food, he began to vomit; when the food was omitted, the vomiting stopped. On the 13th he vomited a large quantity of coffee-like material. On April 1 an indefinite mass was felt in the epigastrium. Vomiting continued every few days, so he was transferred to the surgical side on April 7.

At operation a mass was found in the duodenum and an anterior gastro-enterostomy was done. He died on the 16th. The post-operative history suggested a continued slow hemorrhage. The stomach and duodenum were removed post-mortem through the wound and a photograph is preserved showing a typical round ulcer just below the pylorus.

CASE XV. Mr. C. A. R., age twenty-one. July 3, 1901. Massachusetts General Hospital. Vol. 54, p. 128.

Has felt well as ever in his life up to last night: Just after going to bed, sudden severe pain in pit of stomach, accompanied with vomiting, tenderness, etc. On cross questioning he says that last few weeks he has had " a little sort of gnawing, uneasy feeling in epigastrium, but has had no trouble with stomach, has eaten all sorts of things freely, no belching nor vomiting nor pain after eating. No jaundice, no constipation."

On examination there was boardlike rigidity of the abdomen. Liver dullness was normal, but " over the liver found crepitus as he breathes."

At operation a median incision was made, nothing was found; then an incision was made in the appendix region and the appendix removed. The appendix was covered with flakes of fibrin. The abdomen was irrigated. He died forty-eight hours later. Autopsy No. 718.

Anatomical diagnosis. — Perforating ulcer of the duodenum; acute general fibrino-purulent peritonitis; operation wounds.

Just below the pylorus the antero-lateral portion of the wall of the duodenum is slightly adherent to the under surface of the liver by rather soft, easily separable adhesions. On separation, there is disclosed a small opening in the wall of the duodenum just below the pylorus, from which the stomach contents exude on pressure of that organ.

Stomach: On section, the organ is not remarkable, except for a rather large patch of ecchymosis in the mucosa.

Duodenum: On section, there is a bulging-out appearing loss of substance in the mucosa, just below the pylorus, about 1 cm. by 7 mm. The edges of this loss of substance are rounded, fairly smooth and are beveled down through the wall of the duodenum as far as the peritoneal coat, in which there is a small perforation about 2 mm. in greatest diameter and which is the opening mentioned in the description of the peritoneal cavity. The remaining portion of the intestinal tract is not remarkable.

CASE XVI. Mr. H. C., age fifty. Actor. Dec. 10, 1901. Massachusetts General Hospital. Vol. 369, p. 148; vol. 361, p. 74; vol. 60, p. 62.

On Sept. 4, 1883, at the age of thirty-two, he entered the hospital for typhoid. At that time he gave a history of " nervous prostration " three years before, this was associated with chills and fever and lasted two years. He re-entered again on Dec. 10, 1901, at the age of fifty.

At this time he gave a history of nervous dyspepsia at twenty-seven and said that for two years he had attacks of eructations of gas, bloating and sour stomach, but no vomiting. Since this time has always had a delicate stomach and has had to be careful of what he ate or else epigastric pain and distress would follow. In 1899 he had jaundice, which came on gradually and lasted two months. Had occasional chills and attack of severe knife-like pains in right hypochondrium and radiating around abdomen. Was given olive oil treatment and in two weeks passed three hundred and fifty stones which his physician said were gallstones. After this he " felt splendid " for a year. During all that time (traveling about with show) subject to old stomach trouble and occasional vomiting. Since 1900 has had attacks of pain lasting one to four hours in gall-bladder region. For a year stomach has troubled him more or less from daily vomiting. Often large quantities, always with relief. Symptoms not increased by kinds of food, but he diets on " general principles." Has to use enemata. Wife has washed out his stomach daily for a year. Has taken much morphine, half a grain a day, for six months.

Examination. — Visible peristalsis and gurgling below umbilicus. Dilatation. Improved under medical treatment, but he was transferred to the surgical side Dec. 25.

Jan. 2, operation. Gall bladder was found normal. Stomach very large. Pylorus and duodenum surrounded by dense adhesions. Pyloroplasty. Pneumonia developed and he died on the seventh day after the operation.

At autopsy the gall bladder was found normal and a duodenal ulcer was present. Autopsy No. 808.

Anatomical diagnosis. — Lobar pneumonia of the left upper lobe; ulcer of the duodenum; gastroptosis, chronic peritonitis in the region of the pylorus, duodenum and gall bladder; chronic perihepatitis; pyloroplasty; small calcareous patch in the aorta; deformed liver; pseudopneumococcus septicemia.

Stomach: Considerably enlarged and hangs several centimeters below its normal position. On section, the wall at the pyloric end is somewhat thickened and in the region of the pylorus presents a row of intact sutures. Several intact sutures in the mass of adhesions mentioned above. The mucosa of the wall of the duodenum just below the pylorus shows one or two thickened folds and just immediately below the margin of the pylorus there is an ovoid loss in its substance, measuring 1½ cm. in greatest diameter, which diameter is parallel with the longitudinal axis of the first portion of the duodenum. This loss in the wall of the duodenum has smooth rounded edges which are beveled down to a smooth base, which is dense and gray-white in appearance. Section at right angles to the long diameter of the ulcer shows its base to consist of a narrow band of dense gray-white tissue, immediately beneath which is the pancreas. The pylorus permits the passage of the little finger through its lumen.

CASE XVII. Miss C. T., age twenty. Clinical record not obtained. Nov. 18, 1901. Massachusetts General Hospital. Autopsy No. 775.

Anatomical diagnosis. — Chronic glomerulo-nephritis; hypertrophy and dilatation of the heart; chronic passive congestion of the lungs, liver and spleen; hydropericardium; ascites; anasarca; ulcers of the duodenum; chronic pelvic peritonitis; some fatty degeneration of the myocardium.

The mucosa of the duodenum presents two losses of its substance, measuring about 1 cm. in greatest diameter. One of them is shallow, with beveled edges and smooth base. The other apparently extends to the muscular coat and presents beveled edges and a smooth base. The remaining portion of the intestine, on section, is not remarkable, except for a general reddening of the mucosa.

Case XVIII. Mr. H. L., age sixty-nine. Baker. Feb. 24, 1902. Massachusetts General Hospital. Vol. 60, p. 246.

Brought to the Accident Room with a crushed arm and chest. Hemorrhage necessitated ligature of subclavian artery. There were various complications and he died on the ninth day. There is no mention of stomach symptoms in his history. Autopsy No. 840.

Anatomical diagnosis. — Ulcer of the duodenum with rupture of a large artery at its base and with hemorrhage into the duodenum and stomach; general anemia; fracture of the scapula, clavicle and ribs on the left side; amputation of the left arm at the shoulder joint; suppurating wound of the left shoulder; hydrocele (double); nephrolithiasis and chronic interstitial nephritis of the right kidney; hypertrophy of the left kidney; streptococcus infection.

Stomach: Rather large and somewhat distended. The duodenum is distended to about the size of the fist. The walls of the duodenum and of the stomach show a dull red color, as if from material in their cavities, the color of which shows through the walls. On section, the cavity of the duodenum is filled with a dark red blood clot and a small amount of fluid blood-like material. The cavity of the stomach contains a dark red clot measuring roughly about 30 cm. long by 8 cm. wide by 5 cm. thick, and a moderate amount of fluid blood-like material. The mucosa of the stomach is not remarkable. About 1½ cm. below the pylorus and posteriorly in the wall of the duodenum there is a loss of substance measuring 2½ cm. in greatest dimension. The edges of this loss of substance are overhanging in places and in other places are rounded and fairly smooth. The base of the ulcer is about 2½ cm. in greatest diameter, its surface firm, somewhat fibrous and slightly trabeculated. On section, through the base, the pancreas is seen to be in close relation with the floor of the ulcer. In the upper part of the base of the ulcer a grayish black-red mass about 6 mm. in greatest diameter. This mass is apparently blood clot. On further dissection a rather large artery is seen extending across beneath the floor of the ulcer, and at the point of the situation of the small mass described as in the upper part of the floor of the ulcer there is a loss in the continuity of the vessel walls through which opening the small mass mentioned extends into the lumen of the artery.

Case XIX. Mrs. M. S., age sixty. Laundress. March 10, 1902. Massachusetts General Hospital. Vol. 391, p. 184.

Came to the hospital on account of gangrene of the legs. Both legs were amputated. There was no stomach history. Autopsy No. 861.

Anatomical diagnosis. — Atheromatous endocarditis (mitral stenosis); hypertrophy and dilatation of the left auricle; thrombosis of the left auricular appendix; embolic thrombosis of the right axillary artery; hemorrhages into the basal ganglia on the left side; multiple infarcts of the spleen and kidneys; double amputation at the lower third of the thighs for embolic gangrene; obturating thrombosis of the left common iliac and external iliac veins; infarcts in the left lung; ulcer of the duodenum; hemorrhage into the small intestine; malformation of the left common iliac vein; chronic perihepatitis; cholelithiasis; streptococcus infection.

The duodenum near the pylorus is attached to the gall bladder by connective tissue adhesions, which are of a dark brown color, over an area about 1½ cm. in diameter. Through the central portion of this dark brown area, between the duodenum and the gall bladder, in the midst of the adhesions, there exudes on slight pressure a foul brown-colored fecal fluid. It is almost certain that a perforation had not existed at this point until made during the manipulation of the autopsy.

On opening the duodenum, there is seen to be an irregular shaped defect in the wall of the duodenum at a point corresponding to this area of adhesions of the duodenum to the gall bladder. This opening in the wall of the duodenum is likewise in direct continuity with the opening already mentioned through which fecal material exuded on pressure. The opening in the wall of the duodenum is about 1 cm. in greatest diameter. The mucous membrane rounds over its margins. The margins are not especially indurated nor is there any extensive thickening of the wall of the gut about this opening. The opening is situated about 12 mm. below the pylorus.

The mucous membrane of the gall bladder presents no sign of inflammation, and there is no evidence that the perforation of the wall of the duodenum is due to inflammation of the gall bladder. In the small intestine a considerable quantity of thin purplish-colored opaque fluid, paint-like in character. This is regarded as the result of hemorrhage into the intestine, which has produced the reddish coloration of the wall of the intestine above noted.

Case XX. Mr. J. W., age twenty-eight. Insurance agent. May 22, 1902. Massachusetts General Hospital. Vol. 62, p. 199.

Was brought to the Accident Room with bullet wound in the stomach, having attempted suicide. He died on the eighth day after operation.

Autopsy showed that a duodenal ulcer was present beside the recent wounds. Autopsy No. 879.

Anatomical diagnosis. — Partially healed and healed wounds of the left thoracic wall, the diaphragm, the liver, the stomach and the tissues of the back about the twelfth thoracic vertebra, with unclosed perforation of the stomach wall, said to be due to the passage of a bullet. General fibrino-purulent peritonitis; hemorrhagic edema of the lungs; parenchymatous hemorrhage in the lower lobe of the left lung; chronic perisplenitis; ulcer of the duodenum; laparotomy wound; streptococcus septicemia.

After describing the bullet wounds of stomach, etc., the following statement is made: In the duodenum, just below the pylorus, a loss of substance in the wall of the duodenum about 8 mm. in greatest diameter with rounded beveled edges and a fairly smooth base. The loss of substance extends as far as the outer coat of the duodenum. The intestines, on section, elsewhere show marked post-mortem changes. No lesions observed.

Case XXI. Mr. J. D., age forty-seven. Ironmolder. Aug. 7, 1902. Massachusetts General Hospital. Vol., 569, p. 182; vol. 414, p. 205.

Until seven years ago had never been sick except for constipation and hemorrhoids. Has used no liquor for nineteen years. Seven years ago he began to loose flesh. Used to weigh 185; now 158. Nine months ago had sour stomach and vomited two or three times daily for several weeks. Was treated by having stomach washed, etc. Gained flesh and was well until twelve days ago, when he began to get weak again and became paler. For five days noticed tarry stools and again yesterday. Has been very restless and sweats easily. Very pale and in very bad condition for surgical operation. An indefinite mass felt in the region of gall bladder.

Operation was, nevertheless, attempted on Aug. 8, but the patient died soon afterwards.

Autopsy No. 912.

Anatomical diagnosis. — Ulcer of the duodenum with perforation of the common bile duct and of an artery at the base of the ulcer, with extensive hemorrhage into the intestine; general anemia; laparotomy wound; streptococcus and pneumococcus infection.

The stomach, just above the pylorus, is encircled by a ligature. There is a complete separation in the continuity of the duodenum a short distance below the duodenal papilla, and the proximal end of the separation is closed by a row of sutures, which are intact. The distal end is open. The stomach, on section, presents a normal mucosa. The duodenum, on section, presents in its wall, just below the pylorus, a deep loss of its substance, measuring 2 cm. in greatest diameter. The edges of this loss of substance are generally rounded and fairly smooth, but its lower margin, for a distance of 1½ cm., is flattened and beveled fairly smooth with the floor of the ulcer. The common bile duct, which runs close to the ulcer, presents an extensive loss in the continuity of its wall, so much so that on pressure on the gall bladder the bile flows into the ulcer. All that remains of the distal end of the common duct is a small portion about 1 cm. long, which opens continuously through the duodenal papilla. In the base of the ulcer a minute dark red clotted mass resting in the broken wall of a good-sized artery, which, on section, is seen extending across and just beneath the floor of the ulcer. There is some fibrous thickening in the floor of the ulcer which is in immediate association with the tissue of the pancreas.

Intestines, on section, contain a large amount of tarry black-red semi-fluid blood-like material.

Autopsy No. 1064.

CASE XXII. Mrs. M. G. H., age sixty-eight. May 12, 1903. Massachusetts General Hospital. Vol. 586, p. 14.

" Ever since last November she has had indigestion, with loss of appetite and sour stomach. Almost daily vomiting. This has continued without noticeable improvement or increase all through winter up to present. Vomiting occurs every fifteen minutes to one hour after eating. Amount of vomitus small, sour, no coffee grounds. She feels tired most of the time. No headaches or vertigo. No loss of memory. She has occasionally been in bed a day or two on account of weakness, but as a rule is up and about."

In spite of this pretty clear history, the hospital records go on to state that the patient behaves in a demented manner and gives other symptoms of mental deterioration.

A diagnosis of melancholia was made. There was slight fever and abdominal symptoms and the patient died after being in the hospital a few days.

Autopsy No. 1064.

Anatomical diagnosis. — Ulcers of the duodenum; arteriosclerosis of the aorta and its great branches; slight atheromatous endocarditis of the mitral and aortic valves; chronic mastitis; chronic perihepatitis; calcareous fibroma of the uterus; old scar in the skin over the left breast.

The duodenum, on section, presents in its mucosa two losses in its substance roughly triangular in shape, the larger one measuring 2 cm. in greatest length and 1 cm. in greatest width. The smaller and more irregular one measures 1 cm. in greatest length and about 7 mm. in greatest width. The edges of the larger are rounded and overhanging and the ulceration extends into the muscular coat. Its base is smooth. There is a slight streak of fibrous tissue just beneath the base of the ulcer. The pyloric ridge forms a portion of the upper boundary of the ulcer, which is situated in the posterior wall of the duodenum. A smaller ulcer is situated in the anterior wall of the duodenum with a small portion of its upper boundary formed by the pyloric ridge. Its edges are rounded, irregular and overhanging, and it extends through the wall of the duodenum forming in the wall of the duodenum viewed outwardly a small opening with slightly irregular edges about 6 mm. long by 2 mm. wide. The peritoneum, in the neighborhood of the opening, is blackish, fairly smooth and no definite adhesions are demonstrable. The tissue of the margins of the walls at the base of the ulcer are blackish and slightly disintegrated.

There are no duodenal contents in the peritoneal cavity, and the perforation is regarded as being due to post-mortem change.

The intestines elsewhere on section show nothing remarkable, except that the mucosa is rather generally reddened, and in the lower part of the small intestine and upper part of the large intestine the contents consists of a rather thin brownish-red semi-fluid material.

CASE XXIII. Mr. T. F. B., age twenty-nine. Printer and, later, bartender. May 12, 1903. Massachusetts General Hospital. Vol. 153, p. 215; vol. 588, p. 6; vol. 136, p. 293.

Has abused alcohol, but has had no trouble with stomach and has never been sick before this. Three days ago he noticed slight dizziness and shortness of breath. Had a dark stool. In the afternoon he vomited some dark blood. Has vomited more or less since but has had no pain in stomach or abdomen either after eating or in connection with vomiting. Black movements daily. Four days ago he was treated at the Out-Patient Department for piles. The last six weeks he has had pain in left shoulder on lying down. It was worse on deep breathing and bore no relation to the time of eating. For two years has had slight cough and occasional night sweats. Very pale. Reds, 1,776,000. Put on rectal feeding. Steady improvement until June 10, when he was discharged well.

On Nov. 13, 1908, he was brought in with typical symptoms of acute perforation. He had remained well since his discharge from the hospital until ten hours ago. At operation a perforation in the first part of the duodenum was found and sutured and a bit of omentum drawn over it. The convalescence was smooth except for a pocket in the region of the right kidney and at one time symptoms of a subphrenic abscess, when he was aspirated, but nothing was found.

On Jan. 24, 1907, he was discharged to the Out-Patient Department. He re-entered again on Oct. 19, 1907, with a history that he had remained well until two days ago, when he began to vomit. This vomiting was not preceded by pain and was greenish.

Examination: " a thin, straight-forward Irishman." Abdominal wall thin and peristalsis visible. No tender point or mass. Splashing in flanks. Temperature normal. Did not consent to operation until following day, when a laparotomy was done and intestinal obstruction found. Intestinal obstruction due to a band which had caused constriction of the intestines with a partial volvulus found. In freeing this the jejunum was apparently torn and the patient died of general peritonitis.

Two days later, in the careful autopsy record No. 2034, there is no mention of a scar in the duodenum and yet it states that the mucosa of the intestine was normal.

(To be continued.)

INTERSTITIAL PREGNANCY.

BY FREDERICK W. JOHNSON, M.D., BOSTON,

Gynecologist in Chief, Carney Hospital.

MRS. J. H. S., thirty years old. Mother of one child born seven months previous to my seeing her. Menstrual history negative. Three months after her labor had a regular normal menstrual period followed by amenorrhea for about three months. A bearing-down feeling with metrorrhagia soon followed (the flow was dark red, rather thick, some clots and variable in amount), but there were no uterine pains. The metrorrhagia had been present off and on up to the time when I first saw her. The enlarged uterus was easily palpated. Solid tumors were felt on the anterior wall toward the right, also on the posterior wall. In the region of the left horn there was a tumor which was soft and somewhat tender. The violet coloring of the vagina was very marked.

Jan. 2, 1909, the uterus was curetted. The cavity was very deep and a large amount of tissue resembling decidua with some old blood clots was obtained. On opening the abdomen, a large, soft uterus studded with several fibroids and a soft, bulging tumor at the left horn was found. The right tube and ovary were normal in size and color. The left tube, horn of uterus and upper part of left broad ligament were much congested and of a deep violet color. At a point beginning just inside the left tube, for a space the size of a quarter of a dollar, the tumor had thinned out the uterine wall so that it was only covered by peritoneum. An incision was made through this thin portion along the fundus, and through this opening a three to four months' fetus with cord and placenta were shelled out. The fetus had evidently been dead but a short time. With the finger a hole was made through the wall communicating with the uterine cavity. The cavity in which the pregnancy was found was closed with buried catgut sutures, peritoneum being finally brought together over the incision. Three fibroids were then enucleated. Convalescence was uneventful and she was discharged on the eighteenth day.

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Reports of Societies.

AMERICAN LARYNGOLOGICAL ASSOCIATION.

Thirty-first annual meeting, held in Boston, May 31, June 1 and 2, 1909, A. Coolidge, Jr., M.D., President; James E. Newcomb, M.D., Secretary.

(Continued from No. 22, p. 789.)

SOME OBSERVATIONS UPON THE COMPLETE EXTIRPATION OF THE DISEASED FAUCIAL TONSIL.

By Dr. Joseph S. Gibb, of Philadelphia, Penn.

A series of one hundred cases of tonsillectomy in an institution in which the comforts and care of a private home were thrown around the patients gave an admirable opportunity for the observation of the after-effects of this operation and to contrast it with previous operations of tonsillotomy in the same institution.

The applicant passes a rigid physical examination, including that of the nose and throat, so that the cases selected for examination are typically healthy boys save for the secondary conditions engendered by mouth breathing.

Cases were classed for operation in which (1) the tonsils were so large as to be evident to a casual observer, (2) those in whom the tonsils were buried and covered by the pillars, (3) those in whom the crypts and surrounding parts gave evidence of attacks of tonsillitis.

The one hundred cases were operated consecutively and were under observation practically at the same time. An anesthetic was administered in nearly every case. The method of operation is as follows: The tonsil is firmly grasped by a forcep, — the forcep which has served me best after trial of a number of varieties is that sold in the shops as the Mikulicz broad ligament forceps, — the tonsil is firmly pulled from its bed by an assistant and the attachment to the pillars severed by the Allis blunt dissector. In many cases the attachment is so firm as to cause considerable tension of the surrounding tissues. Rather than exert force to sever these adhesions it has been found wise and expedient to effect separation by means of a sharp instrument — either a properly constructed scissors or tonsil knives. Having effected a thorough separation of the pillars, the finger is introduced and an endeavor made to break up the deeper adhesions and to leave the tonsil hanging, as it were, by a shred of tissue. The forceps still in place, a strong wire snare is passed over the handles, down over the tonsil and around the shred of tissue and slowly drawn home.

In 90% of the cases the thermometer registered a temperature between 98–101°, and in the larger number of these did not rise above 99°. In nine cases the temperature mounted to 102° and over. The first group, namely, those whose temperature remained below 101°, were the type of case mainly with simple hypertrophied tonsil and slight attachment to the pillars. There were, however, quite a few in whom the tonsils were submerged and firmly adherent. In this group there was very little faucial disturbance. While the extent of removed tissue was observed by inspection to be more extensive than is usually seen after a tonsillotomy, the subjective symptoms were not thereby increased. Later, when the effects of the traumatism had entirely disappeared and the boys were about their usual duties, an examination of the throat disclosed a perfectly normal fauces except that there was not a vestige of tonsil remaining.

The group of nine cases with excessive temperature were those in which the tonsils were firmly adherent to and submerged beneath the pillars — most of them were cases in which the tonsil had been the site of repeated inflammatory attacks and its tissue was soft and friable, requiring much dissection and the use of the tonsil punch, hence unusual traumatism. In these cases there was, in addition to the systemic disturbance, both objectively and subjectively, marked faucial symptoms. The patients complained of much difficulty and pain in swallowing. In two there was regurgitation of fluids through nose. The fauces were indurated in the region of the half arches, and the tonsillar wound was the site of a superficial ulcer covered by a slough.

The contention, then, is, from a study of these cases, that (1) tonsillectomy is the proper operation for the removal of diseased tonsils; (2) that tonsillectomy, in the majority of cases, results in no more serious traumatism to the faucial tissues than does tonsillotomy; (3) that in those cases in which marked systemic and faucial disturbance follows a tonsillectomy, it results because of the difficulty attending a separation of adhesions, and that these latter cases are totally unsuited for the operation of tonsillotomy; (4) that tonsillectomy is always a complete operation — tonsillotomy is only occasionally completed; (5) that hemorrhage after tonsillectomy is slight and largely under the control of the operator. In tonsillotomy, hemorrhage is often profuse, at times serious.

Dr. E. L. Shurly, of Detroit, agreed with Dr. Gibb's technic. He raised the question as to whether or not the tonsil is a necessary organ, giving as his opinion that the remote results of tonsillectomy were often very serious. He would advise more careful division of cases for local treatment and those for operation.

Dr. W. E. Casselberry, of Chicago, differed radically from Dr. Shurly, believing that a diseased tonsil should always be removed and that a tonsil but slightly diseased was doing or would do as much harm as a wholly diseased one, and that it was best to remove it. He described in detail the method he now uses in extirpating the tonsil.

Dr. Otto T. Freer, of Chicago, advocated sharp dissection in the removal of tonsils. He emphasized the fact that the velar lobe is the part of the tonsil he separates last, and this is where traction is made upon the tonsils by means of his sickle-shaped knife. The tonsil turns wrong side out and can be caught and cut away with the curved knife which he uses especially for this purpose. His knife dissection is capable of removing the smallest tonsil, no matter how hard or adherent.

Dr. G. L. Richards, of Fall River, wished to defend the method of extirpating the tonsil with the finger, saying that he had always been very successful in its employment.

Dr. C. W. Richardson, of Washington, also spoke in defense of the finger dissection, saying that after one became dexterous in this method there were few disadvantages. In none of his cases has he had post-operative hemorrhage, and less hemorrhage during operation by the finger method than by any other.

Dr. J. F. Barnhill, of Indianapolis, was of the opinion that whatever function the tonsil might perform, there was plenty of other tissue of like constituency in the throat to perform this function after the removal of diseased tonsils, and urged most strongly the removal of all diseased or partially diseased tonsils. He made reference to a condition which he has frequently noticed in his patients after operation, — not only the filling up of the tonsil pit by granulation tissue, but the formation of adhesions between the anterior and posterior pillars. He also spoke of the after-pain in operations upon the tonsils, saying that in order to assuage this pain he made firm pressure on the area by means of a pillow of gauze which has been saturated with peroxide of hydrogen for a few seconds; then, when the pad is thoroughly dry, covering it with Monsel's solution. He never uses Monsel's solution on a bleeding area, always waiting until the field is dry.

Dr. C. G. Coakley, of New York, said that in his cases healing usually took from two to four weeks; he has rarely seen, following complete excision of the tonsils, any tonsillar fossa left. He has wondered what effect this would have upon the voice of the patient, especially in singers.

Dr. G. Hudson Makuen, of Philadelphia, said that one thing which added greatly to the importance of Dr. Gibb's paper was the fact that he was able to follow the cases for as long a time as he desired, weeks, months or years. His own opportunity in this direction was great, as he frequently had his patients under his care for some months at a time. With regard to the removal of tonsils, he was of the opinion that a diseased tonsil was better out of the throat than in it, and that the whole question revolved around what was a diseased tonsil; he believes an hypertrophied tonsil to be diseased, and, therefore, advocates its removal. He urges the careful after-care of the patient, as otherwise cicatrices will form, causing contractions of the pillars, and thus interfering with the patient's voice.

Dr. R. C. Myles, of New York, referred to numerous experiments he had performed on the tonsil; he found that frequently in trying to remove the capsule of the tonsil it would break and there would be a portion of the capsule left. He is an advocate of the blunt dissection.

Dr. J. Price Brown, of Toronto, said that, with regard to the effect upon the voice after the removal of tonsils, he had gone over this subject with a singing master in his city who was very much opposed to the removal of tonsils in his pupils who had promising voices, saying they were invariably spoiled.

Dr. W. K. Simpson, of New York, spoke in favor of more conservatism in the removal of tonsils, calling attention to the various and serious remote effects often produced.

Dr. J. O. Roe, of Rochester, urged the thorough removal of all diseased tonsils, saying that he had had some experience in the results of partial removal. He referred to the question of septic absorption in these cases, stating that in many cases the patients suffer more after the removal of their tonsils from this source than before. He, therefore, made a strong plea for the thorough removal of the tonsil, if any removal is attempted.

Dr. D. Bryson Delevan, of New York, proposed a study on the part of the Association of the methods of preventing the injury of the upper air passages in operations upon the tonsils.

Dr. J. O. Roe spoke again in reference to the use of orthoform for the relief of the after pain, saying it was his custom to blow it into the tonsil every four to six hours, and particularly before the patient was about to take a meal, as it rendered this undertaking much easier.

Dr. Emil Mayer, of New York, thought Dr. Delevan's suggestion a good one, but that there should be added to it a study of the results of these operations. He has found difficulty in the use of the blunt dissector, and having an aversion to the use of sharp knives except in the most skilled hands, and also objecting to the use of the finger, he has taken a blunt dissector and had it filed so that it represents a file and yet can be used as a knife if desired. He stated as his opinion that but little harm could come to the patient if a little of the lower portion of the tonsil were left, but that it was most important that every bit of the upper portion be removed.

Dr. J. S. Gibb, of Philadelphia, stated as his belief that a diseased tonsil had no function at all and, therefore, should be removed. He considered that in these one hundred cases he had a good opportunity to watch the results of his operations and, therefore, thought this subject might be of interest from his standpoint. He used the finger to some extent in the removal of the tonsil, but does not depend wholly upon it. With reference to Dr. Coakley's remarks upon the shortening of the velum, Dr. Gibb had frequently noticed the same thing, but without any injurious effect on the patients. So far as the removal of the tonsils affecting the singing voice is concerned, he did not believe that it had a bad effect.

AN EMBRYOLOGICAL STUDY OF THE METAPLASIA OF THE EPITHELIUM OF THE TONSILLAR CRYPTS AND A CONTRIBUTION TO THE ORIGIN OF THE LYMPHOCYTES.

By Dr. George B. Wood, of Philadelphia.

To summarize briefly the results of this study we note:

First, that in the adult tonsil there are certain phenomena which are at least suggestive of the idea that the epithelial cells of the crypts undergo a metamorphosis, the result of which is the formation of cells morphologically similar to lymphoid cells.

Second, that in the embryo the very earliest stages show a peculiar activity of the epithelium characterized by the separation of the basal epithelial cells, rupture of the basement membrane, and the presence, in the epithelium and in the neighborhood around this epithelial center, of cells morphologically similar to lymphocytes.

Third, that the increased growth of this epithelial anlage is attended by the deposition in its immediate neighborhood of more lymphoid cells.

Fourth, that transition cells between the typical epithelial cells and the lymphoid cell may be found not only in the epithelium, but also in its immediate neighborhood. These transition cells are more easily studied and are in greater number in the later stages than in the very beginning.

Fifth, that the presence of polymorphonuclear cells, which are comparatively abundant in the early stages, are gradually supplanted by the lymphoid cell as the epithelial anlage increases in size.

The appearance of polymorphonuclear cells in the early stages of the tonsil is difficult to explain. The presence of these cells in the neighboring blood vessels and in the tissues immediately surrounding the blood vessels would seem to indicate that they are derived from the circulation. On the other hand, the undoubted presence of transition types in the epithelium in the very early stages would seem to show that they have a common origin with the lymphocytes. That they gradually disappear as the tonsil develops would lead one to suppose that they are not an essential part of the adult tonsil. It may be that the early change in the epithelium acts as a chemotactic power, attracting the polymorphonuclear cells. It might be argued that these polymorphonuclear cells coming from the blood give rise to the lymphoid element were it not for the peculiar metamorphosis of the cryptal epithelium. The origin and function of the polymorphonuclear leucocytes in the early tonsillar anlage needs much more study, but cannot, to my mind, in any way interfere with the theory of the epithelial origin of lymphocytes.

It seems practically proven, therefore, that some of the cells of the epithelium of the tonsillar crypt undergo a metamorphosis, being converted into cells which are indistinguishable from lymphocytes. We must also remember that, revolutionary as it may seem, the idea of an epithelial origin of lymphocytes is not a new one; that the work which has been done on the embryology of the thymus gland shows conclusively that the lymph tissue of the thymus is formed from the epithelium of the pharyngeal entoderm. Also, there is good reason to believe that the adenoid tissue throughout the gastro-intestinal tract results largely from an epithelial metamorphosis. Further, we must not be too positive in our acceptance of the doctrine that epithelium breeds only epithelium, that connective tissue breeds only connective tissue, and that the endothelium breeds only endothelium. In 1901, His, Woedain and Dekhuisen all agreed that perhaps after all an interchange between the tissue types might under certain circumstances be possible. Krompecher, in 1905, after an elaborate study, not only of a large number of embryologic and pathologic specimens, but also of a thorough review of the bibliography, stated that it is possible, under certain circumstances, for the epithelium to be converted into connective tissue, and that transitional stages can be positively shown to be present in certain forms of tumors and in certain stages of embryonic life.

Dr. Leonard W. Williams, of Boston, went carefully into the embryologic discussion of this subject, giving statistics gained by many experiments.

Dr. H. L. Swain, of New Haven, referred to some work he had in this line in Germany some years ago. He considered Dr. Wood's suggestion that the thinning out of the epithelium is more or less due to the active processes which the epithelium cells are undergoing in producing lymphocytes as an altogether novel view. He believes the tonsil is an active part of the lymphoid structure of the body, a lymph node in every sense of the word, with just as much importance and no more, except that it is the absorbent and recipient of everything coming into the lungs, as any other lymph node. He is of the opinion, also, that if the tonsils are to be removed they should be taken out thoroughly.

Dr. D. Braden Kyle, of Philadelphia, said that the transition stage in epithelial cells was very much as in a plant; it was impossible to tell what the result would be. You can get connective tissue without epithelium, but you never see epithelial cells floating along without connective tissue to support them; the epithelium is, therefore, the dependent structure and gets its nourishment from the connective tissue. No one has ever yet proved that an epithelial cell grew from the connective tissue, and this supposition Dr. Kyle considers most unlikely.

Dr. George B. Wood, of Philadelphia, said that it had been admitted by Storr that the lymphoid cells of the thymus do come from the epithelial cells. Bier was the first to hold that the lymphoids first appeared in the thymus, but Dr. Wood believes it has recently been proven that they appear first in the suprarenal gland.

A CASE OF LARYNGEAL CARCINOMA UNDER OBSERVATION FOR THIRTEEN YEARS; ULTIMATE LARYNGECTOMY.

By Dr. Harmon Smith, of New York.

Numerous specimens were removed for microscopical examination, but the evidence produced was insufficient to warrant radical operative procedures. Laryngotomy was often suggested but was always refused by the patient, and not until great difficulty in respiration was experienced was consent given to operate. The findings microscopically and clinically at this time warranted laryngectomy.

The operation was successful and the further examination of the larynx and its involvement substantiated the correctness of the diagnosis and the advisability of the operation. A complete histological and pathological report is given from the first examination thirteen years ago to the last made upon the larynx after removal.

Dr. D. Bryson Delavan, of New York, said that although he did not remember any such cases among his own statistics, yet he had seen them in the hands of other practitioners. He called attention to the fact that the average duration of life in cases of cancer of the larynx was but a certain time, and that although the operation might prolong the life of one or two patients, he did not believe it warranted when the proportion of cases who died on the table, or from the immediate effects of the operation, was considered. He strongly urged that no man attempt the removal of the larynx for cancer except those especially skilled in this line of work, saying that men who did the operation but occasionally never added credit to the list, while those men, like Butlin, Semon, Brewer, etc., who took selected cases, were doing such work that it would be possible before long to tell whether or not the operation was warranted even in selected cases in the hands of skillful operators, with every facility for success.

He advocates the electric cautery operation in cases of goiter, stating that the bleeding at the time of this operation can be controlled by a piece of cotton, and there is no possible return of the bleeding.

Dr. Chevalier Jackson, of Pittsburg, agreed with Dr. Delavan in his plea for work upon the larynx in cases of cancer to be done only by those especially skilled in it.

Dr. J. W. Gleitsmann, of New York, said that an interesting point in these cases of cancer of the larynx was the time the malignancy developed.

SOME RECENT CASES OF NASAL SARCOMA SUBMITTED AS A COROLLARY TO A FORMER PAPER UPON THE SAME SUBJECT.

By Dr. J. PRICE BROWN, Toronto.

The paper opens with a brief reference to three cases formerly reported to this Association, all of which made recoveries. The men are all perfectly well to-day at intervals of fourteen, seven and two years since the last operations performed upon them.

There is a fourth case reported, followed by a fatal result due to toxemia from the growth itself. This makes 75% of recoveries on the first four cases treated.

The main part of the paper, however, is devoted to a detailed report of these recent cases, giving a more minute account of the method of operation. In these the tumors have all been removed *per vias naturales* by means very largely of electro-cautery operations, without any external cutting whatever. Of course the operative treatment has been of too recent date to warrant a definite prognosis, but the writer, judging by his former experience, and the thorough manner in which the tumors have now been removed, has a reasonable hope that all will be attended by good results and eventually by cures. And he earnestly recommends this method of treatment to be tried by his *confrères* in similar cases.

DR. J. E. LOGAN, of Kansas City, said that in 1893 he reported a case of a man operated upon nine times by the evolution method. Dr. Logan finally removed the growth by the galvanic cautery through the mouth, not the nose. The patient lived for eight years after operation, when a round-celled sarcoma developed in the pancreas, from which he died. He referred to another case of spindle-celled myxosarcoma in which he removed the growth by morsellation and the cold wire snare. Five months later another operation was performed by Dr. Fenger and the patient died on the table. He also referred to a third interesting case of melano-sarcoma in a man sixty-four years of age. With reference to the use of electrolysis, he cited the case of a spindle-celled sarcoma in a boy of fourteen years in which this method was used. This has been about three years ago, and there has so far been no recurrence.

DR. E. L. SHURLY, of Detroit, spoke with reference to the marvelous results obtained by Dr. Brown. He had seen the cases before treatment and was very much surprised at the excellent results. He agreed in the value of electrolysis in these cases.

DR. THOMAS HUBBARD, of Toledo, reported a case remarkably similar to that referred to by Dr. Logan in which there was a recurrence of the growth in the pancreas.

DR. H. L. SWAIN, of New Haven, referred to a new method which he has developed for the removal of sarcoma of the nose externally. He believes for all malignant growths there is nothing so satisfactory as to clear them out completely.

DR. W. L. BALLENGER, of Chicago, referred to a case operated upon for sarcoma of the nose six years ago, the patient still living. He emphasized the fact that sarcoma is a sessile not a pedunculated growth, and that sarcoma in the nose is not as malignant as in other parts of the body. This latter is a point to be borne in mind in comparing the results with those in other areas of the body. While sarcoma of the nose is not so very malignant, in the nasopharynx it is much more malignant.

☛ DR. F. C. COBB, of Boston, referred to the various types of sarcoma, saying that a diagnosis of simple round-celled sarcoma in the nose should be considered rather skeptically.

DR. OTTO T. FREER, of Chicago, thinks also that the variation in the type of sarcoma should be considered, and calls attention to the fact that there is also a variation in round-celled sarcoma, some being slow in progress and others exceptionally malignant. He referred to two cases in point.

DR. J. PRICE BROWN, of Toronto, thought that Dr. Logan had made the mistake in his second case of overtreating it. It is his custom, in case of hemorrhage, to control it, send the patient home until the next day, and then little by little complete the operation, in this way without severe hemorrhage and without such a tax upon the patient. With regard to Dr. Swain's suggestion of an external removal of the growth, I would say that this is not necessary, as the entire growth can be easily and satisfactorily removed by the internal route if one will but take the time, and thus the patient can be saved any resulting cosmetic deformity.

NASAL TUBERCULOSIS; TWO CASES, ONE INVOLVING RIGHT ETHMOID BONE, WITH RECOVERY AFTER OPERATION.

By DR. OTTO T. FREER, of Chicago.

Freer's account of his cases is preceded by a short description of nasal tuberculosis, in which he gives the main characteristics of lupus and tuberculosis, in deference to the custom which still, because of pathological and clinical differences in certain groups of cases, retains two names, nasal tuberculosis and lupus, for what is etiologically a single disease. Lupus is described as a benign form of nasal tuberculosis of a very slow and superficial spread, which involves mainly the integument of the nostrils and nasal cavity and is little prone to attack the underlying cartilage and bone. Lupus occurs nearly always at puberty and in women and represents essentially the type of tuberculosis found also in other parts of the body, which has a tendency to granulation formation resulting in cicatrization rather than ulceration and destruction, this benign type indicating a vigorous resistance to the tubercle bacilli or else a variety of these germs possessing a low virulence.

In distinction to lupus the granulations of nasal tuberculosis proper tend to break down by ulceration, there is no tendency to repair, and the deeper structures are liable to succumb, so that caries of bone and extensive infiltration and destruction of cartilage are characteristic. Lupus is usually primary, nasal tuberculosis often secondary. Granulation tumors often of considerable size are seen in nasal tuberculosis but do not occur in lupus.

Nasal tuberculosis in its broader sense, including lupus, is divided according to its aspect into four forms, — the tubercular ulcer, the tubercular tumor or tuberculoma, the diffuse deep-seated infiltration and, finally, the formation of superficial areas of granulations, that is, lupus.

A full description of these forms follows, and a consideration of the diagnosis and prognosis of the disease.

For the treatment of nasal tuberculosis proper, Freer prefers excision of the diseased tissue to all other measures when the affection has not gone beyond the reach of cutting instruments.

Of the two cases described, one inoperable one represented the deep-seated infiltrative type of the disease. Tuberculin injections were employed without effect. The disease had created granulating ulcers upon the lower and middle turbinated bodies in both nostrils and had infiltrated the whole thickness of the cartilaginous septum, the thickening entering also into the frame work of the external nose from behind.

The other patient had a tubercular granuloma upon the posterior end of the septum and extensive granulating areas upon the right side of the septum which extended over into the middle turbinated body and involved the entire right lateral mass of ethmoidal cells. In three operations all of the diseased tissue, including the entire ethmoid lateral mass up to the cribriform plate and outward as far as the lamina papyracea of the orbital wall, was completely removed, with lasting recovery. The ethmoidal cells were severed from their attachment above with a thin bladed ethmoidal chisel of Dr. Freer's devising which was pushed along by hand. The removal of the lateral mass was then effected with the Grünwald-Hartmann punch and the Grünwald curettes.

Freer contrasts this complete intranasal eradication of this extensive tubercular involvement with the formidable operations from without so often employed by general surgeons to remove nasal disease which the rhinologist succeeds in extirpating through the nostril.

NASAL TUBERCULOSIS: A CASE AND REMARKS.

By Dr. Scott Renner, Buffalo, N. Y.

A healthy country woman, twenty-eight years old, suffered from nasal obstruction of both nasal fossæ, due to a tumor on the right side of the nasal septum, and infiltration and ulceration of the right lower turbinate which histologically proved to be tubercular in character. It was removed surgically and has not returned.

Nasal tuberculosis has been classified into tuberculoma, diffuse infiltration and lupus. The ulcerative form is usually secondary to pulmonary phthisis; the other three forms are supposed to be primary and occur after infection of the nasal mucous membrane over the cartilaginous portion of the nasal septum.

Diagnosis of the ulcerative form is made from the character of the ulcer and from its association with pulmonary disease.

The proliferative form, including tuberculoma and diffuse infiltration, is diagnosed from other tumors by the microscopic examination. Lupus is usually diagnosed from the skin lesions.

Dr. Emil Mayer, of New York, took exception to the statement made by Dr. Renner that nasal tuberculosis took place late in pulmonary involvement, saying that he had seen several cases which would disprove this theory. He strongly urged that the term "lupus" should not be dropped, saying that it did not mean the same thing as tuberculosis, and he considered it should be retained in the nomenclature.

Dr. Otto T. Freer, of Chicago, agreed with Dr. Mayer that the term "lupus" should be retained.

Dr. W. Scott Renner, of Buffalo, said he did not dispute the clinical differences in lupus and ordinary tuberculosis, but thought that the histological nature should be considered in the nomenclature.

CASE REPORTS: (*a*) CAVERNOUS SINUS THROMBOSIS SIMULATING FRONTAL SINUSITIS; KILLIAN OPERATION; RECOVERY. (*b*) TERATOMA IN POSTERIOR SURFACE OF SOFT PALATE; OPERATION; RECOVERY.

By Dr. Lewis A. Coffin, of New York.

Dr. Coffin reported two cases: The first, that of a lady fifty-six years of age, upon whom he had done a complete Killian operation for the relief of an exophthalmos and diplopia, believed to be due to an empyema of the frontal sinus. Although no pus was found, the lining membrane of all the accessory sinuses was unusually thick from congestion, and profuse hemorrhage kept up during the entire operative procedure.

The congested membranes accounted for the cloudiness seen on x-ray negatives. A more detailed history was gone into after the operation, which was as follows: Sudden pain in right anterior aspect of head eight days previous. A gradual development of exophthalmos and diplopia, with continuation of pain; and during the first three or four days a brue-like noise, both subjective and objective, in the head. Marked chemosis. Condition much relieved by operation, but diagnosed as a thrombo-phlebitis of the cavernous sinus and ophthalmic veins. Dr. Coffin said in cases diagnosed as thrombophlebitis of the cavernous sinus and ophthalmic veins, in which no infecting focus could be found, he would do a Killian operation on the ground that one or more of the accessory sinuses of the nose might be so diseased as to act as the infecting focus without giving such evidence of the existence of the disease as to make diagnosis easy or possible. Aside from this eradicating of the infecting area, good would be accomplished by the local blood letting; as an auxiliary lemon juice is recommended for the reduction of the coagulability of the blood.

The second case was that of a tumor found in the naso-pharynx of a patient (female) sixty-five years of age. It was attached in the median line of the posterior surface of the soft palate. Tumor was the size of a pecan nut. On examination Dr. Jonathan Wright reported that the growth was a teratoma. Dr. Hodenpyle called it a "papillary adeno-carcinoma" lacking in marked malignancy. This is the pathological history of many tumors about the pharynx and nasal pharynx, especially those involving the soft palate. They are reported by some as teratoma; by others as mixed tumors.

The growth was removed by making a transverse incision from molar to molar, through the soft tissues of the hard palate, in a line parallel to its junction with the soft palate. When the posterior flap had been freed from the hard palate, the incision was carried into the nasal pharynx, the soft palate was separated into two layers, and the posterior layer, in which was the growth, was removed. The posterior flap was sutured to the anterior and healed by primary union.

Dr. W. L. Ballenger, of Chicago, said that in his opinion skiagraphs were of no value in differentiating between suppurative conditions and simple catarrhal congestion.

Dr. Thomas Hubbard, of Toledo, reported a similar case to that of Dr. Coffin. He considered there was always a risk in operating on the sinuses during acute suppuration, especially through the lower portion of the frontal sinus, but this can be avoided by entering the ethmoid intranasally.

Dr. Lewis A. Coffin, of New York, said that he inferred from Dr. Ballenger's remarks regarding the skiagraph in these cases that he had not read Dr. Coakley's paper on the work of his assistant along these lines. He considers the risk of a Killian operation less than intranasal work, which can never be as thorough or as well drained.

BACTERIOLOGY OF THE NORMAL NOSE.

By Dr. F. C. Cobb and Dr. E. W. Nagle, of Boston.

The usual impression of the profession is that the nose is sterile, yet almost all writers on the subject have found large numbers of bacteria in the normal organ. Thompson and Hewlett cultivated the normal vestibule of the nose and found that it contained large numbers of bacteria, while from the interior they got sterile cultures in 80% of the cases. They used a sterile speculum but made no attempt to disinfect the vestibule. The authors of this paper, after trying various germicides in 39 cases in the vestibule, finally used Harrington's solution, consisting of corrosive, hydrochloric acid and alcohol, in 50 cases, and obtained negative cultures in 94%.

The technic is as follows: The vestibule of the nose and its hairs were soaked for three minutes in Harrington's solution. A speculum and rubber cot to cover the same and prevent intrusion of hairs were introduced after having been disinfected by boiling, and a sterile cotton swab carried through the cot into the nose in the middle turbinate region. The swab and cot were then placed in blood serum and bouillon and allowed to remain in the incubator four days. The conclusions drawn are,

First, that the principal source of bacteria in the normal nose is the vestibule.

Second, that the disinfection with peroxide and corrosive sterilizes the vestibules for all germs except staphylococcus.

Third, that the disinfection by Harrington's solution will sterilize the vestibule of all germs.

Fourth, it is believed that the remaining cases showing bacteria may be due to some as yet undiscovered fault in technic.

Fifth, that cultures in pathological cases should only be regarded as reliable when the cot in the vestibule is sterile, and that any form of staphylococcus should be treated with suspicion as the positive factor in any disease of the nose, owing to the difficulty of eliminating its presence from the normal nostril.

DR. GEORGE B. WOOD, of Philadelphia, said he had always been under the impression that the posterior portion of the nose was absolutely sterile.

DR. F. C. COBB, of Boston, said Dr. Wood was wrong in his conjectures, as almost every germ known could be found in the nose.

(To be continued.)

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Book Reviews.

Medical Sociology: A Series of Observations Touching upon the Sociology of Health and the Relations of Medicine to Society. By JAMES PETER WARBASSE, M.D., Surgeon to the German Hospital; Attending Surgeon to the Seney M. E. Hospital, etc. Pp. 355. New York and London: D. Appleton & Co. 1909.

The result of the publication of this book will presumably be to break down still further the barrier hitherto existing between the physician and the public. This at least is the hope which the author expresses. The volume consists of a variety of essays, some long and some crowded into a single paragraph, on a wide diversity of topics connected with medicine in its broader aspects. The author is evidently one of those who believes in the utmost candor in dealing with vital questions of health. The book is, therefore, throughout a refreshing statement of facts, many of them unpleasant, but all deserving of a far greater degree of attention than they ordinarily receive. The style of writing is attractive, many of the ideas, or at least the method of expressing them, is original, and the book should certainly do its share in the missionary work now in progress.

A Theory Regarding the Origin of Cancer. By C. E. GREEN. Second edition. Pp. 46. Edinburgh and London: William Green & Sons. 1909.

The development of cancer is explained by the author on the hypothesis that tissue cells are stimulated to active growth through the presence of "fungoid organisms." The development of the latter are believed to be favored by deoxidizing agents, very frequently by the sulphur compounds resulting from the combustion of coal. Many of the conclusions drawn in this book are without adequate basis in fact, and the context is to be regarded as speculative rather than scientific in character.

Protozoölogy. By GARY N. CALKINS, Ph. D., Professor of Protozoölogy in Columbia University, New York. Illustrated with 125 engravings and 4 colored plates. Pp. 350. New York and Philadelphia: Lea & Febiger. 1909.

This book will be welcomed not only by students of protozoölogy, but by the medical profession as well. In the first chapters the more fundamental subjects, such as the organization, the physiology and the processes concerned in reproduction of protozoa are taken up. Another chapter is devoted to the subject of "Parasitism." From the cultural study of Paramecium caudatum through seven hundred and forty-two generations, the author obtained results which he believes have a general bearing on the question of "age" in higher animals as well as in protozoa. The last five chapters are devoted to the pathogenic protozoa and the diseases which they produce. Other diseases of obscure etiology, probably due to protozoa, are discussed. The difficult matter of the classification of the Protozoa is dealt with in a satisfactory manner, and an enumeration is given of all known species of spirochetes and trypanosomes. From the compilation of the most important results in the investigation of protozoa, the book serves to bring this subject up to date.

The Body at Work: A Treatise in the Principles of Physiology. By ALEX HILL, M.A., M.D., F.R.C.S., sometime Master of Downing College, Cambridge. Pp. xi + 448. London: Edward Arnold. 1908.

Physiology has been called the people's science. Almost all extensive treatises on the subject, however, have been written for medical students, practitioners or technical experts. In the present volume an attempt has been made to describe in common language the activities of the parts of the body and their inter-relations, so that any one, though unacquainted with basic sciences, such as physics and chemistry, will not be puzzled. Topics tabooed in polite conversation are not even hinted at. The means used in obtaining physiological facts are also discreetly omitted. The result is a rather chatty account of the general features of bodily functions, enlivened by anecdotes, similes and historical allusions. The style is light and pleasing. The volume may be commended as one not likely to injure the sensibilities of the most fastidious lady, even an antivivisectionist.

THE BOSTON
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OPENING OF NEW YORK NEUROLOGICAL INSTITUTE.

A new hospital, to be devoted to the care of neurological and border-line mental cases, was opened this week in New York. This enterprise is due chiefly to the energy and persistence of Dr. Joseph Collins, who, with Dr. Joseph Fraenkel and Dr. Pearce Bailey, constitute the medical board. The institution has been incorporated under the laws of the state and will serve the double function of caring for ambulant patients and providing complete hospital care for those who demand permanent residence. The building, situated on East 67th Street, has been adequately equipped with apparatus for the therapeutic use of water, electricity, massage and other agencies which experience has shown are useful in the treatment of various disorders of the nervous system. The staff will consist not only of the physicians mentioned, but of others skilled in branches of medicine and surgery, together with a psychologist and a director of the pathological laboratory. In other words, this is a serious attempt to establish a neurological hospital on the basis of other hospitals, complete in itself and capable of ministering to the needs of patients suffering with nervous disease in its most varied forms.

A circular recently published by the directors of the new hospital calls attention to various obvious facts with relation to the treatment of nervous disorders at public hospitals. The wholly inadequate provision for this class of sufferers is pointed out, in spite of the very great need of properly equipped hospitals for their care. It has been peculiarly difficult to persuade either the medical profession or the public of the necessity of hospital care for many types of nervous disease, not only incapacitating in themselves, but constituting a distinct detriment, if not a positive menace, to the welfare of the family of which the sufferer happens to be a member. The need is not so much for those who have distinctly passed beyond the bounds of sanity, for whom ample provision is already made, but rather for the great and probably increasing number of border-line cases who may be restored to lives of usefulness if proper methods are employed in their early treatment. Such patients are not welcome and no doubt do not belong in the wards of our general hospitals. They certainly should not, even did the law permit, be committed to institutions for the insane. They have hitherto, in this country, been obliged to seek what assistance they could in out-patient departments, the inadequacy of which is only too apparent. The result has been that a great number of persons have been denied proper care simply because no provision adequate to their needs has been made. Although the New York institute cannot hope fully to meet the problem which the city presents in this regard, its establishment is significant of the increasing interest in this type of disorder and of the determination of certain public-spirited men to limit its inroads in the community. If this hospital proves a success, and of this we have no doubt, it will certainly point the way to the establishment of others in various cities through the country.

Quite apart, however, from the class of patients to which we have alluded, it is essential that hospital facilities at the earliest possible moment be established for persons suffering from acute or chronic structural disease of the nervous system, at present unwelcome guests at most of our general hospitals. The establishment of neurological clinics, apart from out-patient departments, has been extraordinarily slow in gaining a foothold, although the Boston City Hospital has in this regard recently set a good example. The recognition of the importance of structural nerve disease as a subject worthy of serious attention and the delegating of the care of such patients to men primarily interested in them is, we believe, a development of the near future. The establishment of a hospital, such as that now beginning its work in New York, is sure to have a salutary influence in this respect, inasmuch as it will demonstrate, in the first place, the possibility of building a hospital system, as it were, with diseases of the nervous system as its basis, and, secondarily, will permit special students of the subject an opportunity to follow cases of structural as well as functional nervous disease to the end.

We extend our best wishes to the enterprise and are confident that with wise management and conservative methods it will prove a boon not only to the city in which it is located, but to other parts of the country as well.

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CÆSAREAN SECTION IN BOSTON AND NEW ENGLAND.

In another column the Journal prints this week a series of papers, by members of the staff of the Boston Lying-In Hospital, presenting a study of the first hundred Cæsarean sections performed at that institution. This work, covering as it does a period of thirteen years, and representing the labor of the surgeons, living and dead, is a contribution to obstetric science and literature, and marks a definite epoch in the medical history of New England.

At the time this series of cases was begun, the operation of Cæsarean section was established in the great European clinics, but had little standing on this continent, except perhaps in New York, Philadelphia and Baltimore. In New England it was practically unknown.

In developing the technique, in defining and formulating the indications, in demonstrating the possibilities of this operation, the staff of the Boston Lying-In Hospital have done a pioneer work in our community, as their predecessors did in determining and applying the rules of obstetric asepsis. Cæsarean section is now a procedure of locally known and tested value and safety, whose benefits, though not as far-reaching as those springing from the conquest of puerperal fever, are peculiarly precious to those who profit by them.

Whether or no general surgical opinions concur in the conservative attitude officially taken by the hospital relative to sterilization at primary section and based on the results of the twenty-five repeated sections, it should be a matter of pride to the profession of this city that such a piece of clinical research should be added to the credit of medical science in Boston.

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FOOTBALL DEATHS AND INJURIES.

According to data compiled and published last week by the Chicago *Record-Herald*, there were 30 deaths and 216 major injuries due to football during the current season, the largest number of deaths during the past nine years in which these figures have been recorded. The most frequent cause of death was fracture — dislocation of the cervical vertebræ, with crush of the cord. The injuries included 19 cases of cerebral concussion, 19 of fractured rib, 19 of sprained ankle, 15 of fractured leg, 12 of fractured clavicle, 9 of fractured arm.

Such a list of casualties and fatalities recalls that of our annual Fourth of July celebration and raises the question whether the benefit of football contests justifies the price paid in life and limb. Especially is this the case if there be taken into consideration also the large number of major and minor injuries not here recorded, and their more or less permanent and serious disabling consequences. The liability to severe trauma in football seems relatively much greater than in any other common form of sport, and the problem of avoiding or mitigating this risk deserves serious general consideration.

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YELLOW FEVER IN RIO DE JANEIRO.

In an interesting paper read before the meeting of the Latin-American Medical and Sanitary Congress, held at Rio de Janeiro last summer, Dr. Oswaldo Cruz, Chief of the Brazilian Public Health Service, narrated the history of the remarkable and successful campaign for the suppression of yellow fever in that country. Rio de Janeiro, capital of Brazil, a city of nearly a million inhabitants, had long been the greatest center of yellow fever infection in South America. In 1894 there were 4,852 deaths from the disease in that city alone; in no year since 1882 had the deaths been less than 100; and in the period of thirty-two years from 1872 to 1903, when the campaign began, the total number of deaths was 46,256. In 1904 there were 48 deaths; in 1908, 4; and in the first half of 1909, not one. Dr. Cruz describes at length the methods by which this remarkable result has been accomplished, an achievement of lasting credit to the medical profession in Brazil.

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MEDICAL NOTES.

Union of Ohio and Miami Medical Colleges. — Exercises celebrating the union of the Ohio and Miami Medical Colleges were held at the University of Cincinnati this week. The new institution is to be known as the Medical College of the University of Cincinnati. The address was delivered by Dr. Victor Clarence Vaughan, Dean of the College of Medicine of the University of Michigan, after which there was a reception to the officers and guests of the university.

VIOLATIONS OF PURE FOOD LAW. — In the United States Circuit Court in San Francisco last week, three wholesale firms pleaded guilty to charges of violating the pure food law. One company had shipped, under label as peach brandy and apricot brandy, liquors in whose manufacture no peaches or apricots had been used. Another firm shipped as olive oil an oil containing 45% of cottonseed oil. The third firm shipped impure syrup. All were convicted.

INFANT MORTALITY IN BUENOS AYRES. — For some years Buenos Ayres, capital of the Argentine Republic, has had a lower rate of infant mortality than any other city of its size in the world. It has been suggested that the reason for this is its exceptionally pure and carefully guarded milk supply, but an investigation of this supply reported in a recent bulletin of the United States Public Health and Marine-Hospital Service seems to show that, though excellent, it is not materially better than that of Boston and some other cities with a much higher rate. Probably other agencies, as yet undetermined, are operative at Buenos Ayres. In view of the interest now current in this country in the subject of infant mortality, it would seem that further investigation of the health conditions in that city would be desirable.

BOSTON AND NEW ENGLAND.

ACUTE INFECTIOUS DISEASES IN BOSTON. — For the week ending at noon, Nov. 30, 1909, there were reported to the Board of Health of Boston the following cases of acute infectious diseases: Diphtheria 74, scarlatina 30, typhoid fever 12, measles 72, smallpox 0, tuberculosis 49.

The death-rate of the reported deaths for the week ending Nov. 30, 1909, was 16.15.

BOSTON MORTALITY STATISTICS. — The total number of deaths reported to the Board of Health for the week ending Saturday, noon, Nov. 27, 1909, was 191, against 199 the corresponding week of last year, showing a decrease of 8 deaths and making the death-rate for the week 15.99. Of this number 93 were males and 98 were females; 181 were white and 10 colored; 114 were born in the United States, 72 in foreign countries and 5 unknown; 42 were of American parentage, 119 of foreign parentage and 30 unknown. The number of cases and deaths from infectious diseases reported this week is as follows: Diphtheria, 66 cases and 2 deaths; scarlatina, 37 cases and 0 deaths; typhoid fever, 16 cases and 2 deaths; measles, 81 cases and 2 deaths; tuberculosis, 53 cases and 25 deaths; smallpox, 0 cases and 0 deaths. The deaths from pneumonia were 28, whooping cough 0, heart disease 22, bronchitis 4 and marasmus 1. There were 17 deaths from violent causes. The number of children who died under one year was 31; the number under five years 42. The number of persons who died over sixty years of age was 50. The deaths in public institutions were 65.

Cerebrospinal meningitis, 1 death.

Deducting deaths of non-residents, the total is 173 and the death-rate is then 14.48.

NEW YORK.

NEEDS OF THE NEW YORK ACADEMY OF MEDICINE. — At a recent meeting of the Council of the New York Academy of Medicine it was "Resolved, that the present building is inadequate to the needs of the Academy and that it is the sense of the Council that steps should be taken looking towards acquiring a new building."

INTERNATIONAL SANITARY CONVENTION. — Dr. Alvah H. Doty, health officer of the Port of New York, has been selected by the Secretary of the Treasury as one of the delegates to represent the United States government at the Fourth International Sanitary convention to be held at San José, Costa Rica, Dec. 25, 1909, to Jan. 2, 1910.

A CENTENARIAN. — Dr. Gaston Francois Petitjean, an aged French physician, died at the King's County Hospital, Brooklyn, N. Y., on Nov. 26. He told the physicians in attendance that he was a member of a noble family in France and that he was 104 years old. He had been living in this country for many years.

WOMEN AS POLICE OFFICERS. — In compliance with certain requests made him, the Commissioner of Public Safety of Yonkers has decided to appoint a few women on the police force of that city. They will be attached to the sanitary squad and are not to wear uniforms. They will visit the homes of the poor and, it is hoped, may be of special service in the enforcement of sanitary regulations.

STATE MORTALITY. — The State Department of Health reports that in the month of September the mortality in the state decreased to a daily average of 368 deaths from 374 in August. The death-rate was identical with that of September, 1908, but while there was a saving over last year in the urban mortality, the rural mortality was increased and appears excessive. The births reported amounted to 16,797, representing an annual birth-rate of 16.5 in the incorporated cities and 17.6 in the rural portion of the state.

Annual Meeting of Directors of Jewish Hospital. — At the annual meeting of the directors of the Jewish Hospital, of Brooklyn, which was held on Nov. 21, it was reported that, notwithstanding a considerable increase in its work during the past year, the institution had received enough financial support to meet its expenses. In addition, a laboratory, isolation house and septic pavilion have been contracted for at a cost of $18,000, the funds for which are already in hand. The hospital has also undertaken the construction of a nurses' home, at an expenditure of $100,000. Of this amount $26,000 has been subscribed and the remainder is to be raised on mortgage.

Conference of Association of Public School-teachers of Crippled Children. — The second annual conference of the Association of Public School-teachers of Crippled Children in the city of New York was held on Nov. 22, and among the honorary members who spoke were Dr. Virgil P. Gibney, Chief Surgeon of the Society for the Relief of the Ruptured and Crippled, and Jacob A. Riis. The latter related many incidents relating to crippled children which he had met with in his long experience as a student of life and conditions in New York, and in conclusion said, " It is hard to realize what improvements the city has made for the betterment of its inhabitants until we look back to conditions twenty years ago, or more."

Unusual Features in Suit for Damages. — A case presenting some unusual features was recently decided in the New York Supreme Court when John Fiesel, a lad of fourteen, obtained a verdict of $7,000 against a sewing machine company for injuries suffered in 1906, when an automobile owned by the company ran him down in the streets. In a previous suit he had received a verdict for $10,000, but this was set aside on the ground of newly discovered evidence. In court at the second trial the boy was accompanied by his twin brother Charles, and the two resembled each other so closely that it was impossible for a stranger to tell them apart. The plaintiff contended that the company, in order to aid their case by misleading the jury, had had photographs taken of Charles on his way to school and while running in a foot race. The pictures were exhibited, and Charles testified that a man had come to him some time after the accident and offered him money if he would let himself be photographed in the act of running. John, whose right foot was permanently injured by the automobile, then identified the pictures as likenesses of his brother.

Conference of Sanitary Officers. — The ninth annual conference of the sanitary officers of the state was held in Rochester Nov. 10, 11 and 12, and was the most successful and best attended conference yet held. The elaborate program previously announced was carried out, and among those participating were a number of authorities from outside the state. A few of the topics discussed were the following: " New Methods in the Diagnosis and Treatment of Infectious Diseases," introduced by Dr. William S. Magill, acting director of the State Hygienic Laboratory at Albany; " Influence of Trades on Disease," by Frederick L. Hoffman, statistician of the Prudential Life Insurance Company, Newark, N. J.; " The Registration of Tuberculosis," by Dr. Marshall L. Price, secretary of the Maryland State Board of Health; " What the Federal Government is Doing for Public Health," by Surgeon-General Walter A. Wyman, of the United States Public Health and Marine-Hospital Service; " Vital Statistics," by Dr. Cressy L. Wilbur, chief statistician of the United States Census Bureau; " The Prevention of Ophthalmia Neonatorum," by Dr. F. Park Lewis, Buffalo; " The Control of a Milk Supply," by Prof. H. A. Harding, Geneva. On the evening of Nov. 10 there was a public meeting, and among the addresses made was one by Prof. W. T. Sedgwick, of the Massachusetts Institute of Technology, on " Shall We Continue or Shall We Abate the Sewage Pollution of Streams? " During the conference a tuberculosis clinic was held for an hour each day under the direction of Drs. John H. Pryor, of Buffalo, and Henry L. Elsner, of Syracuse.

Conference of Charities and Correction. — At the State Conference of Charities and Correction, which was held at Albany on Nov. 16, 17 and 18, Dr. Eugene H. Howard, superintendent of the Rochester State Hospital for the Insane, in presenting the report of the committee on public institutions, stated that there was at present a general note of encouragement for all the charitable work of the state. " Never before," he said, " has the department been freer from political influence, and at the same time it has had the help and sympathy of the members of all parties in official position in improving the service."

Referring to the insane of the state, Dr. Howard said that the total number of insane patients in the thirteen state hospitals at the close of the fiscal year was 29,362. The net increase during the year was 1,014, as against 1,346 in the preceding year. It could not be denied that the enormous immigration of the past ten years had unduly swelled the number of insane. The temporary care provided for insane persons in most communities presented conditions not unlike those which led to the agitation resulting in the passage of the state care act in 1890. Thus, in the borough of Manhattan, New York City, 55% of the cases received at the psychopathic ward at Bellevue Hospital gained access to hospital care only through police channels, and the jails and lockups were certainly no places for insane persons. In many of them there was no matron, and some of the patients received from such places had been desperately ill and had died soon after admission to the state hospitals. He insisted that the duties relating to the first care of insane cases should be attended to by medical officers instead of by the charities' authorities and the police, and stated that although a bill providing for this change had failed to pass the last legislature, a similar bill would be introduced at the coming session. In conclusion, he attributed certain unsatisfactory conditions in the state hospitals to inadequate compensation of nurses and attendants. To remedy the defect, increased salaries, better accommodations for family life and the establishment of an equitable retirement fund were recommended.

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Current Literature.

New York Medical Journal.

Nov. 20, 1909.

1. Mitchell, S. Weir. *Address of Welcome.*
2. Dyer, I. *Some Differential Points in the Skin Lesions of Pellagra.*
3. Bass, C. C. *Complement Fixation with Lecithin as Antigen in Pellagra.*
4. Einhorn, M. *The Treatment of Gastric Ulcer.*
5. Brown, L. *An Outline for a Co-ordinated Attack upon Tuberculosis.*
6. Curtis, F. C. *Certain Contagious Diseases of the Skin.*
7. *Hertzberg, R. *On the Use of Mercury Succinimide in Superficial Tuberculous Lesions.*
8. Sautter, A. C. *Report of a Case of Uremic Amaurosis following Scarlet Fever.*
9. Hubbard, E. V. *Tonsil Removal.*

7. Hertzberg reports remarkable results from the use of mercury in three obstinate cases of superficial tuberculosis, two of scrofuloderma and one of extensive pharyngeal infiltration. He gave one fifth of a grain of the succinimide subcutaneously every other day, and one fourth of a grain of the protiodide by mouth three times a day. Local curetting and cauterization and x-ray exposures gave no permanent relief until supplemented by the mercury. [L. D. C.]

The Journal of the American Medical Association.

Nov. 20, 1909.

1. *Stockton, C. G. *Use of Digestive Ferments in Medicine.*
2. *Kanavel, A. B. *Removal of Tumors of the Pituitary Body by an Infranasal Route: A Proposed Operation, with a Description of the Technic.*
3. White, G. R. *Cystocele. A Radical Cure by Suturing Lateral Sulci of Vagina to White Line of Pelvic Fascia.*
4. *Weinstein, J. W. *Macroscopic and Microscopic Appearance of Stomach Contents.*
5. Pratt, J. H. *The Work of a Co-operative Hydrotherapeutic Establishment.*
6. *Miller, D. J. M. *History of Two Cases of Congenital Pyloric Spasm, with Remarks on the Etiology and Treatment.*
7. Van Derslice, J. W. *An Investigation into the Conditions Surrounding the Child in School.*
8. Hollopeter, W. C. *The School Child's Breakfast.*
9. *Carstens, J. H. *Final Word on the Stem Pessary for Amenorrhea, Dysmenorrhea, Sterility, Etc.*
10. Cutler, C. W. *Opacities of the Cornea: Their Frequency in Childhood from Preventable Causes and Their Effect on Vision.*

1. Stockton, reviewing the use of the digestive ferments, concludes that the question is a complicated one, and is rendered more uncertain by lack of precise knowledge as to what becomes of them in the digestive tract. There can be no question that a large number of the preparations on the market are inert.

2. Kanavel advocates the operation of elevating the nose, cutting the cartilaginous septum, removing the middle turbinates, deflecting the septum, locating the sphenoidal foramina, biting off the intervening attachment of the perpendicular plate of the ethmoid and vomer, entering the sphenoid cells, and thus reaching the floor of the sella turcica in removal of pituitary tumors: this as opposed to the supranasal operation.

4. Weinstein has an exhaustive and very rational article on macroscopic and microscopic appearances of stomach contents in disease and in health.

6. Miller describes congenital pyloric spasm in infants, and believes that the condition of spasm is the most prominent factor if not the only one in a large per cent of the cases commonly diagnosed as congenital pyloric stenosis. He believes that in all cases of stenosis, spasm is an ever-present symptom, and also that in all cases of spasm there is underlying, as a primary cause, a congenital defect of the circular muscle fibers at the pylorus. The relation, therefore, of the cases clinically recognized as pyloric spasm to those in which a true hypertrophy exists is simply one of degree. Treatment is entirely dietetic — intelligent, persistent and patient dietetic experiment. The prognosis is good. Feed only when it is known that the stomach is empty, and only such amounts as it is known by experiment on the individual case that the stomach will hold without throwing it off. Lime water is useful, as it neutralizes the otherwise too acid gastric contents which irritate and provoke spasm in the hypersensative pylorus. Fats should be avoided. Daily lavage is beneficial and often aids in the diagnosis.

9. Carstens recommends the use of the stem pessary in such conditions as amenorrhea, premature atrophy, amenorrhea in fleshy, sterile women, dysmenorrhea, displacements, sterility, when there are no inflammatory conditions present, and claims remarkably successful results. [E. H. R.]

The American Journal of the Medical Sciences.

October, 1909.

1. *Barker, L. F., and Harris, F. M. *Exophthalmos and Other Eye Signs in Chronic Nephritis.*
2. Adami, J. G. *The Nature of the Arteriosclerotic Process.*
3. *Hedblom, C. A., and Cannon, W. B. *Some Conditions affecting the Discharge of Food from the Stomach.*

4. *MENDEL, L. B. *The Relation of the Foodstuffs to Alimentary Functions.*
5 *FRISSELL, M. H. *Diet and the Care of the Bowels in Typhoid Fever.*
6. BLACKADER, A. D. *The Etiology of Loose Bowel Movements.*
7. *GOMPERTZ, L. M. *Chronic Constipation Clinically Considered.*
8. *DAYTON, H. *The Location of the Cardiac Apex Beat.*
9. CLAYTOR, T. A. *Orthodiagraphy in the Study of the Heart and Great Vessels.*
10. *OTTENBERG, R. *Observations on Acute Leukemia, with Special Reference to Auer's Bodies.*
11. *GINSBURG, N. *Volkmann's Contracture.*
12. ASHHURST, A. P. C. *A Case of Appendicitis in which Oxyuris Vermicularis was Found in the Appendix.*

1. Barker calls attention to the occurrence of exophthalmos in chronic nephritis. Among 33 cases of chronic nephritis he observed exophthalmos in 16, a majority of which showed other eye signs associated with it. He believes that it is due to toxic irritation of autonomic nerve fibers analogous to that which occurs in Graves' disease. Illustrative cases are reported at length.

3. Hedblom and Cannon report the results of animal experiments performed by x-ray observations as to the rapidity of the discharge of food from the stomach. Their findings, in brief, are as follows, each fact being determined by a series of observations: (1) If carbohydrate food is thinned by adding water there is very little change in the rate of exit from the stomach; but adding water to protein food tends to make the discharge more rapid. (2) When hard particles are present in the food, the rate of outgo from the stomach is notably retarded, but coarse, branny food leaves the stomach slightly faster than similar foods of finer texture. (3) The presence of gas in the stomach delays gastric discharge. (4) No considerable variation from the normal rate of exit is observed when the food is fed very hot or very cold. (5) Food with approximately normal acidity leaves the stomach much faster than food which is hyperacid. (6) Massage of the stomach has very slight influence. (7) Irritation of the colon notably retards gastric discharge and delays the movements of food through the small intestine.

4. Mendel's article is a brief description of recent teachings as to the action of foods in calling forth digestive secretions. The first stimulus to the digestion of a meal is, as Pawlow taught, a nervous one. But later digestive processes are more probably stimulated by chemical excitants, or *hormones*, as exemplified by Bayliss and Starling's demonstration that substances absorbed and passing through the blood stream to the liver and pancreas can excite secretion of bile and pancreatic juice. Just how complex and how accurately regulated these processes are is uncertain. Yet the recognition of these processes is necessary to proper dietetic treatment.

5. Fussell discusses the diet in typhoid fever and concludes that it is not rational to insist either upon the old-fashioned liquid diet or upon any more liberal fixed diet list. While some patients may be given a liberal diet, excessive feeding is still a danger. He recommends beginning in in each case with liquids, milk and egg albumen, gradually adding starches, meat, soups, etc., watching for tympany or diarrhea, and if these occur, returning to digested milk and eggs.

7. Gompertz, acting upon Mendel's suggestion, has used agar-agar in cases of chronic constipation with uniformly favorable results. As a rule he has begun with 15-gm. doses morning and evening, usually eaten with sugar and cream. Within one to three days regular movements begin and the dose may be reduced.

8. Dayton writes to protest against the common error of mistaking maximum cardiac impulse for the apex of the heart. The true apex is the outermost and lowest point at which any impulse can be felt.

10. Ottenberg reports the findings of certain bodies first described by Auer in 1906 in three cases of acute leukemia, whereas in a case of chronic leukemia and in many normal cases none were found. The bodies have the appearance of rods within leucocytes. Their nature cannot be determined; attempts to find them in the body post mortem, as well as inoculation experiments, completely failed.

11. Ginsburg describes the condition known as Volkmann's contracture or ischemic paralysis and reports a case, bringing the total of reported cases up to one hundred and nine. It is a deformity of the forearm, wrist and hand, usually following too tightly applied dressings for fractures of the forearm or humerus in children under the age of fifteen. Pain, numbness and discoloration of the hand, with contraction of the fingers, are first noticed; later flexion of the interphalangeal joints, wrist and usually elbow occurs, with marked pronation. The cause is obscure, but most probably lies in injury to nerves which induces muscle anemia, with subsequent degeneration. The contracture is the result of this myositis. Prophylaxis lies in the careful application of dressings. Operative treatment consists in tendoplasty or resection of both bones of the forearm. Nerves should be examined and freed if necessary. [F. W. P.]

THE ARCHIVES OF INTERNAL MEDICINE.

OCTOBER, 1909.

1. *THAYER, W. S. *Further Observations on the Third Heart Sound.*
2. *POTTINGER, F. M. *The Effect of Tuberculosis on the Heart.*
3. *DAVIS, D. J. *Influenzal Meningitis.*
4. *EWING, J., AND WOLF, C. G. L. *The Clinical Significance of Urinary Nitrogen. Nitrogenous Metabolism in Typhoid Fever.*
5. *MILLER, J. L., AND MATHEWS, S. A. *A Study of the Mechanical Factors in Experimental Acute Pulmonary Edema.*
6. *SWIFT, H. F. *A Comparative Study of Serum Diagnosis in Syphilis.*
7. ROSENOFF, A. J. *The Much-Holtzmann Serum Reaction in Insanity.*

1. Thayer reports a number of observations on the occurrence of the "third heart sound" in normal and pathological conditions. He believes that the third heart sound is present in the majority of young individuals in the recumbent and left lateral postures; that the sound may well be due to the sudden tension of the auriculo-ventricular valves as a result of the first rush of blood from auricle into ventricle in diastole; that pathologically the sound is especially frequent in conditions in which the quantity of blood entering the ventricle from the auricle is especially large, in which the diastole is especially rapid, in which there is a lowered tonus or dilatation of the ventricle (aortic and mitral insufficiency, adherent pericardium, myocardial weakness and dilatation of the ventricle); that a protodiastolic gallop is not, *per se*, a pathological manifestation.

2. Pottinger publishes a large number of statistics on the condition of the heart in tuberculosis, or the effect of tuberculosis on the heart and blood vessels. The cases are classified by the stage of the disease, the age of the patient and the amount of involvement of the lung. He has recorded the systolic and diastolic blood pressure, the condition of the radial, the position and size of the heart and the valvular sounds and the condition of the heart muscle. He finds that a relatively low blood pressure is present in tuberculosis, especially in advanced cases. The factors which favor low pressure are the effects of the toxins on the vasodilators, the weakness of the heart muscle and general wasting. The factors which have a tendency to maintain pressure are hypertrophy of the heart muscle and thickening of the systemic arteries. The thickening of the arteries occurs perhaps as a result of the action of the toxins on the vessel wall and is found especially in patients who have had tuberculosis for some time. Myocarditis is a condition very common in advanced tuberculosis, and one which, if recognized, yields to appropriate treatment in many instances.

3. Davis reports a case of meningitis in a child five days old, due to the bacillus influenza.

4. The authors report a large series of observations on the nitrogenous metabolism in typhoid fever. The report includes a tabular view of the daily findings in a number of cases. The highest excretion of nitrogen in proportion to the body weight seems to occur in the so-called toxic cases and periods of the disease when the patient appears poisoned and can be observed to be

losing weight rapidly. Although these features are usually coincident with a high temperature, the total nitrogen seems to be less affected by the fever than by the intoxication. The results seem to show that a persistently high urea ratio is a favorable sign. From estimates of the ammonia nitrogen it is evident that acidosis is not a prominent feature of typhoid. There is distinct evidence that a pathological increase in creatinin belongs to the typhoid process. The highest quantities and the highest coefficients appear in the severe stages of the disease, while the absolute amounts diminish with convalescence, and some very low coefficients appear in emaciated and very weak subjects. Creatin appeared in the urine nearly constantly in the active period of the disease, and disappears during convalescence. Its appearance is coincident with the period of negative balance and general loss of weight. As a rule, the creatin nitrogen was low in the milder cases, and its disappearance from the urine proved a favorable sign. Uric acid failed to show any definite relation to the clinical features. A rise in rest nitrogen is of bad significance at the height of the fever; during convalescence it may simply indicate imperfect food metabolism. Their observations make it seem probable that disturbance in metabolism may have important influence in relapse. The authors remark that the most obvious conclusion of this study is the inadequacy of the diet used and of that generally employed in typhoid fever.

5. The authors report many experiments in producing acute pulmonary edema and their observations to determine the part played by mechanical factors in its production. In many of the cases there was no evidence that mechanical factors were responsible for the edema. They discuss at some length the effects of various remedial agents. Atropin was of no value except in the cases where the edema was due to muscarin poisoning. Nitroglycerin was of no value in the edema produced by acetic ether and the iodides where it was possible that the rise in pressure in the pulmonary artery was due to a vasoconstrictor action. In the edema produced by adrenalin with high systemic pressure, the drug was ineffectual on account of its action being interfered with by the more powerful adrenalin. (The result does not rule it out in cases of high systemic pressure in man.) Barium chloride was without effect. Digitalis was of benefit only in those cases where there was present an artificial mitral stenosis. Here in conjunction with venesection it contributed to the equalization of the circulation. Venesection was disappointing.

6. The article contains a very careful analysis of the different methods of serum diagnosis in syphilis. The author presents tables to show the relative values of the different reactions in different cases. He discusses at length the advantages and disadvantages of the different methods. [W. B. R.]

The Lancet.

Nov. 6, 1909.

1. Lindsay, J. A. *The Bradshaw Lecture on Darwinism and Medicine.*
2. *Maguire, R. *On Oxaluria and the Treatment of Calcium Oxalate Deposit from the Urine, with a Method for the Solution of Calcium Oxalate Calculus whilst in the Urinary Passages.*
3. Miller, A. H. *A Case of Late Traumatic Subdural Hemorrhage; Traumatic Late Apoplexy.*
4. Cantley, E. *Starch Digestion in Babies.*
5. *Horder, T. J. *Lung Puncture; A New Application of Clinical Pathology.*
6. Fenwick, W. S. *The Dyspepsia of Old Age.*
7. *Manwaring-White, R. M. *Sinusitis Occurring as a Concomitant Complication of Influenza.*
8. Browne, R. H. J. *A Case of Tertiary Syphilis Terminating in Sudden Death from Abductor Paralysis of the Vocal Cords.*
9. Parry, T. W. *Rapid Recovery in a Case of Trophneurotic Anemia by Intramuscular Injections of Sodium Para-aminophenylarsonate.*
10. Piasecki, E. *Bacteriological Investigations on Some Modern Mouth Disinfectants.*

2. Maguire, after describing his experiments on dissolving calcium oxalate calculi by means of solutions of acid sodium phosphate, advises that this drug be given in occasional doses whenever there is found to be prolonged deposition of calcium oxalate crystals in the urine.

5. Horder describes several cases of various lung conditions in which he has done lung puncture for diagnostic purposes. His technic, which is simple, he describes. He believes that this method of diagnosis should be more frequently used than it now is.

6. Fenwick describes a form of indigestion occurring in old persons which he calls "senile dyspepsia." This condition is largely due to atrophy of the mucous membrane of the stomach and a consequent subacidity and lack of motility. The pathological conditions he gives in detail. It usually develops between sixty and seventy years of age. The symptoms are flatulence, distention and an increasing loss of appetite. The treatment is the same as that of achylia gastrica in young persons. Much fluid should be avoided. The subacidity should be relieved and careful attention paid to the constipation nearly always present. The administration of lactic acid bacilli in the form of Metchnikoff's sour milk is a most valuable aid to treatment. Saline cathartics should be avoided.

7. Manwaring-White gives a careful description of sinusitis, usually frontal, following acute influenza. The prevailing organism in the secretion is most often the micrococcus catarrhalis and very rarely the influenza bacillus. Diagnosis is simple. Treatment consists of local measures to reduce the inflammation and allow free drainage, for which purpose he recommends steam inhalations of eucalyptus, menthol, etc., and local application of cocaine or adrenalin. [J. B. H.]

British Medical Journal.

Oct. 30, 1909.

1. Bland-Sutton, J. *A Lecture on Hernia of the Uterus in Men and Women.*
2. Embleton, D., and Shaw, H. B. *On the Increase of the Hemolytic Power of Sera Resulting from the Experimental Introduction of Organ Extracts Derived from Other Animals of the Same Species.*
3. Wallis, F. C. *Seven Cases of Appendicostomy for Various Forms of Colitis.*
4. Butler, H. B. *Fulminating Appendicitis.*
5. Peacock, W. E. *Pneumococcus Invasion of the Throat followed by Pleuropneumonia and Appendicitis; Operation and Recovery.*
6. Bishop, E. S. *Whitehead's Operation for Hemorrhoids.*
7. *Anderson, H. G. *The After-Results of the Operative Treatment of Hemorrhoids: A Study of Three Hundred Cases.*
8. Shaw, B. H. *Acute Necrosis of the Pancreas: Sudden Death.*
9. Pearse, E. M. *A Case of "Congenital Pyloric Stenosis" Successfully Treated without Operation.*

7. Anderson has studied 300 cases of hemorrhoid operation, of which 150 were treated by ligature, 100 by Whitehead's operation and 50 by clamp and cautery, as to after-results. Pain severe enough to require morphia was most frequent in the Whitehead cases; a catheter was needed in 10% of the ligature cases, none in the other two series. There was more contraction requiring dilatation after the Whitehead operation than in the others. For all severe cases he recommends the Whitehead operation; the clamp and cautery is useful when there are not more than three piles, and the ligature operation is especially valuable when there are both internal and external piles. [J. B. H.]

Nov. 6, 1909.

1. Lindsay, J. A. *The Bradshaw Lecture on Darwinism and Medicine.*
2. Hawkins, H. P. *The Identity of British Ulcerative Colitis and Tropical Bacillary Dysentery.*
3. Leiper, R. T. *The Alleged Heterogenesis of Ankylostoma Duodenali.*
4. Carter, R. M. *A Note on Oriental Sore.*
5. Row, R. *Some Observations on Tubercle in Bombay.*
6. *McNeil, C. *A Study of the Tuberculin Reactions in Skin and Eye. A Series of One Hundred and Sixty-three Cases.*
7. Hemsted, H. *A Case of Disseminated Tuberculosis Treated by Marmorek's Serum.*

THE SCIENCE COMMITTEE OF THE BRITISH MEDICAL ASSOCIATION.

8. Benham, C. H. *Further Researches into the Bacteriology and Vaccine Therapy of Common Colds.*

6. McNeil reports his results with the eye and skin tubercular reactions in 153 cases. In bone, joint and gland tuberculosis the results were clear, either distinctly negative or positive. The test was of great value in obscure joint conditions where the clinical diagnosis was in doubt. In pleural effusions, long supposed to be tuberculous, positive tests were present in 13 out of 14 cases. (In this country a negative test frequently is seen in a tuberculous pleurisy.) [J. B. H.]

Deutsche Medizinische Wochenschrift. No. 43. Oct. 28, 1909.

1. *Kümmell, H. *Further Experiences in the Early Getting Up after Laparotomy in Regard to the Shortening and Assurance of Convalescence.*
2. *Jochmann, G. *The Diagnostic and Prognostic Importance of Antitrypsin in Human Blood Serum.*
3. Noeggerath, C. T. *Serological Investigation on the Theory of the Nourishment of Infants.*
4. Sterzing, P. *Comparative Blood Pressure Measurements by Means of Palpatory and Auscultatory Methods.*
5. Harrass, P. *Tearing of the Rectum in Fracture of the Pelvis.*
6. Sebba, M. *Study of Incarcerated Hernia through the Linea Alba.*
7. Samuel, M. *The Easing of Childbirth by Non-Operative Measures.*
8. Durlacher. *Double Utero-Vaginal Canal in a Woman with Atresia and Pyokolpos of the Right Vagina.*

1. Kümmell gives the ultimate results of cases which he has had sit up soon after laparotomy and finds that they are as well off as those that stay in bed. Therefore the question comes down to the immediate effects. The advantages to the respiratory tract, such as a diminution in bronchitis and pneumonia, are marked by an early getting up. He has his patients get up in a chair for a short time on the day after the operation. Another advantage of this method is the lessening of the tendency towards thrombosis. Even in cases of hernia and cases with wicks he claims that the end results on the toughness of the scar are just as good as when they stay in bed for longer times.

2. Jochmann shows that an increase in the antitryptic power of the blood may occur under a variety of conditions and that, therefore, an increase is not a positive sign as to the presence of cancer. On the other hand, however, as the antitrypsin is almost always increased in cancer, the diminution of it can very reliably be used to exclude cancer. As a prognostic sign he puts little faith in it. [C. F., Jr.]

Münchener Medizinische Wochenschrift. No. 44. Nov. 2, 1909.

1. Wessely, K. *Studies of the Growing Eye.*
2. Konjetzny, G. E. *The Pathology and Symptomatology of Acquired Diverticulum of the Appendix.*
3. Jack. *Antitrypsin Content of the Blood of the Insane.*
4. Apelt, F. *Studies of the Cerebrospinal Fluid as to Increase of Cellular Elements and Albumin in Trypanosomiasis of the Dog.*
5. *Rose, C. *An Epidemiclike Influenza Due to Diplococci.*
6. Hoffmann, A. *Cardiac Arrythmia in the Electrocardiogram.*
7. Saathoff. *A Contribution to the Recognition of Primary Pyelitis.*
8. *Simon, L. *Two Cases of Severe Tetanus Treated with High Dosage of Antitoxin, with Favorable Outcome.*
9. Wolff-Eisner, A. *Tuberculin Vaseline for the Conjunctival Reaction, a Modification of the Conjunctival Test for Practice.*
10. Dessauer, F., and Wiesner, B. *A New Röntgenological Method.*
11. Herhold. *Obscuration of Subphrenic Abscess by Secondary Serous Effusions in the Abdominal or Pleural Cavities.*
12. Sommerfeld, P. *Unique Occurrence of Bacillus Pyocyaneus in the Bladder.*
13. Volpino, G. *Motility of the Bodies Seen in Vaccinia and in Smallpox.*
14. Schwiening. *The Question of Fitness for Military Service of the Volunteers for One Year of Service in Germany.*
15. Raebiger, H. *Cases of Illness Due to the Bacillus of House Typhoid.*

5. Rose describes an epidemic of 37 cases of pneumococcus infection occurring in a hospital. The incubation period varied between twelve and thirty-six hours. The onset was like that of influenza, except that the reddening of the pharynx was followed in nearly every case by an exudate. Most of the patients had bronchitis and 17 developed croupous pneumonia. Of the latter, 7 came to autopsy. The fever lasted in most cases ten to twelve days and fell by lysis. Blood cultures were positive in only 2 cases. One died from pneumonia, the other apparently from septicemia. Other complications were few.

8. The writer reports two cases of tetanus of short incubation which were saved by the use of large doses of serum (Höhst), repeated on several days. Half the dose was given intraspinally and the rest intravenously. [G. C. S.]

Berliner Klinische Wochenschrift. No. 44. Nov. 1, 1909.

1. Binz, C. *The Use of Chlorinated Lime in Dermatology.*
2. Arnot, G. *Preliminary Communication on a Case of Sporotrichosis of the Skin.*
3. Zeissler, J. *The Quantitative Estimation of Antibodies in the Wassermann Reaction.*
4. *Zlatogoroff, S. J. *A Case of Laboratory Infection from Water Contaminated with the Cholera Spirillum.*
5. Poll, H. *The Biology of the Adrenal System.*
6. Lucksch, F. *The Disturbance in the Function of the Adrenal in Infectious Diseases.* (Conclusion.)
7. Ephraim, A. *The Significance of Bronchoscopy in Internal Medicine.*
8. Jahrmärker, M. *The Question of Commitment of the Insane and Feeble-Minded.*

4. Zlatogoroff reports a typical case of cholera contracted from the careless use of an emulsion of cholera spirilla, from which he was able to observe accurately the incubation period and to determine the fact that the passage of the spirillum through the human organism greatly increased its virulence for guinea pigs. [H. P. G.]

Die Therapie der Gegenwart. October, 1909.

1. Magnus-Alsleben, E. *Older and Newer Indications for a Milk Diet.*
2. Strauch, F. W. *Estimations of Residual Air in Emphysema, with Special Reference to W. A. Freund's Operation.*
3. Bockelman, W. A., and van Hoogenhuyze, C. J. C. *A Case of Mixed Cell Leukemia Treated with Röntgen Rays. Influence of These Rays on the Condition of the Blood and the Urine.*
4. *Klink, W. *The Epidemic Appearance of Appendicitis.*
5. Sternberg, W. *The Importance of the Diet Kitchen for the Management of Diet.*

4. Klink describes a small epidemic of appendicitis which he observed in Wilmersdorf, a section of Berlin, with a population of about ten thousand. Twenty-six cases came under his care in April, May and June, 1909. The wife of one patient was taken sick eleven days after her husband. In none of the cases was there a history of preceding trauma, intestinal catarrh or infection elsewhere in the body. During this period of three months 11% of his cases were appendicitis, 20% respiratory infections; rheumatic ailments, 14%; otitis media, 6%; abscesses and furuncles, 9%. The writer is inclined to think that exposure to cold was of etiological importance in the appendix cases, and that the ordinary pyogenic micro-organisms of the air must have been greatly increased both in numbers and virulence. [L. D. C.]

Miscellany.

REPORT OF THE MILK COMMISSION OF THE SUFFOLK DISTRICT MEDICAL SOCIETY, OCT. 30, 1909.

Your commission has to report that it is at present certifying the milk of "The Warelands," the farm of the Massachusetts State Agricultural College, the Cherry Hill Farm of Beverly, Mass., and the Middlebrook Farm of Dover, N. H.

"The Warelands" has been certified since January, 1907, with the exception of August and September of this year, when, on account of the dry weather, it was impossible for the farm to get clean water. The bacterial counts were very high and the certification was taken away. Since then the bacterial counts have been well below the limit of ten thousand. "The Warelands" has its own delivery wagon and delivers daily, Sundays and holidays included, two grades of milk, 4% fat and a richer milk. The farm can be reached best by telephoning Mrs. Robert A. Ware, Haymarket 2182.

The milk of the Massachusetts State Agricultural College is of but one grade, containing 4% of fat. It is delivered by D. Whiting & Sons under the head of "Certified Milk," price 16 cents per quart. This farm has been certified since January, 1908.

During September the Cherry Hill Farm of Beverly, Mass., and the Middlebrook Farm of Dover, N. H., were examined by representatives of the commission and found able to live up to the standards required. They both received their certificates on Oct. 1, 1908.

The Cherry Hill Farm delivers in its own carts, and can best be reached by telephoning Beverly 852–2. The farm is at present making arrangements to have a direct telephone line from Boston, so that it can be on the Boston exchange. It delivers several grades of milk at different prices, varying from 13 cents to 22 cents per quart, according to the richness and quantity taken. The special "Baby Milk" is from a pure Holstein herd and the percentage of fat is determined at short intervals and kept as close to 4% as possible. The price of this milk is, for one quart daily, 18 cents, and two or more quarts daily, 16 cents. Morning's milking can be obtained by request.

As it was impossible for the veterinarian of the commission to examine farms outside the state of Massachusetts, it was found necessary to appoint a new representative in the state of New Hampshire. Dr. F. L. Bodwell, of Dover, one of the state veterinarians, and Dr. E. C. Batchelder kindly agreed to represent your commission, as the Middlebrook Farm has but one grade of milk, containing 4% of fat. Their herd is of pure Jerseys. They are planning, however, to add Holsteins to it. The milk is delivered by H. P. Hood & Sons, telephone Charlestown 600. Price, 16 cents per quart.

Aside from an infected udder and their trouble with the water supply, "The Warelands" has had no difficulty in living up to the requirements of the commission. At these times the bacterial count went as high as 750,000. At other times the bacterial counts have been low, varying between 1,000 in June and 10,000 in January.

The Massachusetts State Agricultural College had a bacterial count of 1,200 in April and 9,700 in March; the majority of bacterial counts were in the neighborhood of 3,000. On Sept. 15 the percentage of fat was 4.95. This, however, was quickly rectified. The Cherry Hill Farm 4% had for October a bacterial count of 1,500; for November, 3,700, and December, 1,100; the 4% plus milk had a bacterial count of 2,700 in October, 1,300 in November, and 2,350 in December. The Middlebrook Farm bacterial counts were 350, 1,100 and 1,850.

"The Warelands" is at present producing a little over 200 quarts of certified milk daily; the Massachusetts Agricultural College, 310 quarts; the Middlebrook Farm, 36 quarts and the Cherry Hill Farm, 1,200 quarts daily.

The demand for certified milk has not increased as much as we had hoped, although at one time during the summer the supply could not meet the demand in every instance. Your commission feels that during the next year the demand should increase materially and that the society should show even more interest than is shown at present in this excellent milk supply.

All of the farms have shown a very friendly spirit in co-operating with the commission. Several other dairies have inquired about certification, and one of these will probably be certified in the course of the ensuing year.

Your commission had on hand Oct. 31, 1908,	$56.87
And has received an appropriation voted at the last meeting of	100.00
Making	$156.87
The commission has expended	121.15
Leaving a balance of	$35.72

The chief expenses of the commission have been:

For collecting from Oct. 31, 1908, to Oct. 30, 1909,	$67.25
For membership in the American Association of Medical Milk Commissioners,	15.00
And for postals to the members of the Suffolk District Medical Society,	17.95
Leaving for miscellaneous,	20.95
And making	$121.15

Your commission asks for an appropriation of $175 for the ensuing year. This alone will cover the expenses, providing no other dairy is certified.

The commission regrets to report the resignation of Dr. John Lovett Morse, who, from the beginning, has acted as chairman. He is responsible for the policies pursued by the commission and the high character of the work done.

The commission has been able to arrange for the continuance of free bacteriologic, chemical, veterinarian and medical inspection of the farms.

The Milk Commission of the Suffolk District Medical Society consists of Drs. James Marsh Jackson, chairman; Edwin A. Locke, Francis H. Slack, Robert L. De Normandie, and Fritz B. Talbot, secretary.

RECORD OF MORTALITY

For the Week ending Saturday, Nov. 13, 1909.

Cities.	Reported deaths in each.	Deaths under five years.	Cities.	Reported deaths in each.	Deaths under five years.
New York	—	—	Waltham	5	1
Chicago	594	156	Pittsfield	6	1
Philadelphia	—	—	Brookline	7	—
St. Louis	—	—	Gloucester	5	1
Baltimore	172	63	North Adams	4	2
Cleveland	—	—	Northampton	4	0
Buffalo	—	—	Chicopee	3	0
Pittsburg	—	—	Medford	5	2
Cincinnati	—	—	Beverly	5	—
Milwaukee	—	—	Leominster	2	1
Washington	—	—	Hyde Park	2	—
Providence	—	—	Melrose	5	0
Boston	173	42	Newburyport	6	—
Worcester	37	8	Revere	2	—
Fall River	36	18	Westfield	1	—
Cambridge	35	9	Woburn	5	1
Lowell	19	5	Peabody	—	—
New Bedford	28	12	Marlboro	6	1
Lynn	23	6	Attleboro	5	0
Springfield	30	7	Adams	3	—
Lawrence	25	12	Clinton	6	2
Somerville	26	3	Gardner	4	0
Brockton	15	3	Milford	3	2
Holyoke	—	—	Watertown	8	0
Malden	10	2	Plymouth	—	—
Chelsea	10	3	Southbridge	3	2
Newton	10	—	Weymouth	1	0
Salem	11	1	Framingham	4	2
Haverhill	9	—	Wakefield	—	—
Fitchburg	10	3	Webster	—	—
Everett	8	1	Arlington	3	—
Quincy	—	—	Greenfield	1	—
Taunton	15	2			

LIST OF CHANGES OF STATIONS AND DUTIES OF COMMISSIONED AND OTHER OFFICERS OF THE PUBLIC HEALTH AND MARINE-HOSPITAL SERVICE FOR THE SEVEN DAYS ENDED NOV. 17, 1909.

Cobb, J. O., surgeon. Granted one day's leave of absence, Nov. 11, 1909, on account of sickness.

Wertenbaker, C. P., surgeon. Directed to report at the Bureau Nov. 15, 1909, upon special temporary duty. Nov. 13, 1909.

Lavinder, C. H., passed assistant surgeon. Detailed to represent the service at the meeting of the Chicago Medical Society to be held at Chicago, Ill., Nov. 24, 1909. Nov. 11, 1909.

Parker, H. B., passed assistant surgeon. Directed to report at the Bureau Nov. 19, 1909, upon special temporary duty. Nov. 16, 1909.

Corput, G. M., passed assistant surgeon. Granted five days' leave of absence from Nov. 12, 1909.

Fox, Carroll, passed assistant surgeon. Granted ten days' leave of absence en route to station.

Goldberger, Joseph, passed assistant surgeon. Directed to proceed to Mexico City, Mexico, upon special temporary duty. Nov. 8, 1909.

Lloyd, B. J., passed assistant surgeon. Granted five days' leave of absence from Oct. 19, 1909.

Francis, Edward, passed assistant surgeon. Granted two days' leave of absence while en route to places mentioned in Department orders of Nov. 9, 1909.

Ebersole, R. E., passed assistant surgeon. Directed to report to the medical officer in command at San Francisco, Cal., for duty and assignment to quarters. Nov. 13, 1909.

Bryan, Wm. M., assistant surgeon. Granted thirty days' leave of absence from Nov. 27, 1909.

Stiles, Ch. W., chief Division of Zoology, Hygienic Laboratory. Detailed to attend the meeting of the New Jersey Sanitary Association, to be held in Lakewood, N. J., Dec. 3–4, 1909. Nov. 17, 1909.

Hunt, Reid, chief Division of Pharmacology, Hygienic Laboratory. Detailed to attend the meeting of the Council on Pharmacology and Chemistry of the American Medical Association, to be held in Chicago, Ill., Nov. 12–13, 1909. Nov. 11, 1909.

Bailey, C. A., acting assistant surgeon. Directed to proceed to St. John, N. B., on or about Nov. 23, 1909, for medical examination of aliens. Nov. 11, 1909.

Cheney, E. L., acting assistant surgeon. Granted twenty-one days' leave of absence from Nov. 16, 1909,

Houghton, M. W., acting assistant surgeon. Granted five days' leave of absence from Nov. 18, 1909.

MacCaffry, W. B., acting assistant surgeon. Granted two days' leave of absence in October, 1909, under Paragraph 210, Service Regulations.

Ransom, S. A., acting assistant surgeon. Granted thirty days' leave of absence from Nov. 11, 1909.

Rodman, J. C., acting assistant surgeon. Granted five days' leave of absence from Nov. 17, 1909.

Simonson, G. T., acting assistant surgeon. Granted two days' leave of absence from Nov. 16, 1909.

Brinckerhoff, W. R., assistant director, Leprosy Investigation Station. Granted thirty days' leave of absence from Dec. 2, 1909.

Miller, Charles, pharmacist. Leave of absence for thirty days from Sept. 30, 1909, amended to read twenty-seven days from Sept. 30, 1909.

Ryder, L. W., pharmacist. Granted four days' leave of absence from Nov. 8, 1909, under Paragraph 210, Service Regulations.

Osborn, J. L., pharmacist. Relieved from duty at Boston, Mass., and directed to proceed to the Savannah Quarantine Station, Ga., and report to the medical officer in command for duty and assignment to quarters. Nov. 10, 1909.

Wilbert, Martin I., technical assistant, Hygienic Laboratory. Detailed to attend the meeting of the Council on Pharmacology and Chemistry of the American Medical Association, to be held in Chicago, Ill., Nov. 12–13, 1909. Nov. 11, 1909.

BOARDS CONVENED.

Board of medical officers convened to meet at the Marine Hospital, San Francisco, Cal., for the purpose of making a physical examination of two officers of the Revenue-Cutter Service. Detail for the board: Surgeon James M. Gassaway, chairman; Assistant Surgeon S. C. Hotchkiss, recorder. Nov. 11, 1909.

Board of medical officers convened to meet at Astoria, Ore., for the purpose of making a physical examination of an officer of the Revenue-Cutter Service. Detail for the board: Passed Assistant Surgeon J. M. Holt, chairman; Acting Assistant Surgeon Jay Tuttle, recorder. Nov. 11, 1909.

Board of medical officers convened to meet at the Marine Hospital, Key West, Fla., for the purpose of making a physical examination of an officer of the Revenue-Cutter Service. Detail for the board: Surgeon E. K. Sprague, chairman; Acting Assistant Surgeon S. D. W. Light, recorder. Nov. 12, 1909.

CHANGES IN THE MEDICAL CORPS U. S. NAVY FOR THE WEEK ENDING NOV. 27, 1909.

Brownell, C. DeW., surgeon. Detached from the "Mississippi" and granted sick leave for six weeks. Nov. 19.

Clifford, A. B., passed assistant surgeon. Detached from the Naval Hospital, Las Animas, Colo., and ordered to the "Albany." Nov. 20.

RECENT DEATH.

Dr. Samuel Kohn of New York died on Nov. 26, from Bright's disease. He was born in New York City on Nov. 20, 1855, and was graduated from the medical department of New York University in 1877. He began practice on the East Side and was very successful, and many years ago founded the German Poliklinik, on Second Avenue. At the time of his death he was president of this institution and one of its attending physicians.

BOOKS AND PAMPHLETS RECEIVED.

Diseases of Infants and Children. By Henry Dwight Chapin, A.M., M.D., and Godfrey Roger Pisek, M.D. Illustrated. New York: William Wood & Co. 1909.

Surgical Diagnoses. By Daniel N. Eisendrath, A.B., M.D. Second edition, thoroughly revised and enlarged. Illustrated. Philadelphia and London: W. B. Saunders Co. 1909.

Causes of Disability as Applied under Accident and Health Insurance Policies. By Charles Hamilton Harbaugh, M.D. Illustrated. New York: The Spectator Co. 1909.

Clinical Examination of the Urine and Urinary Diagnosis. By J. Bergen Ogden, M.D. Third edition, thoroughly revised. Illustrated. Philadelphia and London: W. B. Saunders Co. 1909.

Clinical Studies for Nurses. By Charlotte A. Aikens. Illustrated. Philadelphia and London: W. B. Saunders Co. 1909.

American Pocket Medical Dictionary. Edited by W. A. Newman Dorland, A.M., M.D. Sixth edition, revised and enlarged. Philadelphia and London: W. B. Saunders Co. 1909.

Original Articles.

THE RELATION OF POSTURE TO HUMAN EFFICIENCY AND THE INFLUENCE OF POISE UPON THE SUPPORT AND FUNCTION OF THE VISCERA.

BY JOEL E. GOLDTHWAIT, M.D., BOSTON.

THE communication which it is my privilege to offer to-night is made in the belief that the way in which our bodies are used, or the attitudes assumed in the performance of all that goes to make up the routine of life, is of greater importance than is commonly supposed. To stand erect, to walk or move easily, to have the various parts of the body so perfectly adjusted that easy balance and graceful use must result, is to be desired for reasons of far greater importance than the esthetic. Such elements are of absolute importance for perfect health and the fullest economic efficiency, since use of the body in proper poise insures the least friction with consequently the greatest amount of energy available for whatever may be required of the individual. This is of importance not only because of the effect upon the framework of the body, but because of the effect which it must have upon the body as a whole. The human organism resembles in many ways a delicately balanced machine made up of many parts each related to the others, and that which we call perfect health is simply the proper correlation of all of these many parts. As a machine, it is intended for use, and when working rightly there is the minimum of friction, and consequently the efficiency of the individual is the greatest that is possible. Anything which results in a departure from this correlation or balance means strain or friction and represents a distinct waste of energy so that the efficiency is lessened. Under such conditions some one part may be, and usually is, strained more than the others, but it must be remembered, nevertheless, that no one part can be strained without affecting the whole.

Not only is the human machine one of extremely delicate adjustment or balance, but in its use greater variation is demanded in the character of the work performed than would be considered possible in any other conceivable mechanism. Not only are the muscles subjected to varying degrees of strain, but all of the visceral functions, as well as the higher mental processes, require an adjustment of the organism as a whole which must make possible wide latitude in the amount of energy that each part can reasonably use. Not only must the amount of energy to be expended vary, but the method of use of any part must also vary, since, for example, the body must be used not only in one plane, but in any possible plane in which it may be placed. The visceral functions, as well as the physical activities, must be possible whether the body is erect or prone, whether straight or flexed, whether in dorsal, dextra, sinistra or anterior decubitus, and many of the functions must go on whether the conscious control of the organism, such as exists in the waking hours, is present or not. With so much of adjustment necessary, and with such great diversity in the character of the work required, it is obvious that all unnecessary friction or strain should be eliminated so that the greatest amount of energy may be available for the accomplishment of the special task, and that at the same time the machine may not be damaged, or, in other words, that the health of the individual may not be impaired.

In considering the question of the use of the body without undue friction or in perfect health, the many differing conditions under which the body may be used must be recognized, and whatever solution of the problem we may have to offer must be offered only after due consideration, not of any one part or of any one use, but of the organism as a whole with regard to all its functions.

In the upright position, the poise or attitude in which there is the least strain, and consequently the correct attitude, is with the body held so that it is made as tall as is possible without raising onto the toes. In this position the head is erect, the shoulders are thrown back so that their center is distinctly posterior to the center of gravity, the chest is high, the abdomen is flat and the spinal curves are slightly convex backward in the dorsal region and convex forward in the lumbar region. The pelvis is inclined forward so that the axis from the promontory of the sacrum to the top of the pubic bones is downward and forward 30° from the horizontal, the inclination of the sacrum being downward and backward so that the axis of the pelvis is at right angles with the plane of the brim of the pelvis, or about 60° from the horizontal. In this position the anterior portion of the upper part of the sacrum, together with the last lumbar vertebra, is almost directly over the top of the great trochanter, or a little posterior to the center of the hip-joint. In this position the Y ligament is made tense as well as the ilio-psoas muscle, these two structures serving to prevent the pelvis from lessening its forward inclination. In this position the ham-string muscles are tight, giving support to the knees as well as preventing an increase in the forward inclination of the pelvis. The knees are straight and the weight is received at the foot upon the astragalus with the posterior calf muscles tight, so that the heel rests lightly, and the chief strain is thrown upon the ball of the feet. The posterior calf muscles are tense, the result being that the posterior tibial and the peroneus longus by their contraction hold the tarsal bones in place, the foot thus being in the position of greatest strength, while the flexor muscles of the toes hold them in contact with the floor, giving a stable base and rendering the forward propulsion of the body possible with the least effort.

The muscles of the trunk in this position are in such balance that while the anterior and posterior groups are in slight contraction, neither group is strained and but few of the ligaments are under tension. The shoulder is slightly back of the lateral median line of the body so that the weight is received largely upon the thorax, none of the muscles being in more than slight contraction, and the strain upon the posterior muscles which must occur when the shoulder is held forward is absent. The head is held erect and so balanced that while all of the muscles, the anterior, posterior and lateral, are in slight contraction, each group is properly balanced by the others and none are subjected to more work than they can easily perform. With the body so poised, not only is there the least possible expenditure of energy required for the maintenance of the position, but it is from this position that action is made most easily. All of the parts are in balance, so that whatever the movement, whether it concern chiefly one part or another, the start is made with no waste of energy in correcting the poise or " gathering oneself " preparatory to the action.

In the posture which has thus far been described, not only is the body in the best position for economic function, but the viscera also are benefited and are held in the positions most favorable for their function. In the thorax, with the erect body, the chest is high and there must be the maximum amount of space for the expansion of the lungs. Not only are the lungs influenced by this position, but with the chest high, the sternum is raised so that the antero-posterior diameter of the upper part of the thorax is considerably greater than when the chest is flat, and since the heart lies in the space between the sternum and the anterior part of the vertebræ (Fig. 1), it is at once apparent that with the increased room allowed by the erect position, the action of the heart must be correspondingly more free. Under ordinary conditions this interference with the free heart action is probably of little importance, but if disease conditions exist so that the size of the heart is increased, such a restriction of the space available for its function becomes of practical importance. When such a condition is appreciated, one is not surprised to find that its recognition and correction is of distinct help in the treatment of heart lesions. The article by M. Herz, " Interference with Heart Action by Stooping," published in *Therapie der Gegenwart*, June, 1908, No. 6, p. 241, is of interest in this connection. No one would, of course, claim that such mechanical elements could cause or cure disease conditions of the heart, but that their recognition and correction will relieve some of the mechanical interference with the functions of the organ and make its action, although imperfect, nevertheless more free, need hardly be emphasized.

The effect of posture upon the abdominal viscera is of even greater importance than with the viscera of the thorax, since in the abdomen the rigid anterior wall of the thorax does not exist and the support is furnished largely by soft structures which are naturally more easily affected by strains or weakness. Under normal conditions in the erect, well-poised body the lumbar spine curves forward to such an extent that opposite the fourth and fifth lumbar vertebræ the anterior surface of these bones is nearer the front of the body than the back. At this level (the fifth lumbar vertebra) the abdominal cavity is much narrower in the antero-posterior diameter than is commonly supposed, representing hardly more than one third of the thickness of the body, and the posterior wall is practically straight across on a plane with the anterior portion of the vertebra. (Fig. 2.) At this level the psoas and quadratus muscles with the retroperitoneal fat fill in the spaces at the sides of the bodies of the vertebræ so that the deepening of the abdominal cavity from the opening of these lateral vertebral spaces, such as exists higher up, does not occur. This becomes a matter of much importance in connection with the understanding of the natural support of the viscera. From the level of the fourth or fifth lumbar vertebræ the spine inclines upward and backward, and with this all of the diameters of the abdomen enlarge and sufficient space is provided for the viscera, which are practically all above this point. That portion of the abdominal cavity which lies below this level is naturally small and contains for viscera only the loose folds of the intestines. Continuous with this is the pelvic cavity, which is distinctly posterior, with its long axis nearly at a right angle with the long axis of the abdominal cavity. The fifth lumbar vertebra with the promontory of the sacrum and the ridge of the ilia, together with the superimposed soft structures, forms a distinct shelf under which lie the pelvic viscera, shielded from the direct pressure of the viscera of the abdomen proper.

The posterior wall of the abdomen is made up of the spine, the upper part of the sacrum, the wings of the ilia, a portion of the diaphragm, with the free portions of the lower four or five ribs and the muscles of the loin. The sides and anterior wall of the abdomen consist practically wholly of muscle, the arrangement of the fibers being such that the greatest elasticity exists without sacrificing the element of strength. The proper tone of this anterior muscle wall is an important part of the support of the abdominal viscera. Besides this, the viscera are supported by ligaments, by the formation of the bony framework and by the arrangement of certain of the structures so that definite ridges or shelves exist, upon which the organs naturally rest. When the body is erect all of these elements work to the best advantage. All of the abdominal muscles are made tense so that the organs are held firmly together with little liability to drag out of place. The ligaments are subjected to the least strain, and the organs rest most securely upon the ridges or shelves, to be described more fully later. In this position the kidneys cannot become displaced, the stomach cannot drag downward nor can the other viscera change their normal relations with each other. Under such conditions there is also the least possible interference with the circulation, which, together with the freedom from strain of any of the structures, would naturally insure the greatest efficiency in their function.

In the consideration of the normal support of the abdominal viscera, that part which results from the arrangement of the structures so that ledges or shelves exist upon which the various organs naturally rest has not, it seems to the writer, received as much attention as it should. Certain work, most notably that of Dr. Martin, of Chicago, has referred to this (Visceral Prolapse, F. H. Martin, *Surgery, Gynecology and Obstetrics*, December, 1908), but the full significance of this part of Nature's plan of construction does not seem to have been appreciated, and a more thorough study seems justified. The writer feels that until this element is appreciated many of the abdominal conditions will be unsatisfactorily treated either by the internist or the surgeon, and that with such understanding many of the cases which have previously been perplexing will be easy of solution. To understand the arrangement of the structures for their support the illustrations which follow, taken from Professor Dwight's work on "Frozen Sections," are suggestive. At the level of the fifth lumbar vertebra (Fig. 2) the posterior wall of the abdominal cavity is practically straight across on a plane with the anterior surface of the vertebra. As has already been stated, at this level the space on either side of the vertebræ is almost completely filled by the psoas and quadratus muscles, and the total depth of the abdominal cavity, while about one third of the thickness of the body, is all anterior to the anterior surface of the vertebra.

The rapid change in the shape of and the depth of the abdominal cavity is shown in Fig. 3, which is a section through the intervertebral disk between the third and fourth lumbar vertebræ. In this, which is only a little more than the thickness of one vertebra above the previous illustration, the space available for the abdominal viscera has increased markedly. Not only is the cavity in front of the vertebra deeper, but the space at the sides of the vertebra, instead of being occupied by muscle, is occupied by the kidney upon the right side, with the colon on the left side. It should be noticed that both of these organs are almost entirely posterior to the anterior edge of the vertebra or the plane of the posterior wall of the abdomen as shown in the previous illustration.

In Fig. 4, a section through the second lumbar vertebra, the same thing is shown, only more strikingly, the space available for the viscera being larger and both kidneys lying well back of that which represented the posterior wall of the abdomen in Fig. 2.

In Fig. 5, a section through the twelfth dorsal vertebra, both kidneys are shown well back of the anterior portion of the body of the vertebra, and also the spleen with a considerable portion of the liver is also posterior to this line.

In Fig. 6, a section through the eleventh dorsal vertebra, the left kidney, together with the spleen, is shown posterior to the anterior edge of the vertebra, while upon the right side the position of the liver with reference to this lateral vertebral space is well shown.

In Fig. 7, a section through the ninth dorsal vertebra, the position of the stomach with reference to this lateral space is clearly shown.

From these cross-sections it is apparent that the kidneys rest in definite depressions which begin at the level of the fourth lumbar vertebra upon the right side and a little above this upon the left; that the bottom of this depression or pocket is made by the psoas and quadratus lumborum muscles together with the retroperitoneal fat, and that when the body is erect the kidneys rest in these pockets or upon these shelves with the long axis of the organs inclined backward at the top so that there is no tendency for them to sag or to be displaced forward or downward.

In this position, also, the major portion of the liver is distinctly posterior to the central transverse line of the body and is supported partly by resting upon the right kidney, partly by its ligamentous attachment to the diaphragm, partly by the stomach, duodenum, transverse colon and other portions of the gastro-intestinal tract, partly by the anterior abdominal muscles, and partly by the shape of the space at the side of the spine in the curve of the lower ribs. This latter element is appreciated by study of the Figs. 5, 6 and 7, and Figs. 8 and 9, in which it is shown that the lower ribs are inclined downward and forward, the distal ends curling inward, so that the transverse diameter of the body is smaller at the level of the lowest ribs than at the level of the ninth or tenth ribs, the level of the greatest thickness of the liver. It is thus seen that if the body is erect the liver rests in a cone-shaped space, the base being uppermost, formed by the spine and stomach upon the median side with the ribs completely encircling it upon the other sides or surfaces, and that in this erect position downward displacement is difficult. It should be borne in mind, also, that the ligamentous attachment of the liver to the diaphragm is well at the back, so that this also tends, if the body is erect, to hold the organ in the space in which it is most easily supported and will interfere the least with the function or position of the other viscera.

With the stomach, similar elements are also present, the main portion lying partly in the depression at the left side of the spine (Fig. 7) and supported by the attachment to the diaphragm which is well to the back of the center of the body. In this position and with these attachments there is but little tendency to sag, either downward or forward, if the abdominal muscles are of their proper tone and they are acting with the body in proper poise. Under such conditions the muscle wall not only holds the stomach back in its place at the side of the spine, but by compressing the intestines and holding them compactly together furnishes a definite support from below.

This placing of the heavier abdominal viscera distinctly posterior to the posterior abdominal wall below so that they rest upon ridges or shelves or in depressions in which will result the minimum of strain upon the various visceral ligaments is well shown in the cross-sections, but is equally well shown in the longitudinal sections in the following illustrations taken from Corning's "Lehrbuch für topographischen Anatomie."

In Fig. 10 the viscera are shown with the left portion of the abdominal wall removed. The position of the kidney is well shown, the depression or shelf furnished by the retroperitoneal fat, which rests in turn upon the psoas and quadratus muscles, with the backward inclination of the organ at the top, being quite evident. The different depth of the upper and lower portions of the abdominal cavity is also well shown, the lower being shallow, the upper being deep, so that the longitudinal axis of the cavity drawn through the middle of the section at the upper portion and again through the middle of the section of the lower portion is downward and forward about 20 or 30° from the vertical. Because of this it will be seen that the resultant of the force of the downward thrust of the viscera is received against the lower part of the anterior abdominal wall, and the appreciation of this gives a new significance to the unusually strong arrangement of the fasciæ in this region.

In Fig. 11 the right abdominal wall has been removed and shows the same relative position and support of the kidney with the portion of the liver still in place.

In Fig. 9 the view is of the right side, the entire liver being in place, and it not only shows the organ extending far back at the side of the spine, but also suggests the importance which the lower ribs represent in its support, a fact that is also shown in Fig. 8. The inward inclination of the lower four or five ribs, so that they practically grasp the liver, is at once apparent.

The pelvic cavity with its axis at nearly a right angle to the axis of the abdominal cavity is well shown in Fig. 12, also taken from Corning's "Lehrbuch." In this it will be seen that the uterus lies almost entirely under the upper part of the sacrum and the last two lumbar vertebræ. When this is taken into account, together with the different axis of the abdominal cavity, and when the narrowness of the lower abdomen is appreciated, together with the fact that this lower portion is entirely filled with omentum and folds of intestine which are held in place by their mesenteric attachments, the completeness of the protection of the pelvic viscera from forces within the abdominal cavity becomes apparent.

The position of the ovaries is still further one of protection from pressure from above, since they rest in pockets on either side just below the pelvic brim, and the bony part of these pockets is still further deepened by the psoas muscles which stretch across the posterior lateral portion of the pelvic brim, extending fully half an inch toward the center away from the bone. When it is appreciated that the common iliac arteries rest upon these muscles still further toward the median line of the body, the definite character of the fossæ in which these two organs rest is appreciated.

In studying such a subject after the anatomical elements have been appreciated, one naturally turns to the direct study of the human family to see if the anatomical theories are supported by the practical test. Theoretically, the poise that has been described should result in the least possible waste of energy and would consequently leave the greatest amount of energy available for expenditure, the form of expenditure, whether physical, visceral or mental, being immaterial. One naturally turns at once to the Spartans as being the people with whom the economic efficiency of the individual was probably developed to as high a degree as has ever been attained by the people of any nation. Their principles may not be such as would meet the approval of the present time, but they were certainly true to their ideals, sacrificing the individual for the good of the race, and no people were probably ever subjected to greater self-discipline than they. The preservation of their health with the attainment of the highest degree of economic fitness were matters of too great importance with them to admit of question.

In studying this part of the subject it has been possible, through the kindness of Mr. Fairbanks, the director of the Museum of Fine Arts in our city, for me to have free access to the collections of that institution. In the so-called Early Greek Room of the old museum, in which were found the casts from Greece of the period from 500–600 B.C., the time when the Spartans ruled Greece, there was not a single cast or reproduction that did not show the body so poised that the greatest efficiency of the organism would be possible. In Fig. 13 and Fig. 14 the erect figure is shown, and while the modeling may not equal that of the later Greek period, the poise is all that could be desired. The head is erect and in such balance that all of the muscles must be in easy contraction, making possible any movement, forward, backward, sidewise or with any combination, with the greatest ease and with the least possible waste of energy. The chest is high, allowing the fullest freedom of action of the thoracic organs. The shoulders are erect, in which position all of the muscles are in easy contraction ready for immediate function with the least effort. The trunk is so in balance that no group of muscles or part is strained, but action with the minimum of waste is possible, while the visceral support and function is maintained with the least effort. So, also, of the legs, there is no strain, but every part is ready for full duty with the least waste in either time or energy. The greatest amount of general fitness is suggested by the figure, and this applies not only to that which is physical, but to the spirit or the purpose of the individual. In every part, the body, the mind and spirit, the figure suggests readiness and efficiency.

The same thing is suggested in Fig. 15. The ease and balance of the poise is so perfect that it requires no effort on the part of the imagination to feel sure that the head of the figure must have been as well poised as in Fig. 14, as any departure from this would have made impossible such perfect poise of the rest of the figure.

Not only are the standing figures of this period worthy of study, but the seated figures are also of interest, and in the relief (Fig. 16), not only is the standing figure well poised, but the trunk of the seated figure is perfectly erect, so that the balance of the trunk muscles is not disturbed, and neither the thorax nor abdomen is cramped so as to interfere with the viscera.

It is naturally not necessary to turn to the early Greeks for our types of correct poise, since in all ages we have instances which are equally fine, but the early Greeks were considered first, as it is doubtful if there has ever been a people where all were examples of the type, as is true of these people of Sparta. Every record that we have of them at this time is similar to those which are here shown.

In more modern times it is not difficult to find equally satisfactory types, but they are far more individualistic and not the universal rule. Nothing can be finer than the St. Gaudens figure of Lincoln (Fig. 17), which is quite remarkable in that even though the figure is depicted in repose, with one knee relaxed, the trunk is perfectly erect so that the poise of the head is free from strain and the visceral function, or support, can in no way be disturbed. The same thing is also true of Fig. 18, the statue at Salzburg of the Empress Elizabeth of Austria. In this, also, the figure is depicted in repose, yet in the relaxation the trunk is not flexed and there is not the slightest suggestion of strain or interference with the visceral function. Of the seated figures, there is nothing better than that of our first President (Fig. 19), in which there is not the slightest suggestion of strain or waste of energy, the trunk being held perfectly erect. The same is also true of the St. Gaudens statue (Fig. 20) of General Sherman, and in this we have also the standing figure ideally poised.

Of still later time the figure of the athlete (Fig. 21) is as finely balanced as any of the early Greeks. With him it is evident that not one ounce of energy is wasted because of undue strain from imperfect posture. It is not to be wondered at that such a type is able to win events from less well-poised competitors. As a type of physical efficiency nothing is left to be desired, and one can only hope that such ideals may be more frequently met in the future, for while many men stand fairly well, only those who have studied the subject carefully can realize how few stand entirely well. Since every particle of energy that is wasted from imperfect poise, or the faulty use of parts, means that much less for reserve when some great test comes, no further emphasis should be needed to make it evident that the attitude assumed in the performance of any work is of far greater importance than the mere esthetic.

Such illustrations are sufficient to present the best type, and while it will probably not be difficult to have them accepted as the best, it is, nevertheless, most regrettable that the type in our present civilization is so infrequently seen. Not only are the common attitudes less good esthetically, but the waste of energy which such imperfect use of the body must entail should be a sufficient appeal in this age when economic fitness is demanded.

All that has thus far been stated in regard to the viscera and the visceral supports has had to do with the normal erect figure or with the axes of the body in such relation as they are when the body is erect. If, now, any departure in these relations takes place, disturbances in the matter of visceral support must take place. If, for instance, the body is inclined forward or droops, the ordinary attitude of weakness or fatigue, the chest is flattened at the top, naturally allowing less free use of the lungs. The sternum is depressed at the top, in which case the space between the sternum and the vertebra is narrowed and the action of the heart may also be interfered with.

While the common result when the body droops is to depress the sternum so that the antero-posterior diameter at the upper portion of this bone is lessened on an average of from one half to three quarters of an inch, the lower portion may also be depressed or it may be forced forward by the flaring of the ribs which may result when the body droops. Under this latter condition it is evident that the action of the heart would not be interfered with mechanically, as it might be if the lower portion as well as the upper part of the bone were depressed. In estimating the importance of the possible changes in the antero-posterior diameters of the chest upon the cardiac function, caliper measurements are of value, since with such an instrument the diameters can at once be determined in whatever position may be desired.

With the flattening of the chest, not only is the movement or position of the sternum of importance, but the effect upon the shape of the upper part of the thorax caused by the necessary increase in the downward inclination of the ribs is of much importance, since this frequently is more apparent in its effect upon the shape of the chest than the sternal positions. The flattening of the upper part of the chest at the sides under the clavicles is due to this and must necessarily restrict the space normally available for the expansion of the lungs. By calipers it is possible to demonstrate the marked difference between the depths of the lateral portions of the chest in the erect and in the drooping positions. No argument should be required to convince that in the erect position the lungs are capable of more perfect function than when this space is constricted, as it must be when the body droops.

With the lower or abdominal portion of the trunk the changes of posture become of even greater importance than is the case with the upper or thoracic portion, for the anatomical reasons which have already been described. In the changes of the general posture which concern the lower portion of the body, two distinct types are met with and must be appreciated if the results of such conditions are to be understood.

With the first of these in the forward bend of the upper body or the consequent increase of the anterior curve of the dorsal spine there is a compensatory increase in the lumbar curve, lordosis, with the protrusion of the lower abdomen forward. (Fig. 22.) In this change the pelvis maintains its normal position and relation to the legs, but as the upper part of the lumbar spine moves backward, as it must in the position of lordosis, the depressions into which the posterior viscera rest are consequently deepened, and as far as this feature alone is concerned there is less liability of the organs becoming displaced downward than is normal. Since, however, this feature is only one part of the support of the viscera, and since the anterior abdominal wall is of much importance in this support, it is evident that as this position necessarily means relaxation of the abdominal muscles, a definite portion of the normal support is lost. It is also evident that as in this position the abdominal cavity as well as the entire length of the trunk is shortened, the viscera are necessarily crowded downward. In this shortening of the trunk the antero-posterior diameter of the abdomen is necessarily increased, and with this increase of the diameter the diaphragm must be stretched antero-posteriorly, with the result that it becomes flatter and the upper part of the dome is lowered. Since at the back the diaphragmatic attachment extends down to the last rib, and since the liver rests directly against this posterior portion of the diaphragm, if the dome of the diaphragm is flattened it must result in forcing the liver and stomach forward and downward, lifting them out of their normal positions in the spaces at the sides of the spine in the curve of the ribs. This naturally results in an increased pressure upon the kidneys and other viscera, with varying degrees of disturbance.

With the kidneys the pressure must naturally result in the gradual absorption of the retroperitoneal fat upon which they rest, with a weakening of this natural support so that even though the depression in which the organs rest is deepened, the fat tissue may be so much absorbed that together with the lack of tone of the abdominal muscles an undue mobility may result.

In this position, except as the supporting structures would be weakened by the bad mechanical use of the body, the organs of the pelvis would not be subjected to any increase of strain or disturbance of function.

The other abdominal type met with in these departures from the normal posture is that which results from an absence of the compensatory increase of the lumbar curve or its entire obliteration. (Figs. 23 and 24.) When this occurs, not only is the axis of the abdominal cavity changed, but the axis of the pelvis is also changed, the angle between these two being materially lessened. It is evident that under these conditions the smaller this angle becomes the more direct will the downward thrust of the abdominal viscera be received upon the viscera of the pelvis. Not only this, but since, with such flattening of the back, the upper body must be inclined forward more markedly than is normal, the long axis of the body becomes more nearly vertical and the attitude naturally tends to increase the downward sag of the viscera and make displacement more easy of occurrence.

Whenever this flattening of the back occurs there must also be a tipping of the pelvis backward and consequently downward. In the erect poise the anterior part of the sacrum as well as the anterior part of the fifth lumbar vertebra is almost directly over the top of the trochanter, the hip-joint being slightly anterior to this. In this position the upper surface of the sacrum, which articulates with the fifth lumbar vertebra, faces forward from the horizontal about 30°. From this articulation the lumbar spine inclines upward and forward with a gradual change to a backward inclination as the dorsal region is reached. If for any reason this lumbar curve is flattened, the upper part of the sacrum must at the same time move backward at the top, the plane of the lumbo-sacral articulation more nearly approaching the horizontal. Since, however, the top of the sacrum is practically at the top of the pelvic circle, if the sacrum moves backward it must also move downward, with the result that the long axis of the pelvis looks upward more than normal. It is at once evident that as the upper part of the sacrum moves downward under such conditions, and that as this represents the base upon which the spine rests, the height of the body is lessened. In the simple change from the erect position with the normal spinal curves to the simple flattening of the lumbar spine, with the average individual there is a difference in height of between one half and three quarters of an inch. In the other type of posture in which the curves of the spine are increased, as shown by the lordosis, the shortening of the trunk is due, of course, to simply an increase of the spinal curves and has nothing to do with the position of the pelvis, since this is not changed.

Another important element in connection with the attitude in which the back is flattened is that the Y ligament is naturally tense when the body is held erect; if the upper part of the pelvic girdle drops downward and backward, this can only take place with at the same time the thigh flexing forward. Since the Y ligament naturally cannot yield, the flexion of the thigh forward is the only thing that can result and this in standing naturally must be associated with flexion of the knees. (Fig. 23.)

The effect which this flattening of the back must have upon the abdominal viscera is of much importance, since in such a position the lower part of the lumbar spine is moved backward, while the upper part of the lumbar spine is moved forward, with the natural result that the depressions or pockets in which, or the shelves or ridges upon which, the viscera rest become more shallow. At the same time the plane of the floor of these depressions or ridges necessarily changes so that they shelve forward and downward, making displacement more easy. With this the fact that the whole upper part of the body is carried forward so that the natural center of weight of all of the viscera is more anterior than normal, together with the fact that in this position the anterior abdominal muscles are necessarily relaxed, makes the importance of attitude in the treatment of the displacements of the abdominal viscera, and the various enteroptoses, easily appreciated.

Since also in this position, with the body drooping and with the back flattened, the upper part of the longitudinal axis of the abdomen is moved forward so that the axis more nearly approaches the perpendicular, and since also the axis of the pelvis moves farther away from the horizontal toward the perpendicular, the two axes more nearly converge, the two cavities become more nearly one, and any force or pressure exerted by the abdominal contents must be more directly transmitted to the viscera of the pelvis than could possibly result under the normal conditions with the axes of the two cavities at nearly right angles with each other.

Another feature which is less easy of anatomical demonstration, but the truth of which is borne out by clinical observations, has to do with the nervous phenomena, and offers an explanation of the common association of the functional nervous disorders with spinal symptoms. Whenever the body is used so that the center of gravity is forward of the normal plane, the posterior or spinal muscles are subjected to greater use or strain than is normal, and if this is continued the muscles weaken, with the result that the ligaments are strained, causing the common back pains or points of tenderness. If the muscles weaken, their blood supply will naturally be less abundant than normal, and as the lumbar arteries (Fig. 25) and the intercostal arteries supply the muscles and send a branch into the spinal canal on the level of each vertebra, furnishing part of the blood supply of the spinal cord, it would seem probable that, if the flow of blood to the muscles were less active than normal, the amount of blood received in the branch which supplies the spinal cord will also be less. Whether this is the explanation of the common association of neurasthenic symptoms with the conditions of spinal weakness, or whether as the result of the weakness of the spinal muscles the motions of the spine are made less freely and thus lead to venous stasis, is entirely problematical. Certain it is, however, that these two groups of symptoms are commonly met with in the same individual, and that the rapid improvement in the nervous symptoms which so often follows the relief of spinal strain with the correction of the spinal weakness would suggest some such explanation.

Not only are such departures from the normal poise or proper balance of the body, as have been shown in Figs. 22, 23 and 24, seen commonly, but there are many variations of these met with which demand consideration if anything approaching normal health is the standard desired in the treatment of these individuals. The simple round or stoop shoulder attitude (Fig. 26) so common in childhood, the bad postures assumed with such frequency by the children when sitting, especially during the school periods (Figs. 27 and 28), the stooping habits associated with disease of the respiratory tract (Figs. 29 and 30), the attitudes with sprung knees and flexed thighs resulting from flat feet, to say nothing of the faulty attitudes which result from definite disease of the framework of the body, such as disease of the hip (Fig. 31), disease of the spine (Fig. 32), all must be given proper consideration if the maximum amount of improvement that it is possible to offer to the patient is to be achieved.

It probably needs but little argument to show that use of the body in any of these ways must result in a much lower standard of efficiency than should be our ideal, or than is suggested by the type pictured in Figs. 13 to 21. If the body is held erect and well poised, there must be the greatest amount of energy available for whatever function the individual may choose or be forced to perform. The muscular forces are used with least waste, the viscera are most favorably situated for function, the circulation in the spinal cord as well as in the rest of the body is subjected to the least interference, so that there is the least possible waste of either mental, nervous or physical energy, and the spirit of the individual has its greatest potential. Any departure from this use of the body means waste, and when we realize that the types depicted in Figs. 22, 23, 24, 29 and 30 are not rare, but exist in varying degrees in a very large number of individuals, irrespective of age or sex or of social position or occupation, a slight idea of the great waste in human energy can be formed. How unfair the problem of the struggle for existence becomes when in addition to the regular work it is necessary to expend a considerable portion of energy in overcoming the strain resulting from such imperfect postures. It would take but slight thought to decide which of the two types, Fig. 21 or Fig. 22, or Fig. 18 or Fig. 24, would be able to best meet the task which life makes necessary, and whether the task be physical or mental is immaterial. Not only from the simple viewpoint of health is such a consideration of importance, but at this time when subjects such as the conservation of the nation's resources, the conservation of energy, the utilization of waste, the elimination of friction, are being so seriously considered, it seems only appropriate that that which concerns the preservation and most perfect utilization of the energy of the human being, upon which all of these other questions must depend, should be given full consideration. Under such conditions as are here shown, there must be strain of the muscles and ligaments or a waste of energy; the viscera, neither the thoracic nor the abdominal, can be normally used, and the general circulation must be less free than normal, so that the whole body suffers and the energy that can be delivered in case of any stress is far less than that which exists in potential. It is to prevent this waste, as well as to relieve the more distinct conditions of disease, that should be the effort of the medical profession. It is preventive medicine which has come to be so large a part of the work for which our profession is held responsible.

The recognition of the many problems suggested in such a paper as this means that the physician has a higher function than the mere treatment of local conditions, however commendable this may be. It means at once that our work must be judged upon the bases of the ultimate cure or general efficiency rather than simply the immediate relief of some local lesion. This oftentimes represents only the beginning of our work. The flat foot, the tuberculosis of the lungs or whatever the special lesion may be should, of course, be corrected or relieved in so far as it is possible so to do, but our care should not stop until the highest degree of physical efficiency for that individual is obtained.

It means that with pulmonary tuberculosis the simple insistence on good hygiene with fresh air and food is not all that the physician is called upon to perform. The Figs. 29 and 30 were taken at random by the director of the class in one of the best supervised of the tuberculosis classes in our city at the request of the writer, but without any selection by him. They show how imperfect the posture is and how imperfectly the respiratory functions must be performed, and suggest the waste of energy which there must be from the back strain at just the time when all the forces should be conserved. Such persons may get well from the good care they receive, but how much easier and surer it would be if the body could be held erect so that the thorax could be thrown wide open and the fresh air that is so insistently urged could be taken in in full measure instead of with so much stint. Not only would the possibility of relief of the local condition be greater, but the energy which is now wasted in the unnatural strain of the spinal muscles, with the interference with the function of the other structures, could then be used for recuperation. Repair under such conditions must take place more rapidly and be more enduring when complete.

It means that in the treatment of disturbances or displacements of the pelvic organs, it is only half doing the work if the condition is simply treated locally, while an imperfect posture which may have been largely responsible for the trouble is allowed to go uncorrected. It needs little argument to show that a cure of such a lesion in a person poised as in Fig. 18 must be much simpler than when such an attitude exists as is pictured in Fig. 24.

It means that in the various abdominal visceral ptoses there is more to do than treat locally a stomach which may have sagged out of place by irrigation or drugs, or to even suture a kidney in place because it too has sagged. Operations, stomach washing and the various forms of local treatment for all such conditions are undoubtedly necessary and may give temporary relief, but none of these can be expected to really cure the lesion until the whole body can be used in such a way that there is the least possible tendency to visceral displacement and there is the greatest amount of energy available for the proper nutrition and function of all the structures of the body. Until the question is approached in some such way as this, and the body is considered first with the local condition second, or at least with due regard to the first, until then this large class of abdominal disturbances will be unsatisfactorily treated, either by the internist or the surgeon, and our profession will be reproached for that for which, judging from many of the results obtained in such cases, reproach seems deserved.

Our responsibility with our patients not only concerns the attitude assumed or the condition present at the time of examination, but we must also know the way in which the body is used in the routine of life, with the correction of the errors in so far as this is possible. In other words, the contributive factors to imperfect poise should be studied and remedied. It is foolish, for instance, to treat the weakly child that stands with the chest flat, with the shoulders drooping forward and with the abdomen relaxed by simply giving tonics. These have their place, of course, but the causes of such attitudes should be investigated, and of these the costume, because most often at fault, should be looked at first. If the underwaist to which the clothing as well as the stocking straps is usually attached is supported by straps which cross over the outer or movable part of the shoulders, this must be changed so that the support is received upon the more stable part of the shoulder near the base of the neck. So also, if we leave the habit of standing with the hands in the low trousers pockets (Figs. 33 and 34) uncorrected, our treatment of the round shoulder will avail little, because in this position the shoulders must drag forward and the chest must be flattened. Again, if we try to correct the poise of the woman without considering the costume our treatment will often avail but little. In this the corsets are, of course, the element of chief importance, and the types pictured (Figs. 35 and 36) show the extremes which must be met. The types pictured are of the old straight front corset and the present long, flat-back pattern. The former, although seemingly the more radical, is, however, less harmful than the latter because it causes less spinal strain and less interference with the position or function of the viscera. The normal lordosis is increased and with this the forward inclination of the pelvis is increased. This inclination of the pelvis forward relatively shortens the ham-string muscles and makes the easiest standing position with the knees slightly flexed and with the heels raised. The body is hyperextended, the chest must be elevated, the lumbar spine must be curved forward more sharply so that the thorax and the abdomen are held in such a way as to favor the proper support and the free function of the viscera. As awkward as such a figure must appear, the effect upon the visceral support and function, as well as the effect upon the pelvic joints and the spinal ligaments, is much less harmful than the flat-back type. With this type (Fig. 36) the effect is largely reversed, the lumbar spine is flattened, which necessarily means the tilting of the pelvis backward and downward, and the upper part of the body being thrown forward, the shoulders are at the same time pushed upward. Such an attitude must mean strain to the sacro-iliac joints and the spinal muscles and also results in abdominal, pelvic and thoracic positions unfavorable to the proper support and function of the viscera.

It means that if our full duty is to be performed that duty has not been fulfilled until we have at least explained to the patient the importance of these elements in their health, and if the emphasis

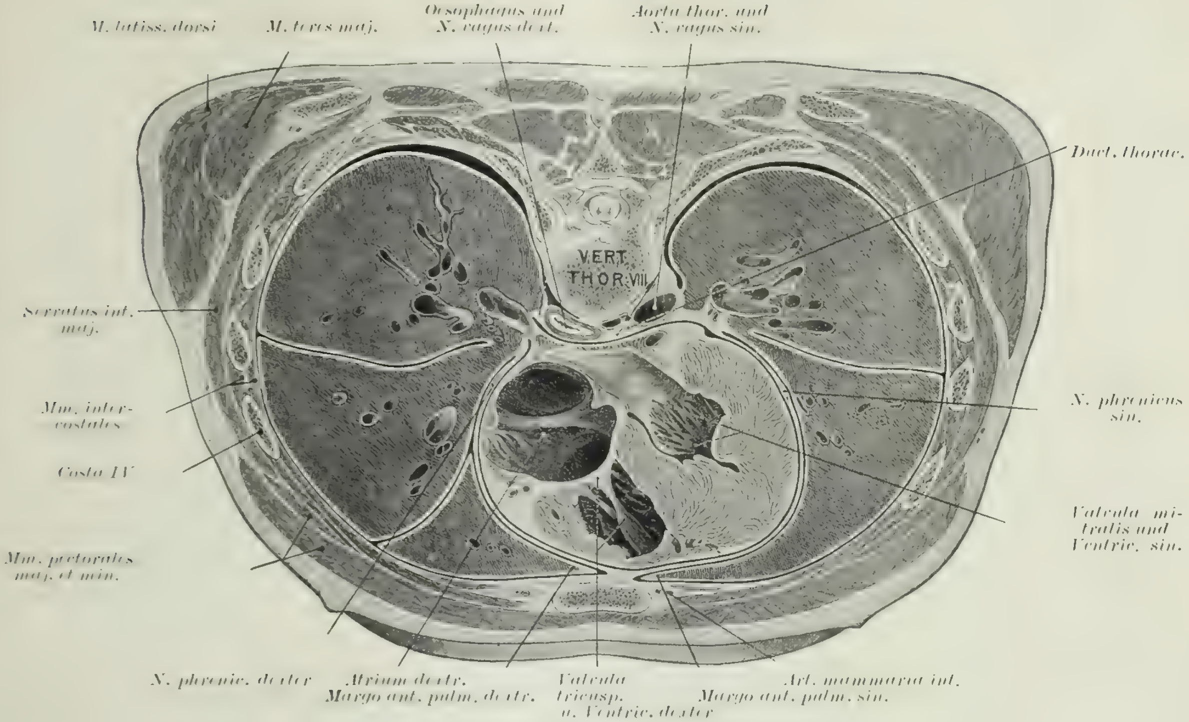

FIG. 1. Corning: Lehrbuch für topographischen Anatomie.

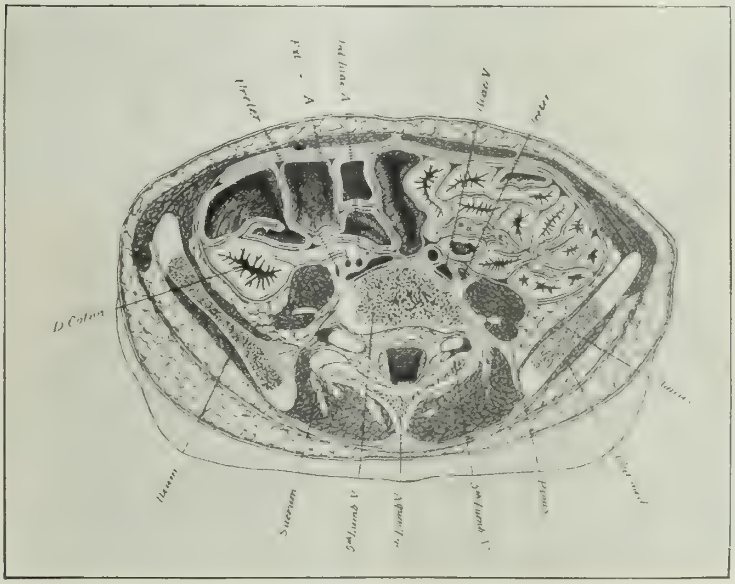

FIG. 2. (Dwight.)

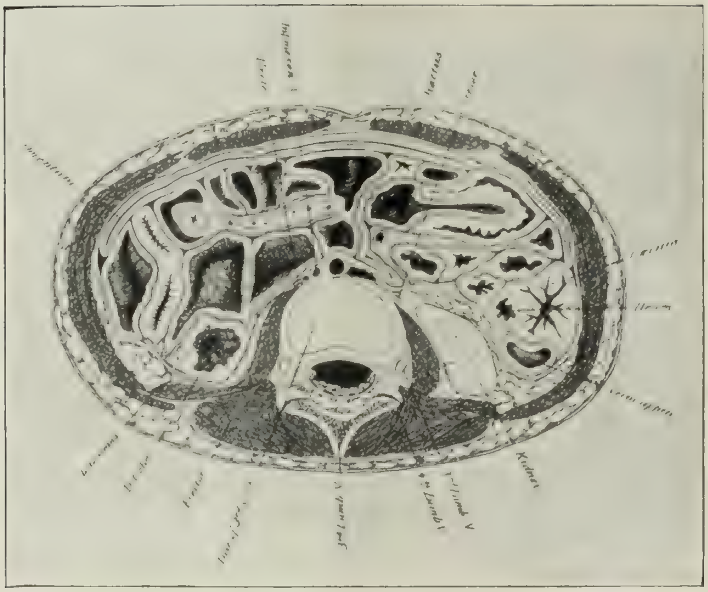

FIG. 3. (Dwight.)

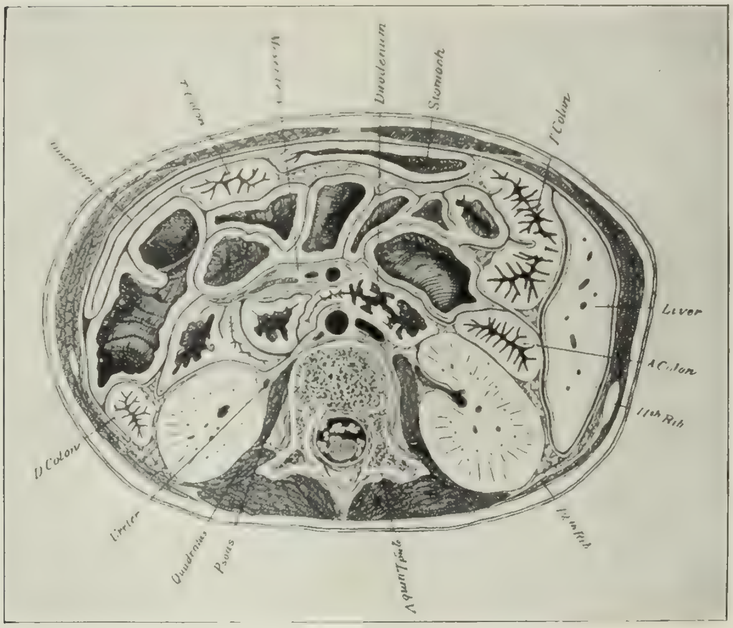

FIG. 4. (Dwight.)

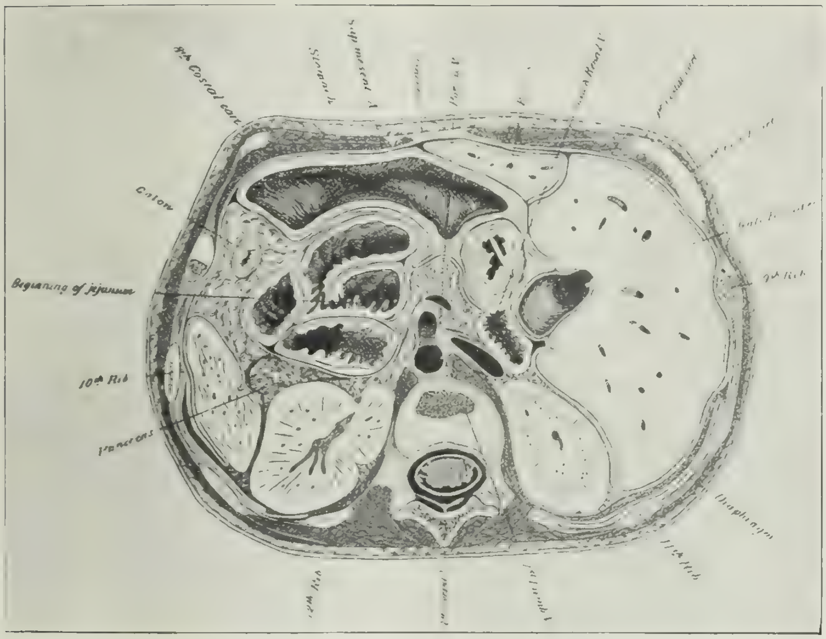

Fig. 5. (Dwight.)

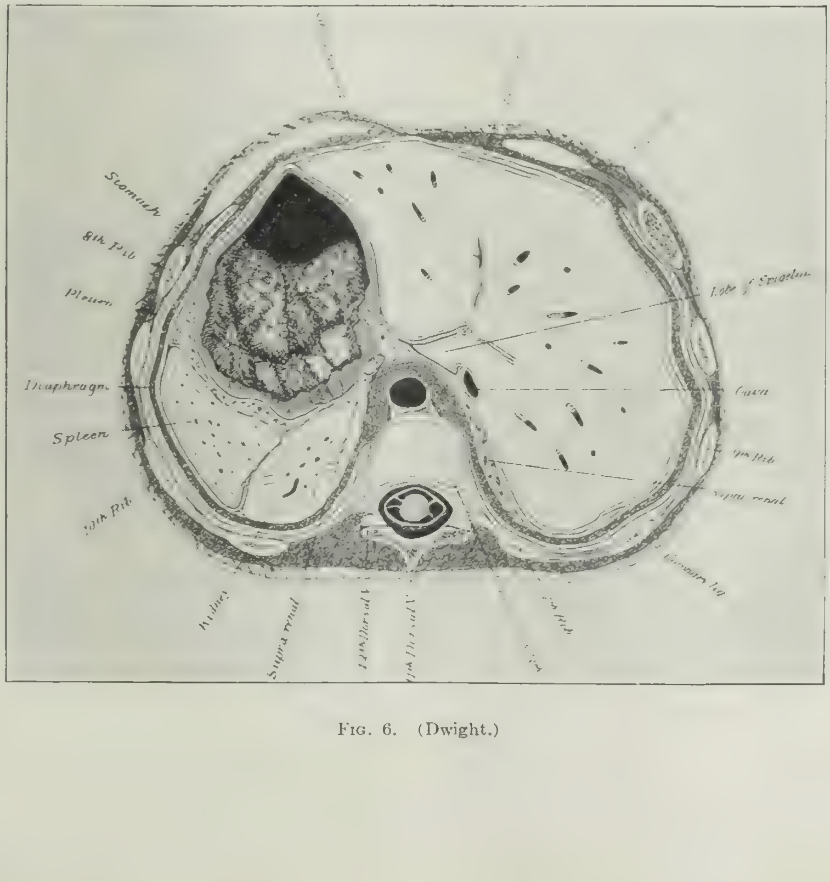

Fig. 6. (Dwight.)

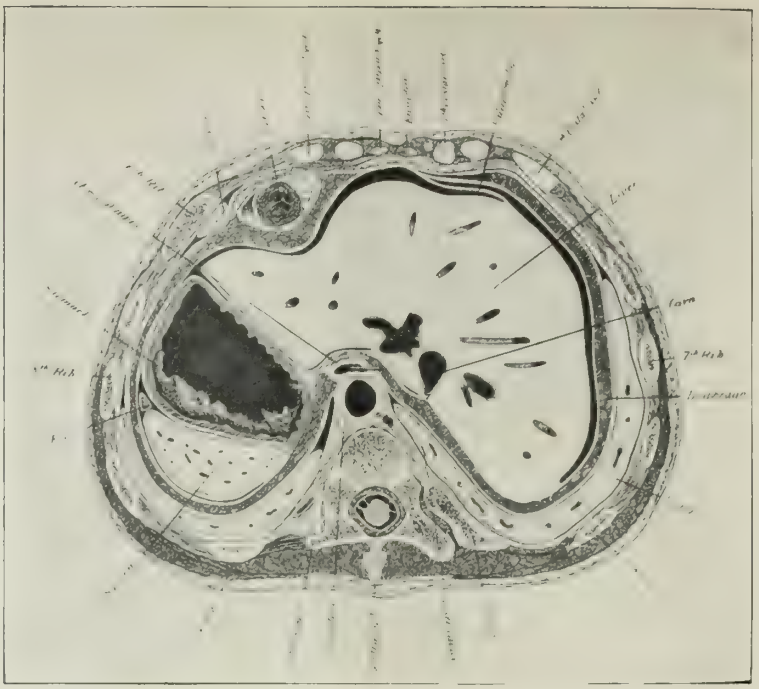

Fig. 7. (Dwight.)

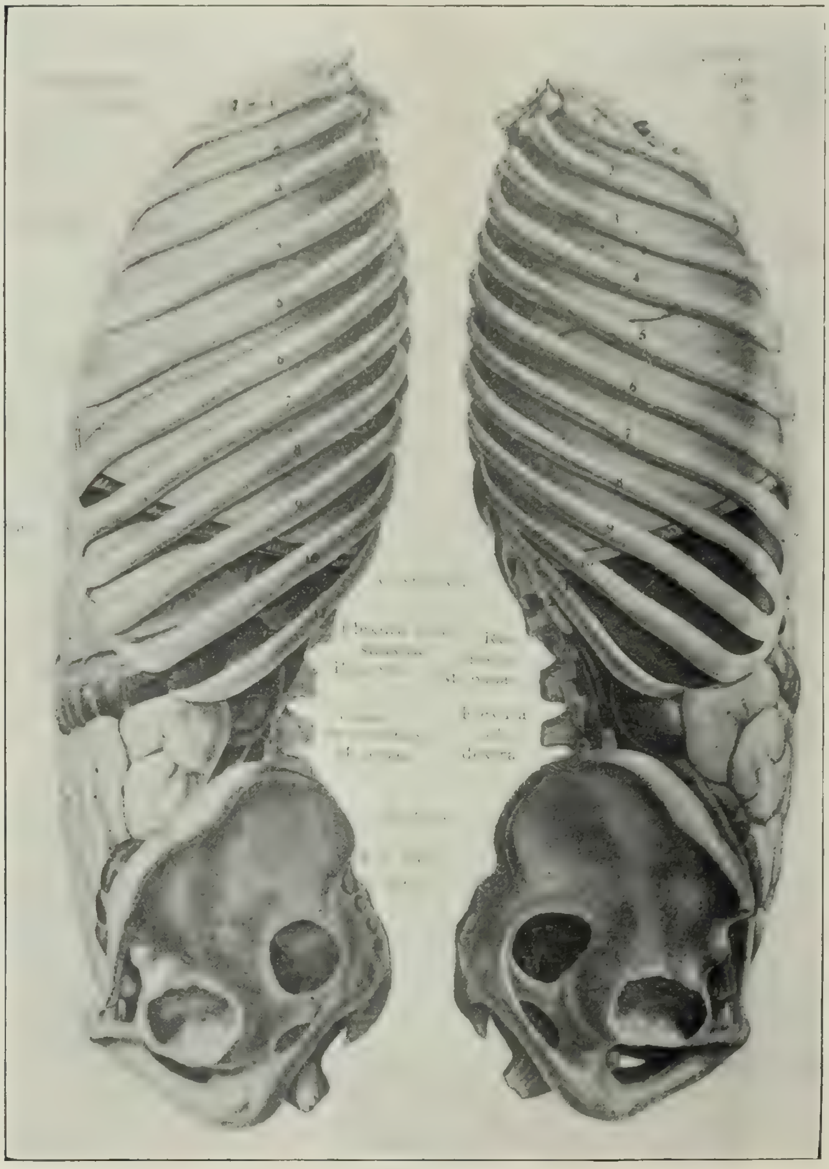

Fig. 8. (Sobotta's Anatomy.)

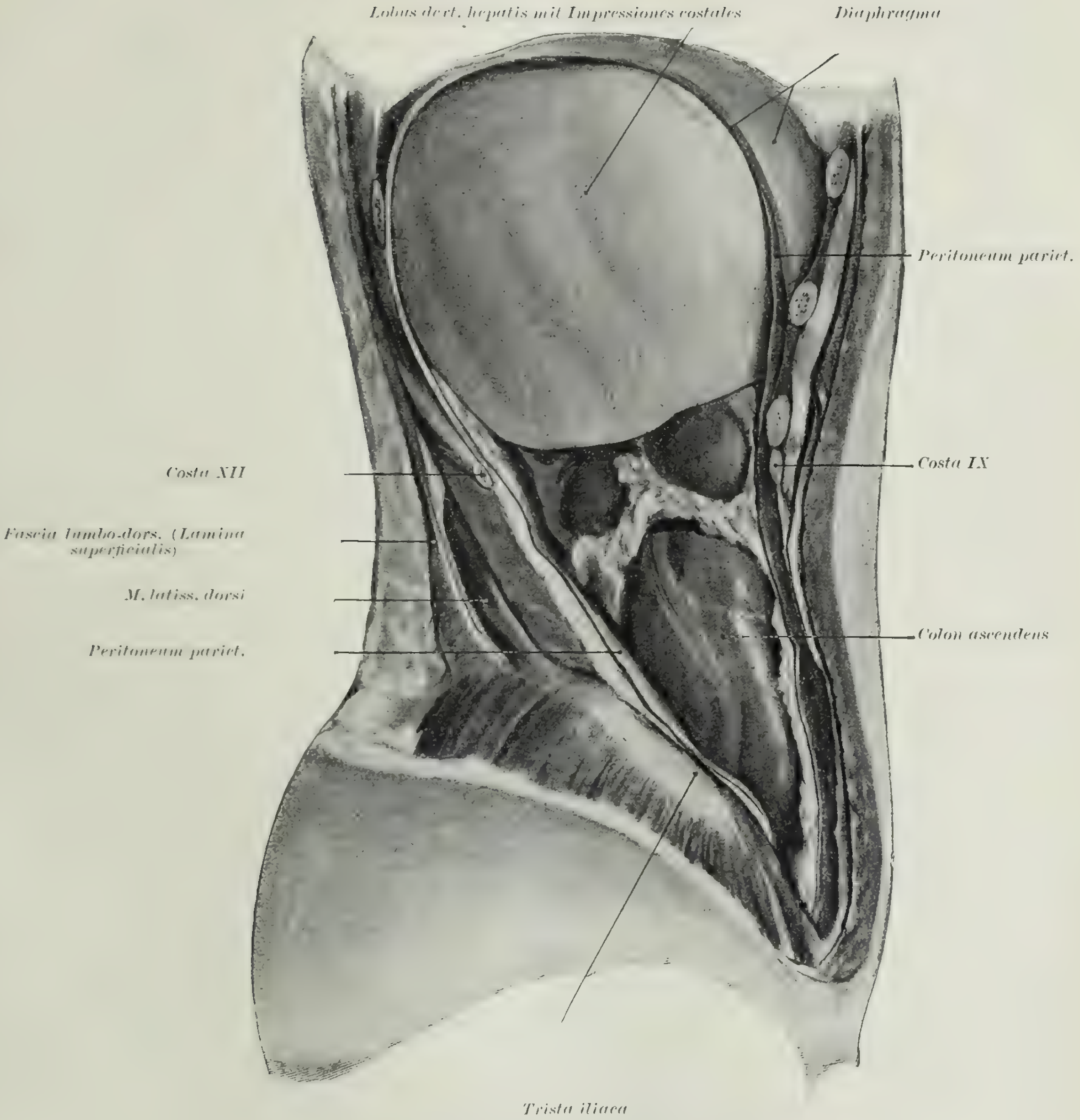

FIG. 9. Corning: Lehrbuch für topographischen Anatomie.

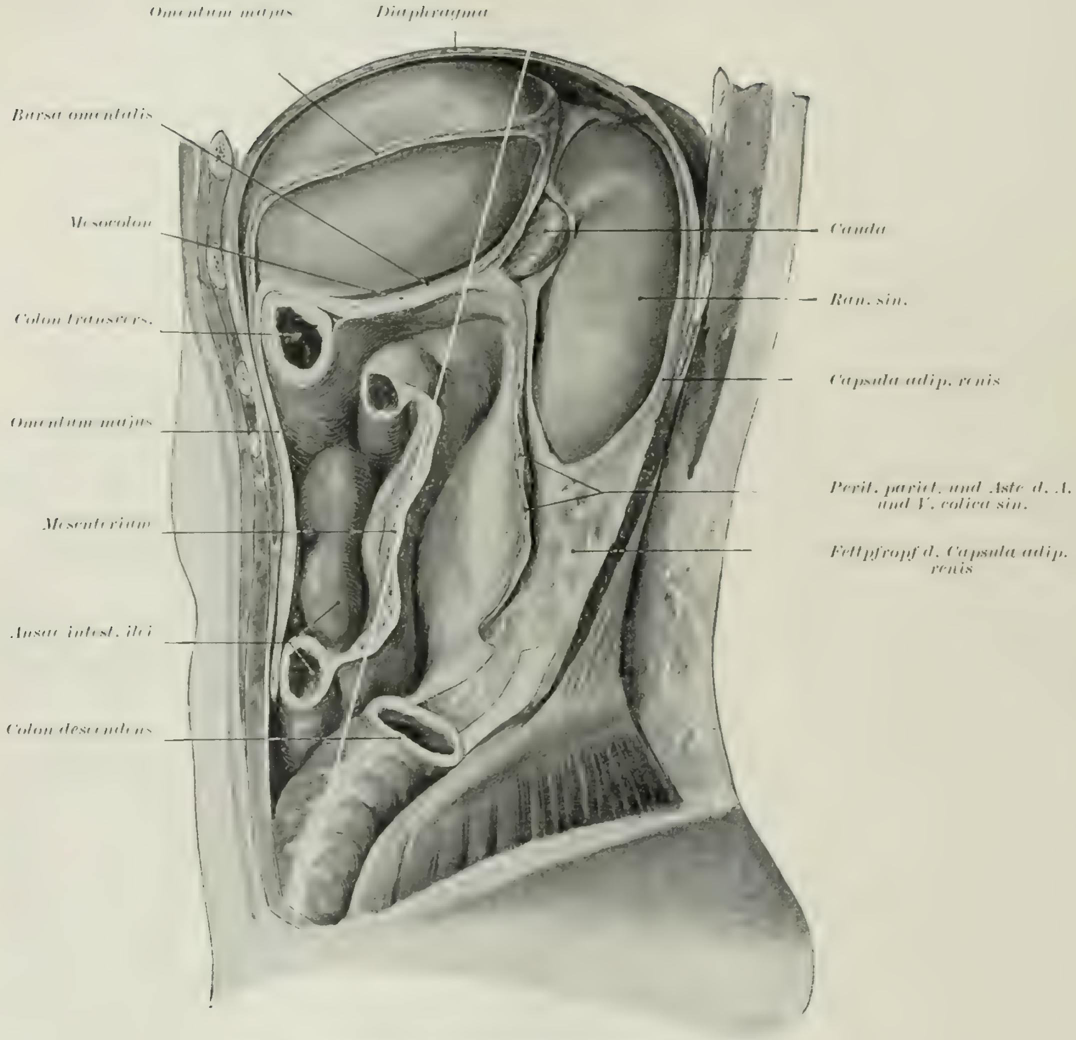

FIG. 10 Corning: Lehrbuch für topographischen Anatomie.

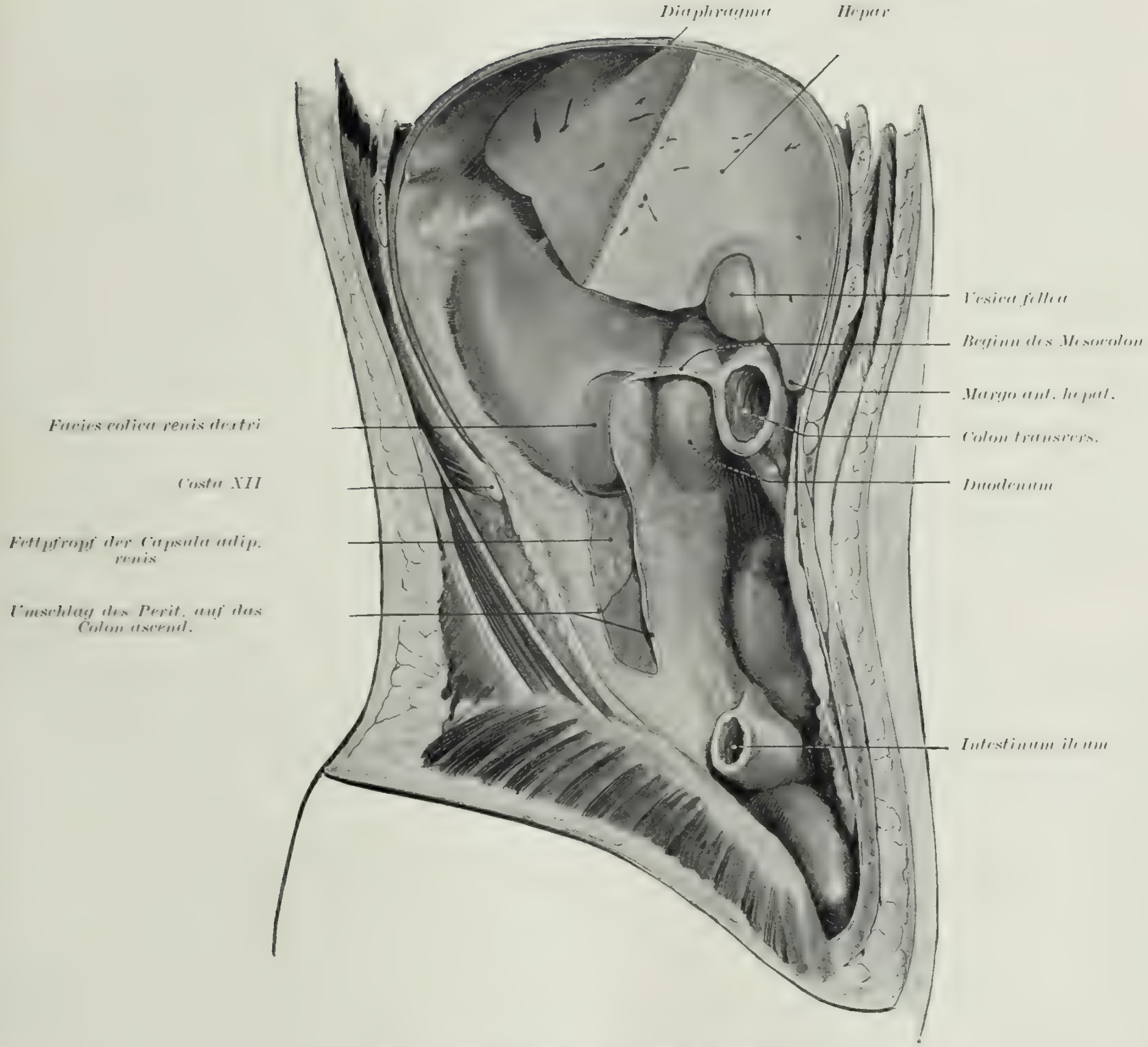

FIG. 11. Corning: Lehrbuch fur topographischen Anatomie.

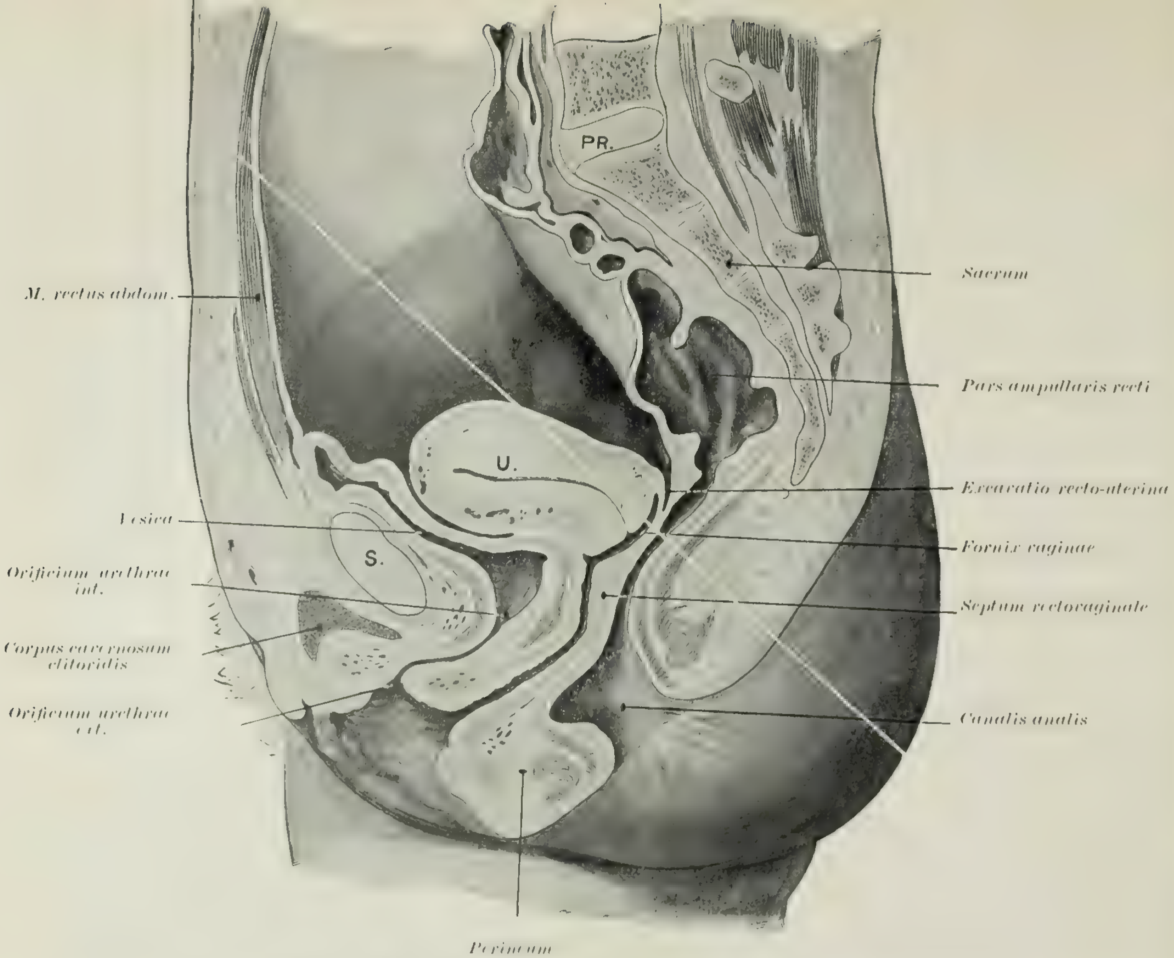

FIG. 12. Corning: Lehrbuch fur topographischen Anatomie.

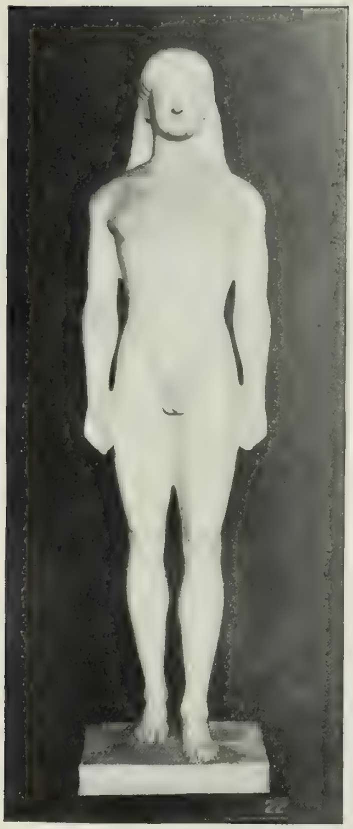

FIG. 13.

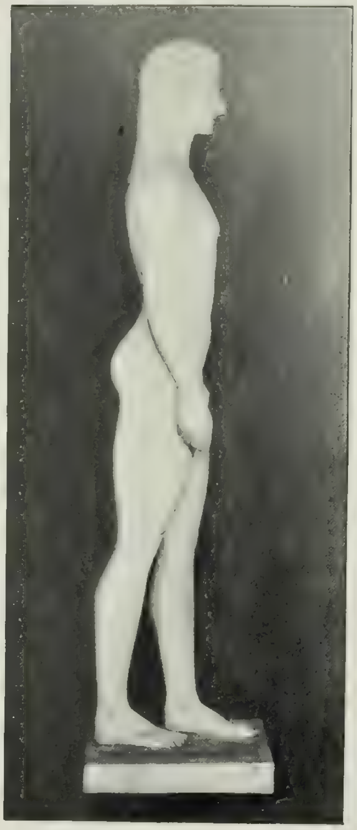

FIG. 14.

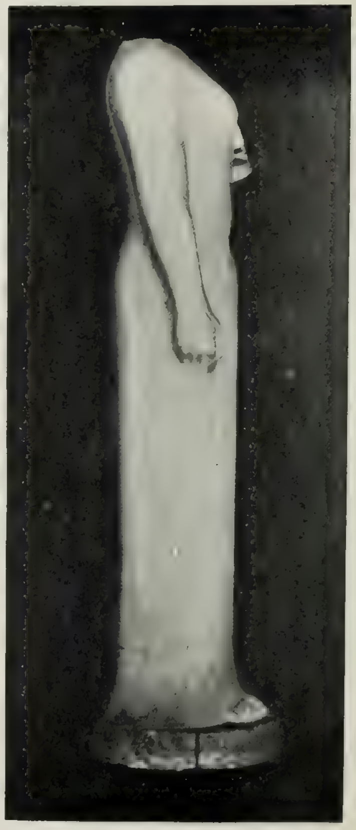

FIG. 15.

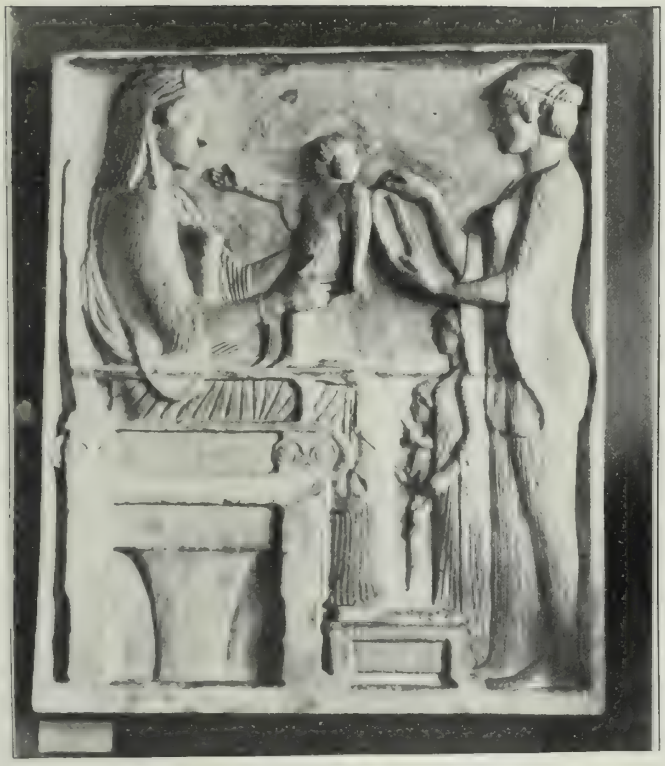

Fig. 16.

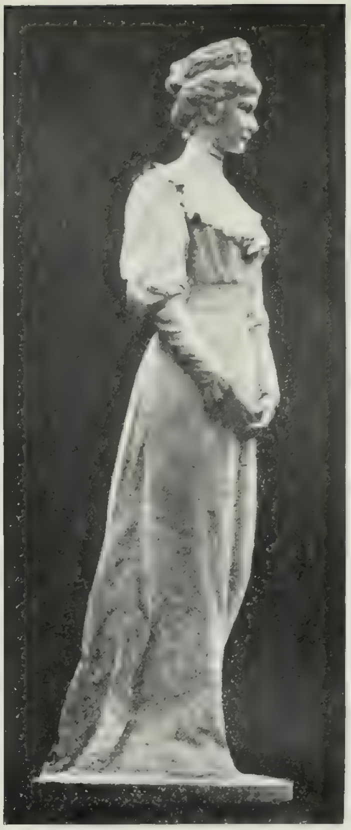

Fig. 18.

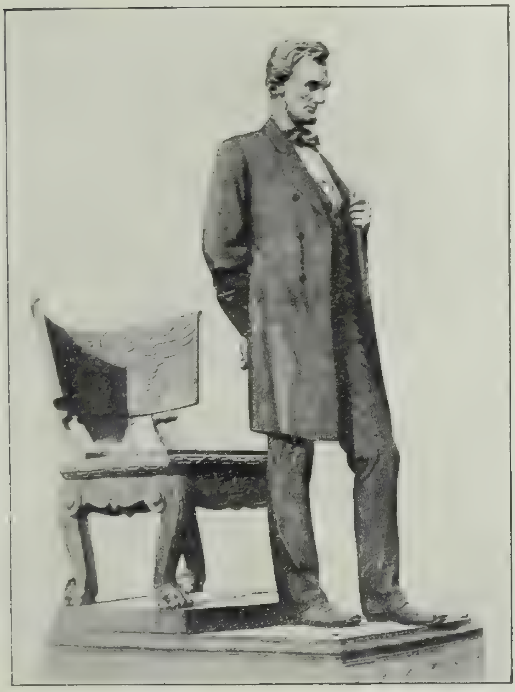

Fig. 17.

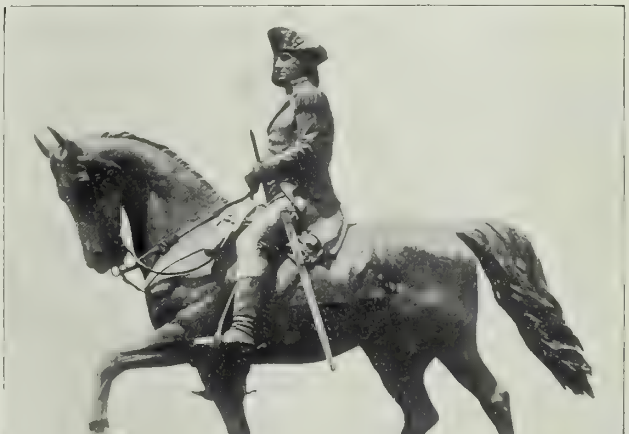

Fig. 19

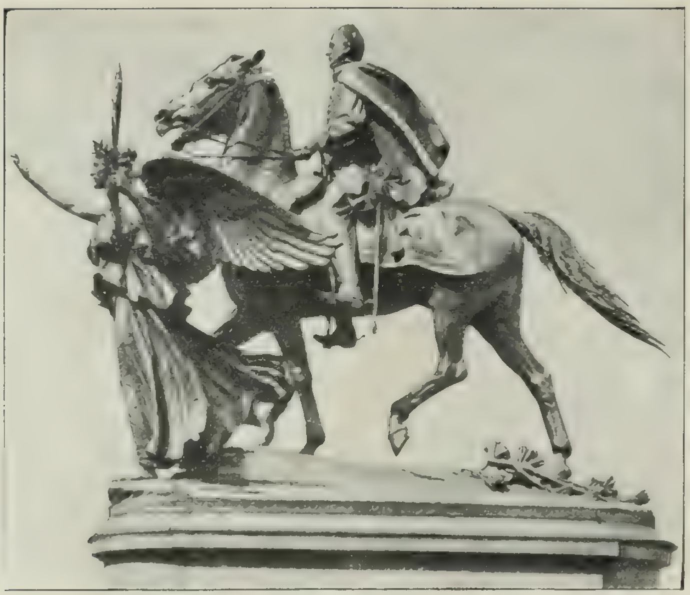

FIG. 20.

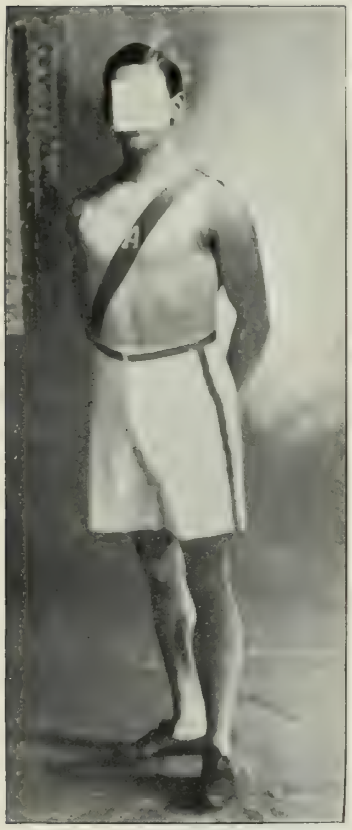

FIG. 21.

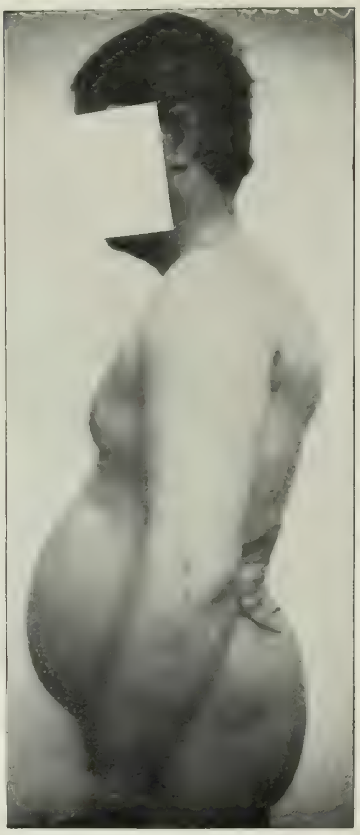

FIG. 22.

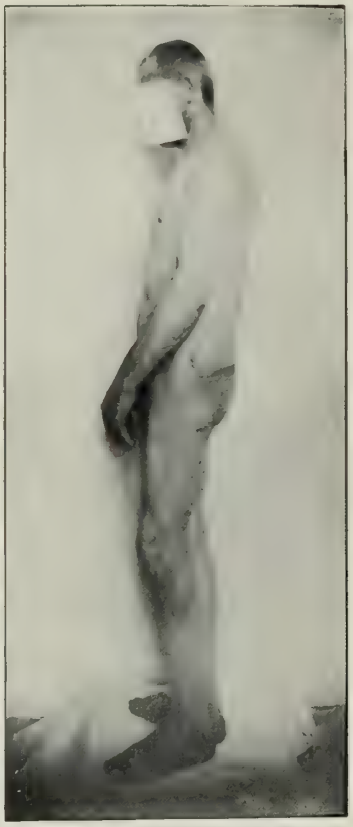

FIG. 23.

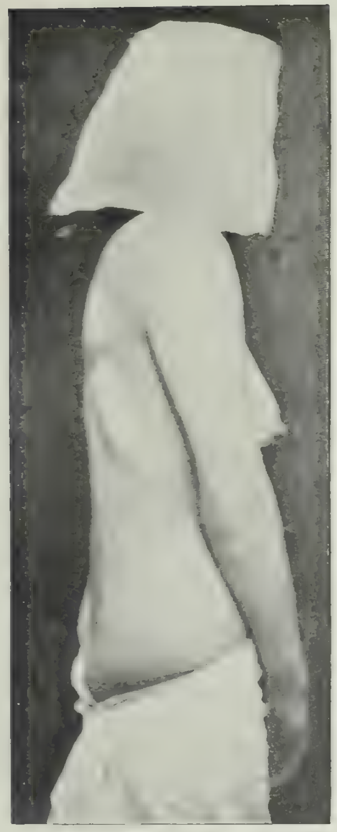

Fig. 24.

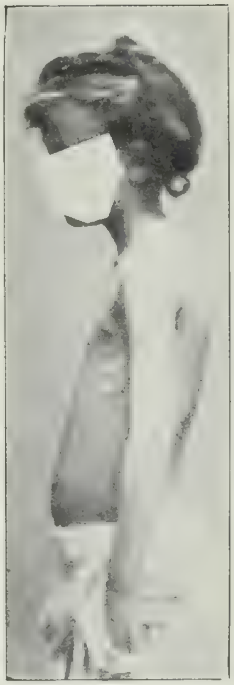

Fig. 26.

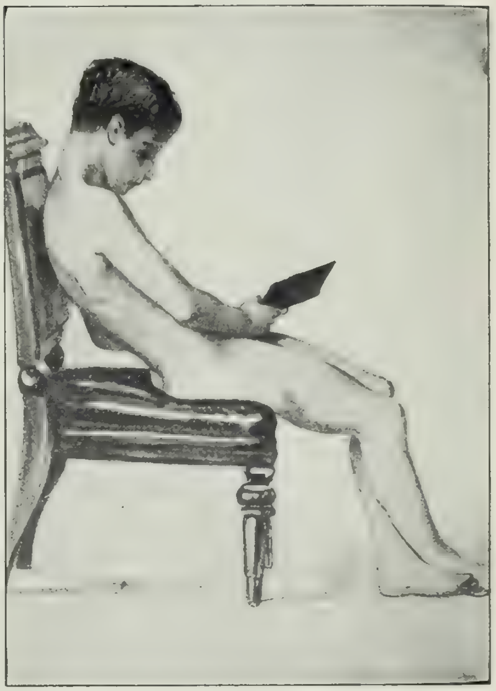

Fig. 27. (Scudder.)

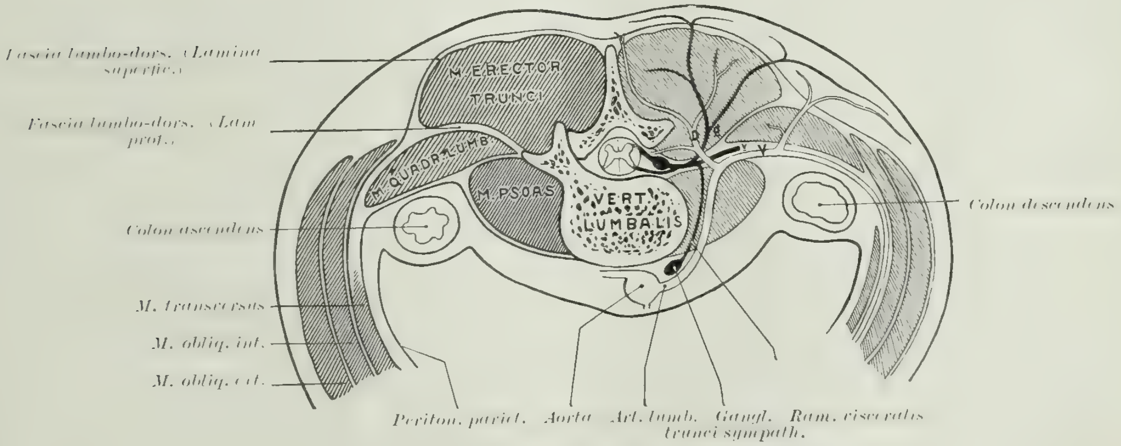

Fig. 25. Corning: Lehrbuch für topographischen Anatomie.

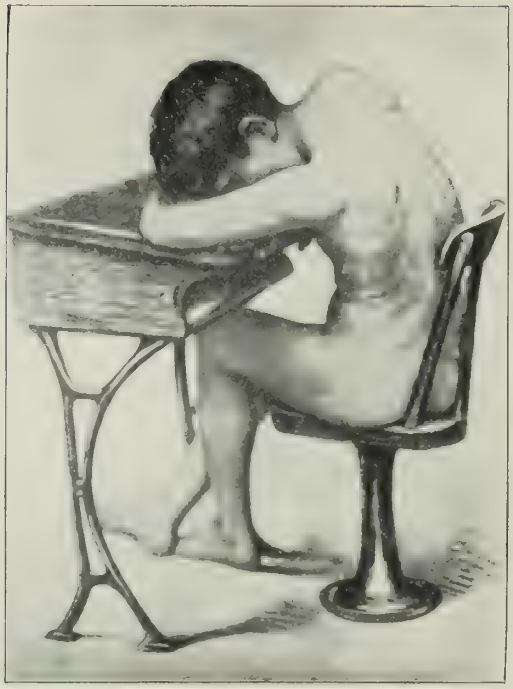

FIG. 28.

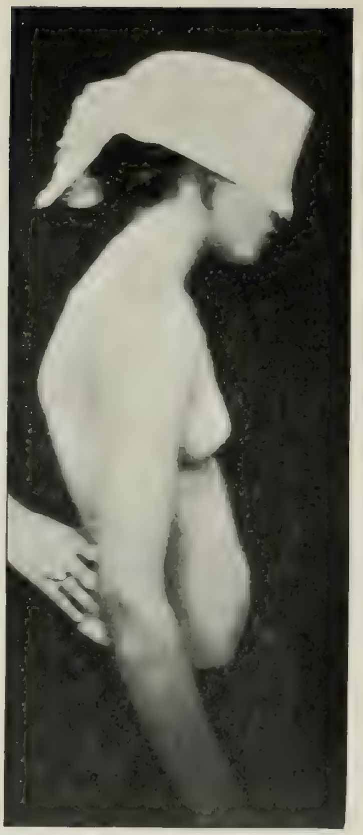

FIG. 29.

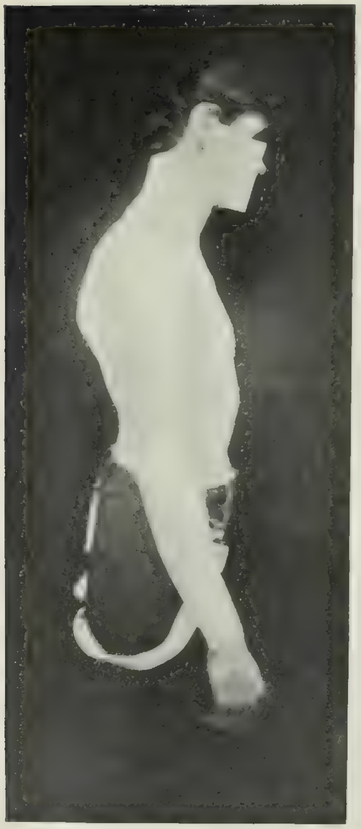

FIG. 30.

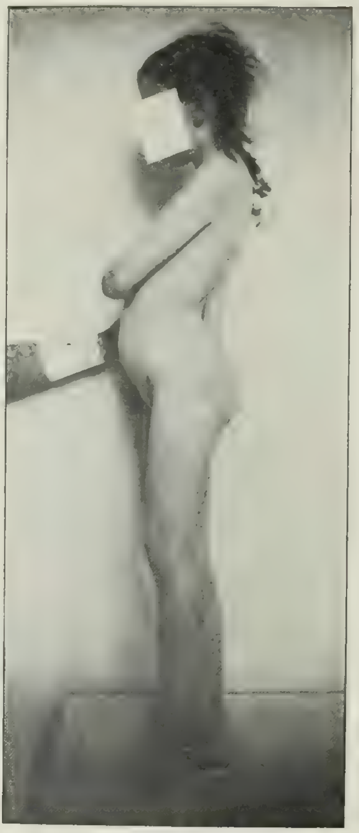

FIG. 31.

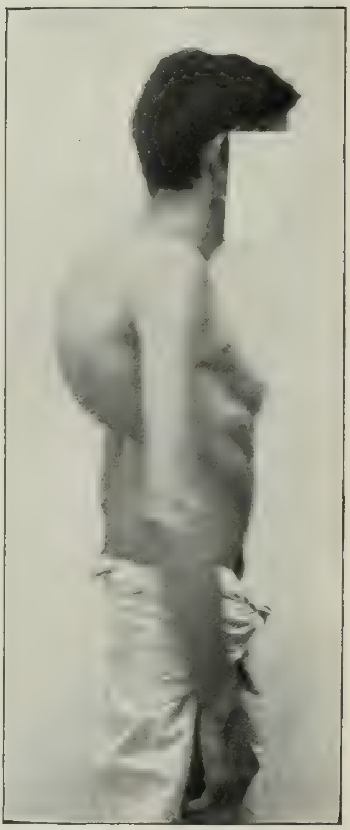

FIG. 32

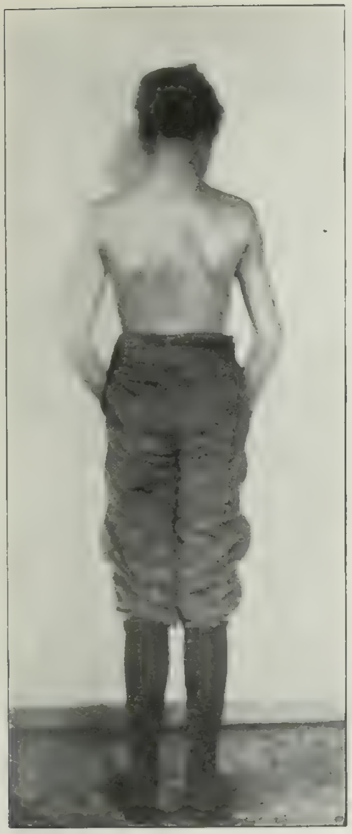

Fig. 33.

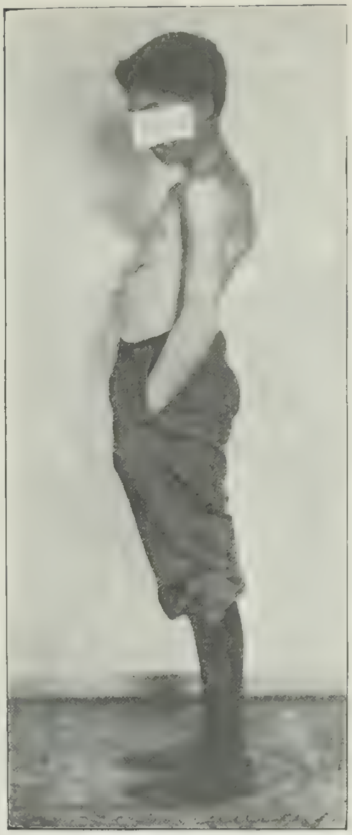

Fig. 34.

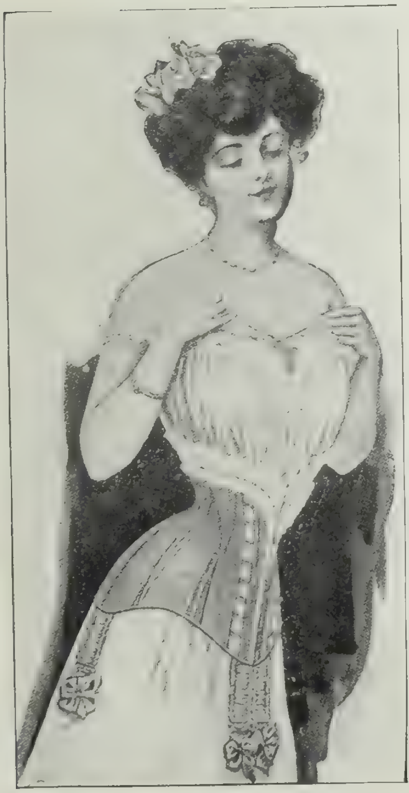

Fig. 35.

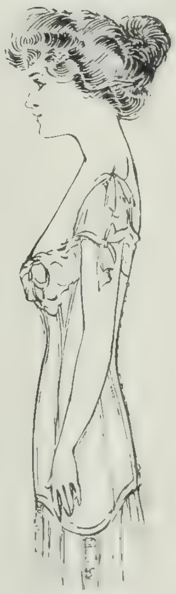

Fig. 36.

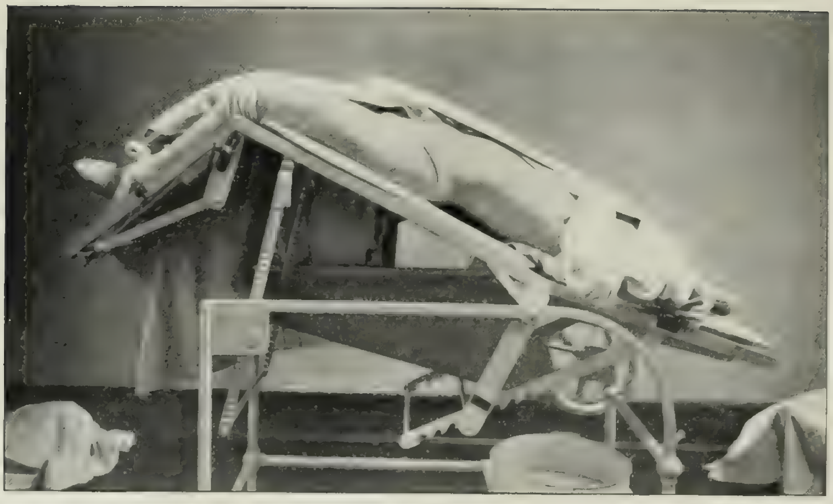

Fig. 37.

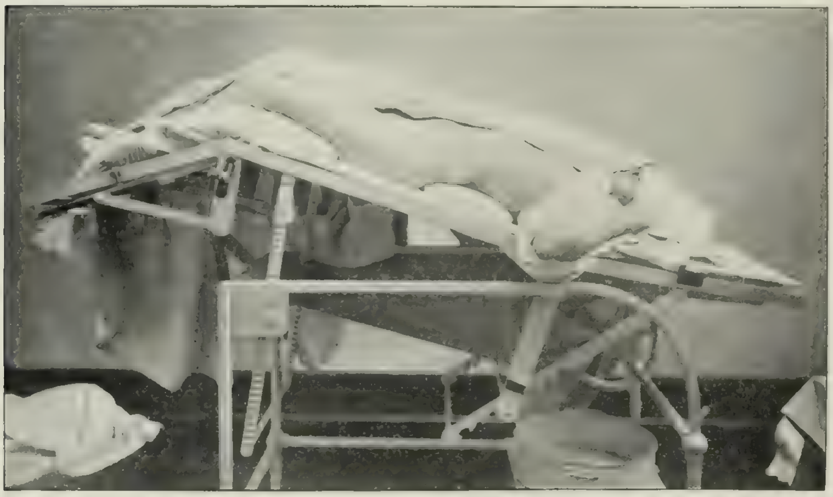

Fig. 38.

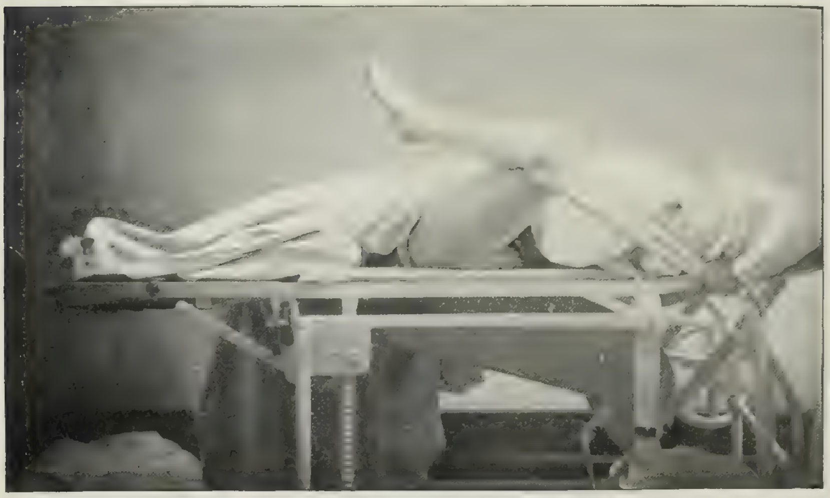

Fig. 39.

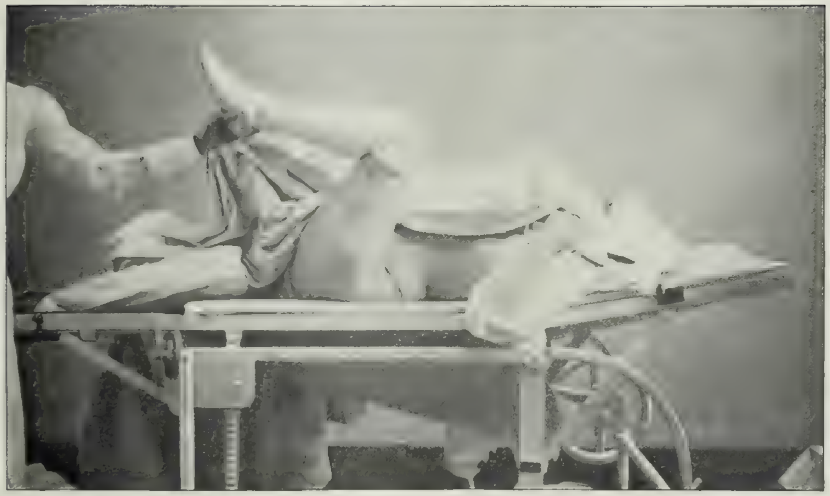

Fig. 40.

is put upon the health entirely apart from the esthetic side, the majority will be willing to listen to and heed our advice.

It means also that we should study the habits of the patients in their occupations, and harmful features be eliminated in so far as is possible, explaining that the erect position in standing, once it is learned, is the easiest position; that the relaxed position, which is an attitude of fatigue, causes still further fatigue; that the sitting position with the body erect, inclining slightly backward, is not only the best position, because the abdominal and thoracic cavities are not constricted, but because also the muscles are the least strained; that if the body must be used inclined forward that the trunk should be kept straight and not flexed, as is the common position; that in walking the trunk should be straight, not flexed, and that if the body is inclined forward it should be from the hips and not by flexing the trunk itself.

Not only does our function as physicians extend into these details of life, but it concerns the positions of the body during the resting or recumbent periods. We must remember that when lying upon the back, if the bed or supporting structure is hard so that the buttocks cannot settle into it, that the lumbar spine must sag downward, and if the buttocks are large or the waist small, the amount of this sag may be enough to cause painful strain upon the interspinous ligaments or upon the sacro-iliac joints. So, also, the position upon the side must mean sag of the middle or unsupported portion of the body as the muscles tire, and results in strain of the spinal ligaments. In both these positions the muscle strain with the resulting strain to the joints may indirectly weaken the visceral supports and exaggerate existing symptoms or be a factor in developing fresh symptoms. If these conditions exist, the use of a small pillow or roll of clothing under the lumbar spine in the hollow of the back, or in the hollow above the hip, if the side position be the one for consideration, will often not only relieve distinct symptoms of strain, such as backache with the referred legache, but will prevent the weakening of the ligaments that would result from the continuance of such positions.

The importance of these positions during recumbency is of particular importance at the time of operations and during the course of acute febrile disturbances. In the former the unyielding character of the operating table, together with the temporary paralysis of the muscles, makes the maximum amount of strain of the joints possible. In the latter, as a part of the febrile disturbance, the severe narcosis, together with the general dulling of the reflexes, makes possible spinal sag and strain that would not occur in ordinary health, even if the positions were favorable for such strain.

This means that in planning operations we have responsibilities other than those which have to do with the purely local lesion. At such times, if the whole body is considered, the strained sacro-iliac joints with the distressing backaches and with the not infrequent disability which results from this will not occur. The patient will not be put upon the table, as shown in Fig. 37, since in this position the thighs are hyperextended, the axis of the pelvis must be drawn forward, thereby raising the upper part of the sacrum and the lumbar spine. There being no support for the spine, however, it must sag back again, and with this the sacrum must be dragged downward, the two influences necessarily resulting in definite strain of the sacro-iliac joints, with subsequent backache. Not only this, but as the result of the hyperextension of the thighs and the tilting downward of the anterior part of the pelvis the abdominal muscles must be stretched, making unnecessarily difficult the separation of these muscles during abdominal operations. With the slight support under the back to prevent the sag of the spine and also under the knees so that hyperextension is prevented (Fig. 38), all of these undesirable features can be overcome without in any way interfering with the important elements of the position.

With the lithotomy position, also, there is a right and a wrong way of obtaining this. If the thigh is sharply flexed (Fig. 39) and at the same time abducted, and if, as is so commonly seen with this, the assistant rests upon the leg as he reaches over to assist the operator, the ilium must be strained downward and backward, with resulting sacro-iliac strain and weakness. If, however, the thigh is flexed to the position shown in Fig. 40, and if a bandage or strap is attached about the knees to prevent the marked separation of the knees, the position can be maintained indefinitely without harm and without sacrificing the essential features of the position.

In conclusion, the writer feels that both the medical profession and the laity should realize that there is a certain definite amount of energy available for expenditure with each individual; that this energy can be expended in many different ways, but that if expended for one thing it no longer is available for other efforts, except after periods of recuperation. The form of the expenditure, whether in mental or physical expression, is immaterial, and the waste of this energy is not only undesirable, but is usually harmful. It is our great function as physicians to show in every way possible how the human organism is to conserve this energy so that when expended it shall yield to the world the largest possible return. If used rightly the physical functions will be more perfectly performed, the mental powers will be greater, and the spirit of the individual must be finer if expressed through a body properly formed and used. It has caused no surprise to find Washington and Lincoln poised so that there could be no waste from the improper use of the physical frames with which they were endowed. We unconsciously expected to find them so poised, and we expect such types to measure up to a very high standard when the great tests are given. It is our duty, however, to recognize that the types which have been depicted as departures from the best have in them the potential of the finest and that we can have no higher function than that of making it possible for some of these poor creatures to so live that they, or their children, may approach more nearly to the standard that it should be the aim of every human being to reach, which, when reached, must mean a high degree of efficiency of all the elements of the body, the physical, the mental and the spiritual.[1]

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TREATMENT OF STRICTURE OF THE BULBAR PORTION OF THE URETHRA BY RESECTION PARTIAL OR COMPLETE.*

BY HUGH CABOT, M.D., BOSTON.

THE class of cases here to be considered is that to which external urethrotomy or perineal section, with or without a guide, has ordinarily been applied. That such a group of cases exists, no one familiar with clinics of the large metropolitan hospitals will question. That by improved methods of checking the original infection and by more intelligent care of the stricture when it begins to form this operation might be avoided is not to be denied, but the fact still remains that many cases present themselves in which the stricture is either for the time being impassable, or in which contraction has gone on to such an extent that gradual dilatation will not effect a cure. Moreover, experience does not warrant the belief that this type of patient will follow up treatment with sufficient persistency to make cure or even palliation by gradual dilatation an outcome at all to be expected. It is common knowledge that these patients will not for a period of years pay attention to the condition of their urethra, and we are, therefore, at liberty to assume without further discussion that we shall at least for some time to come be confronted with these cases of stricture of the bulbar portion of the urethra, requiring some form of operative treatment.

To this class of cases external urethrotomy has generally been regarded as best suited, and though internal urethrotomy has had its advocates, and divulsion has claimed its victims, neither of these operations need be seriously considered as a cure for stricture of this portion of the canal.

Has external urethrotomy proved a satisfactory method of treatment? Clearly it has not. It temporarily relieves the condition, for a short time restores the caliber of the urethra and prepares the way for treatment by gradual dilatation, but as has already been suggested, gradual dilatation will not cure these patients in the time which they can be expected to devote to it, and it remains a fact that recontraction and subsequent re-operation have been a frequent result. The reasons for the failure of the operation are fundamental, for it does not attack the causes of the contraction, but only treats one of its results, namely, narrowing. The fundamental cause of the difficulty lies, of course, in the scar tissue in the peri-urethral structures. Upon these, external urethrotomy has no effect and, in fact, it tends to increase rather than diminish the total amount of scar. In ordinary cases, after the stricture has been divided, there remains a narrow band of the mucous membrane on the roof, and whether the bladder be drained with a perineal tube or an inlying catheter, whether the overlying tissue be sutured or wound left wide open, the caliber of the urethra is restored not by mucous membrane, not by the urethra itself, but by scar tissue, which, if carefully treated, may become covered with mucous membrane, but which can never replace the distensible, elastic tissue of the corpus spongiosum. It must, I think, be generally admitted that the net result of external urethrotomy is an increase, not a diminution, in the amount of scar tissue. In short, the operation makes no attempt at curing the condition and must be regarded as purely palliative. If this operation is to be accepted as satisfactory, or the best that can be achieved under the circumstances, it amounts to admitting that cure, as the word is ordinarily used, cannot be obtained and is not even attempted. This position does not seem to me tenable in the present day, when the limits of surgery are being rapidly extended and nothing short of permanent cure is accepted as satisfactory. In a word, it seems to me that the treatment of these strictures by external urethrotomy is an admission of weakness which ought not at this time to be necessary.

On the other hand, is there no reasonable probability that any other method will give some more satisfactory result? Clearly the object to be attained is the removal of all scar tissue so placed that it can constrict the urethra, and the restoration of the canal by some method which avoids the probability of recontraction. The first requisite is simple enough; the removal of the scar tissue presents no difficulty. It is the restoration of the canal that is the real crux of the matter.

For this restoration two chief methods have been utilized, resection and suture, and more recently fistulization and subsequent closure of the opening by a plastic operation, if necessary. The method of fistulization has recently been advocated with great ability in a paper by Pasteau and Iselin.[1] Their work is devoted principally to traumatic stricture and seems to show that the caliber of the canal can be restored and maintained by this method. On the other hand, the objections to the operation are obvious. It leaves the patient with a perineal fistula for weeks or even months, and in some cases, at least, involves a second operation. As has already been noted, it is by no means easy to keep these patients under observation, and it is quite essential to success that the case should remain under the care of the surgeon who does the first operation. If it can be shown that restoration of the canal can be obtained in no other way, then, and as I think, not until then, is it to be regarded as the operation of election.

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[1] In the preparation of the anatomical parts of this paper I am indebted to Professor Dwight and Professor Warren of the Harvard Medical School for much valuable assistance.

* Read at meeting of American Association of Genito-Urinary Surgeons, May 31 to June 1, 1909.

[1] Ann. des Mal. des Org. Gén.-Urin., 1906, p. 1601.

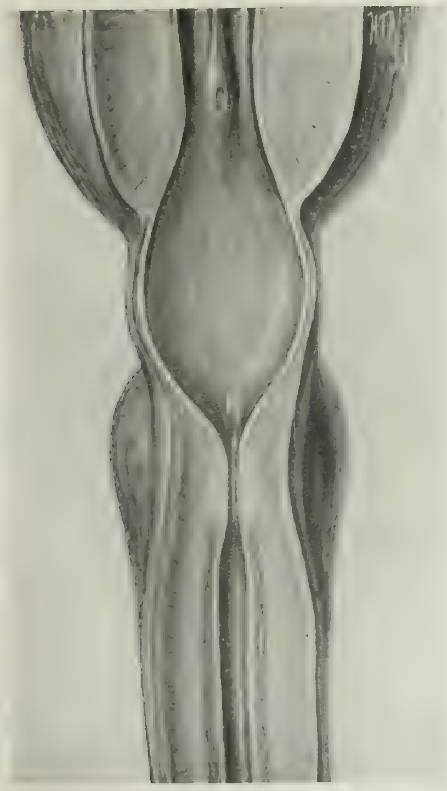

FIG. 1.

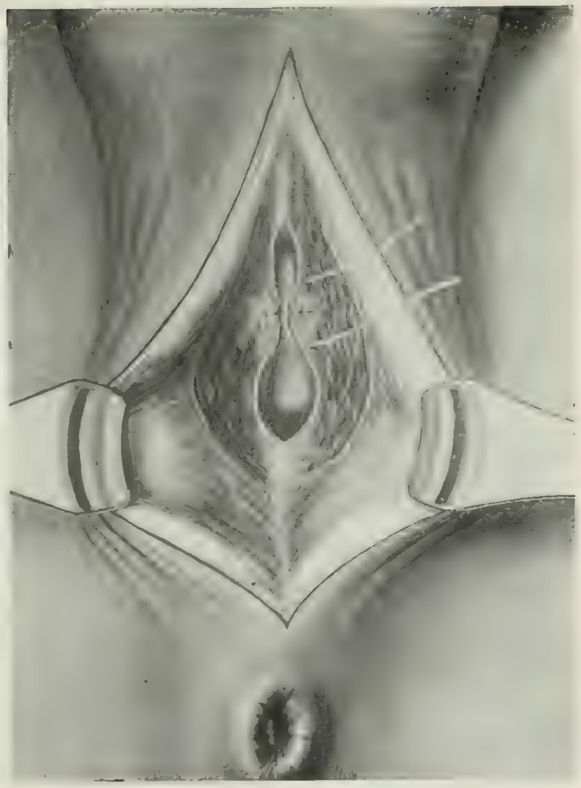

FIG. 3.

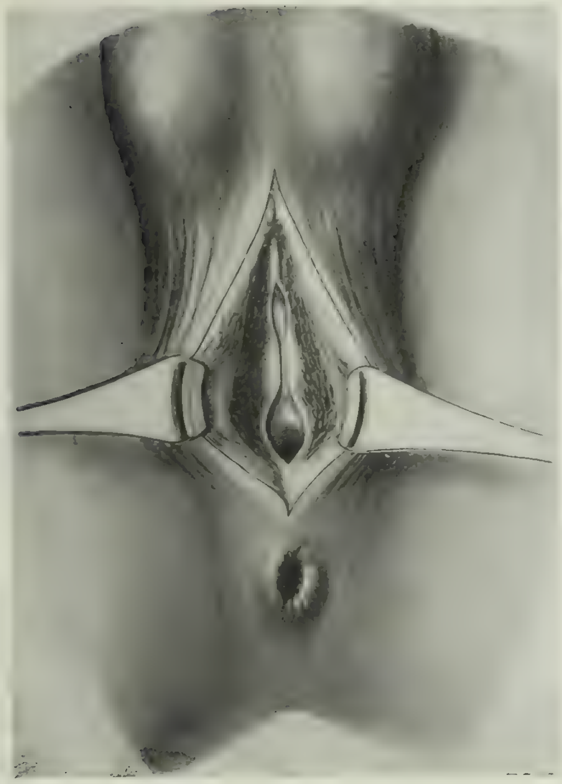

FIG. 2.

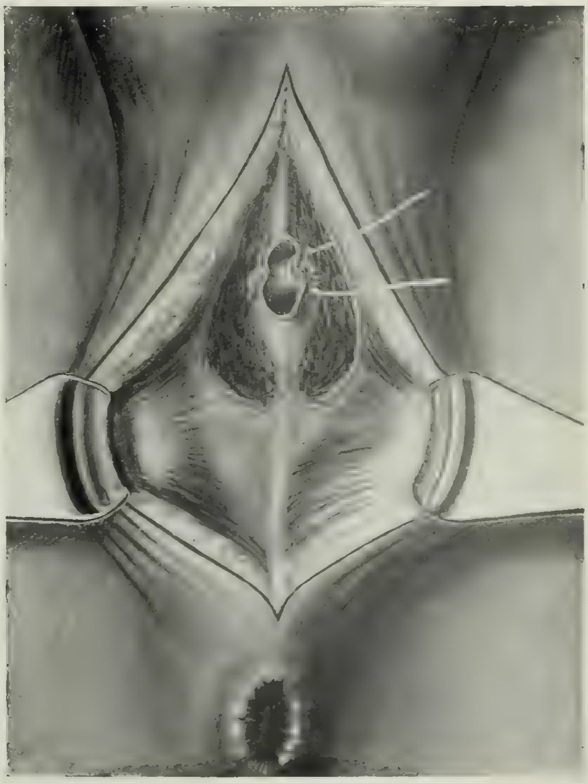

FIG. 4.

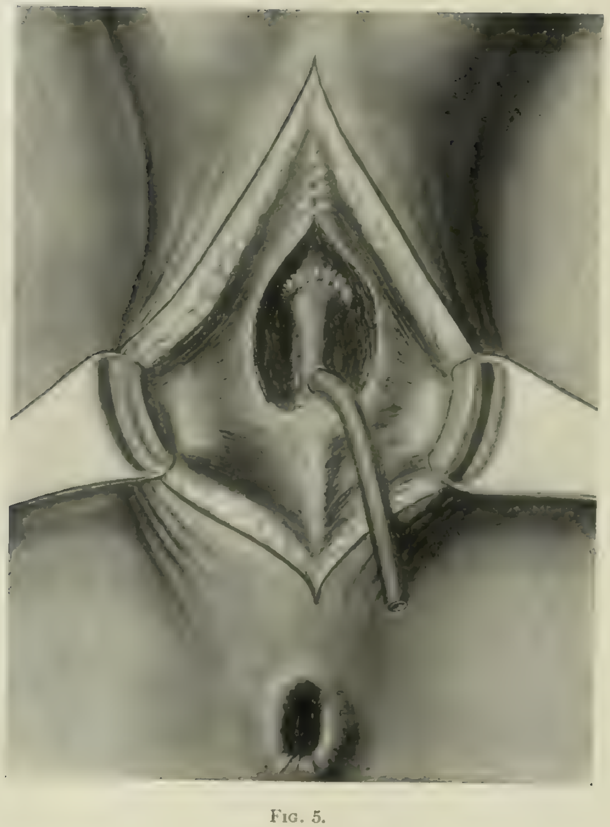

Fig. 5.

RESECTION OF THE URETHRA.

As long ago as 1836 Dugas, an American, resected the urethra for stricture. Since that time the operation has been more or less constantly in use, but has been regarded as particularly applicable to traumatic stricture, more rarely to inflammatory, and has frequently given unsatisfactory results. The three methods which have been most frequently employed are: (1) Complete division of the urethra, with removal of the strictured portion, the ends of the urethra being left free and the gap allowed to close by granulation over an inlying catheter; (2) complete resection of the stricture, with immediate suture of the ends, the bladder being drained with an inlying catheter; (3) partial resection. By this method a band of mucous membrane is left upon the roof of the canal to prevent retraction of the divided ends. The gap is thus left united so as to leave a transverse wound and has some of the characteristics of the so-called Heinike-Mikulicz pyloroplasty. The results of these various operations have not been wholly satisfactory. Pasteau and Iselin studied thirty-five cases collected from literature in which the operation had been applied to traumatic strictcre. They found that in most cases the reports had been made so soon after the operation that no sound idea of the permanent result could be obtained. Only a few of the cases were known to have maintained their caliber for a term of years. It was, in fact, the unsatisfactory character of the results which led them to search for a more successful method.

Failure has apparently been due to three causes: Undue tension at the point of suture, so that the divided ends ultimately pulled apart, leaving a wide band of scar; slight infiltration of urine, which has been almost unavoidable, and which results in excessive scar formation; and wound infection. The entire avoidance of wound infection has been practically impossible, as the urethra is habitually the habitat of bacteria which the presence of an inlying catheter rouses into activity. The degree of infection need not be great, and it has generally been possible to avoid gross wound infection. But even the more moderate degrees, such as necessarily result from the urethritis which accompanies an inlying catheter, have been sufficient to greatly impair the results. The method which I am about to discuss seems to me to avoid these dangers and result in restoration of the canal in such a way as to give considerable hope of its maintaining its caliber.

TECHNIC OF RESECTION OF THE URETHRA.

If this operation is to be successful it must avoid the objections to the operation as ordinarily done.

Prevention of tension. — The entire avoidance of tension at the point of suture is probably the most important requirement. This can be secured if the urethra be sufficiently mobilized. It is the rule behind strictures of small caliber to find some and often considerable dilatation of the urethra, and the slack thus provided makes it unnecessary to mobilize the posterior segment. (Fig. 1.) The anterior segment should be mobilized to an extent sufficient to allow suture entirely without tension. I have been, on the whole, surprised to find how much the corpus spongiosum could be freed from the surrounding tissues without impairment of its nutrition. In one case it was freed as far forward as the peno-scrotal angle without bad results. I believe it to be important to mobilize the whole corpus spongiosum and not simply the urethra itself, as in this way the tendency to retraction is diminished.

Avoidance of urinary infiltration. — Clearly the avoidance of urinary infiltration, even of a slight degree, is of paramount importance. This has ordinarily been guarded against by drainage, either with an inlying catheter or a tube brought out through the wound. Both of these methods are somewhat objectionable. It is claimed, and with some justice, that, even with a catheter in the urethra, some urine escapes along side of it, especially when there is much dilatation of the posterior segment. The other method which drains through the wound is even more objectionable, for it does not avoid infiltration by urine escaping alongside of the catheter, and when the catheter is removed the urine is passed directly through the fistula, causing irritation and increase of scar tissue. In order to entirely avoid contact of urine with the wound until the scar has completely formed, the urethra should be drained behind the point of suture, and this can readily be done by opening the membranous urethra behind the stricture by a small *boutonnière* and draining the bladder with a catheter inserted at this point.

Avoidance of infection. — It is not necessary to consider here the avoidance of the more gross forms of infection; it is with the more apparently trivial kinds that we are chiefly concerned. The most fruitful source has been the presence of the inlying catheter with its accompanying urethritis. This urethritis, while comparatively unimportant in a healthy urethra, undoubtedly tends to increase the infiltration and scar formation at the point of suture and may be a considerable element in the production of excessive scar. This can be avoided by drainage of the urethra behind the stricture, as above suggested. The urethritis thus produced is very slight and can reach the wound only by direct extension along the urethra. This may be avoided by careful treatment of the anterior urethra during the process of healing. It has been our custom to wash out the anterior urethra two or three times a day. For this purpose we have used boracic acid and more recently argyrol, and it is clear to me that benefit has resulted, though I am not clear that the particular solution used is of essential importance. In this way, by drainage behind the point of suture and by frequent cleansing of the anterior urethra, the wound can be made to heal rapidly and infection is minimized.

Details of the operation. — It is not intended to claim originality for this procedure. It is a combination of methods used by other operators with such personal modifications as have seemed desirable.

Where it is possible the mucous membrane of the roof of the canal should not be destroyed and the ends of the urethra will thus be prevented from retracting excessively. In the worst cases, where the urethra has been practically destroyed, transverse division may be necessary. In many of the inflammatory strictures, however, it is possible to leave this strip on the roof which does not in any way interfere with the free mobilization of the anterior segment. For convenience of description, the steps of the operation will be given in order.

(1) With the patient in the lithotomy position a free median incision is made down to the urethra, dividing the structures of the bulb in the median line and turning them aside. It is important that this incision should be carried well backward so that the membranous urethra can be exposed.

(2) The stricture is then divided by a longitudinal incision upon a guide, if one has been passed; without a guide, if its insertion has been impossible. The whole incision should be about one and one-half inches in length. The condition at the point of stricture is then examined. All excess of scar tissue should be removed, the whole strictured portion excised if necessary, and hemostasis obtained. (Fig. 2.)

(3) The anterior segment of the urethra is then freely mobilized by separating the corpus spongiosum from its attachments until it can be joined to the posterior segment without tension. Upon this part of the operation particular stress is laid.

(4) Suture. If it is necessary to completely divide the urethra, suturing should be begun upon the roof, the sutures being passed from without inward, including all the structures of the corpus spongiosum and the urethra. We have generally used number zero chromicized catgut and a fine full-curved needle. Where it has been found possible to leave the roof of the canal intact, suturing is begun at the sides in such a way that the longitudinal incision in the urethra is brought together transversely, somewhat after the method of a pyloroplasty. (Figs. 3 and 4.) After about one third of the circumference of the canal has been sutured, a No. 28 sound is passed into the urethra and the suture is completed about this so as to be sure that the canal is given full caliber. As the dilated urethra behind the stricture generally yields more readily than the anterior segment, the line of suture will be found at the end of the operation to occupy a position further forward than the original stricture. The last suture closing the wound unites the two extremities of the longitudinal incision in the urethra, and by lengthening this incision the caliber can be increased to any reasonable extent.

(5) The suture having been completed, the urethra is opened upon the sound at a point as far behind the stricture as possible. This opening should be small, just sufficient to admit a No. 12 (English) soft rubber catheter, which is passed to the bladder and left in position. (Fig. 5.)

(6) The wound is then sutured in layers, bringing together the muscular structures of the bulb as accurately as possible with interrupted sutures, and the skin is closed, except for a point at the lower angle through which the catheter is brought out. When the closure of the wound is complete, the patient is placed in a horizontal position, the catheter is adjusted at the proper point and is then fastened in position by a suture in the skin.

After-treatment. — The important points in the after-treatment are the care of the anterior urethra and the retention of the catheter until the wound is completely healed. The care of the anterior urethra has been described above, and the essential thing is that the urethra should be kept entirely clean with some solution which will not produce undue irritation, and by some method which will not traumatize the suture. It has seemed to us that injection with a small syringe is preferable to irrigation, either with a catheter or with a reservoir and nozzle.

The catheter should be left in position for from ten to fourteen days. In one case we removed it at the end of a week and slight leakage occurred at the point of suture. In more recent cases it has been retained for two weeks and no leakage has taken place. The perineal *boutonnière* closes, as a rule, in two or three days after withdrawal of the catheter. No instrument should be passed through the stricture until complete healing has taken place, which will be during the third week.

Cases to which the operation is suited. — Resection is applicable to all strictures of the bulbomembranous portion of the urethra not amenable to gradual dilatation and not complicated by infiltration of urine or fistulæ. It is thus applicable to a considerable group of cases, both of traumatic and inflammatory origin.

Since healing practically by first intention is essential, it cannot safely be employed while the inflammatory process is active or in some cases of traumatic rupture of the urethra with extensive tissue destruction. It may more properly be used in the less severe cases of traumatic rupture in which the superior wall is still intact, tissue destruction is not great, and which are seen before infiltration of urine has begun.

To the more severe traumatic ruptures of the urethra and for inflammatory strictures complicated by infiltration of urine or fistulæ, the operation of fistulization as described by Pasteau and Iselin is better suited.

We have done the operation of resection more or less as above outlined in twelve cases during the last eighteen months. In none of them has the time elapsed been sufficient to warrant any conclusions as to the ultimate result, and they will not, therefore, be reported now.

A NEW TREATMENT FOR ABDOMINAL SURGICAL SHOCK.*

BY JOHN R. HOPKINS, M.B., DENVER, COLO.,
Surgeon to St. Anthony's Hospital.

As the problem of the cause of shock now stands, there are many contradictory theories.[1]

It is best for me to state at the beginning of this paper that the case that I will report later, together with my investigations, have proven to my satisfaction that in surgical shock the peripheral vessels are contracted and the vessels in the splanchnic area are dilated. And the vasomotor nerve mechanism is not paralyzed, but is injured sufficiently to lose its reason or function instead of acting in its long-accustomed extremely intelligent and prompt manner in distributing the right amount of blood to the right places at the right times, which is essential to life. There is not nearly enough blood in the body to fill all the blood vessels at once if they were all dilated. Goltz, in his famous experiment, showed that if a frog be suspended in the upright position and its heart exposed, a blow upon the abdomen has a twofold action: (1) It stops the heart reflexly through the vagus; but, after this effect has passed off, (2) the heart beats again, but is empty and sends on no blood into the vessels, because the blow has caused dilation of the abdominal vessels and all the blood becomes stored up in them, so that none reaches the heart.

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* Read before the Colorado State Medical Society, Sept. 15, 1909.

Besides the chief vasomotor center in the medulla, there are subsidary centers in the spinal cord, and Goltz[2] and Ewald have shown that the ganglionic chain of the sympathetic can assume the function of the vasomotor centers.

When the centers or nervous trunks of the vasomotor nerves are irritated, the vessels contract.[3]

Section of the splanchnic nerves causes an immediate and sharp fall of blood pressure.[4] The intestinal arteries, veins and portal vein are dilated and overfilled with blood. As a necessary consequence of their immense capacity the rest of the vascular system is underfilled and the blood pressure falls accordingly. Stimulation of the peripheral end of the splanchnic nerves causes a great rise of blood pressure owing to the constriction of the vessels in the intestinal area. This shows that the vasomotor fibers in the splanchnic nerves are mainly of the constrictor type; also that the splanchnic area serves to a great extent as a regulator of blood pressure.

Mall[5] has shown that the splanchnic nerves contain vaso-constrictor fibers for the portal vein, and Ludwig and Lauder Brunton have shown that the liver in the living is much like a sponge, i. e., can accommodate much blood.

Almost all the cells of the solar plexus are included in the course of the fibers of the splanchnic nerves (Landois).[6] Elevation of temperature, also fever, causes irritation of the splanchnic nerves (Landois).

One of the principal functions of the vasomotor nerve mechanism is the proper distributing of the blood in order to preserve the normal temperature of the body. Eighty per cent of the heat expenditure of the body is through the skin. So when for any reason more than the normal heat or temperature occurs in the body, it is a function of the vasomotor nerve mechanism to at once correct it, but it does not always do it. The elevation of temperature causes irritation of the splanchnic nerves, sympathetic ganglia and vasomotor centers so that orders are usually sent at once to correct the situation; the heart beats faster and peripheral vessels dilate; thus more blood is gotten to the surface to radiate and evaporate heat.

This treatment which I advocate is especially suitable for shock during the few hours or days following an abdominal operation, when the patient is not under an anesthetic, although it is probably beneficial when the patient is anesthetized, but not to so great a degree. It is as follows:

Take out two skin sutures as near the umbilicus as the wound will permit, then pry apart the continuous sutures in the fascia and peritoneum. You can now see if hemorrhage is present. This procedure is not difficult nor very painful, because when patients are in shock they are more or less insensible to the causes of ordinary pain. See that a nurse has ready very hot and cold normal salt solution, reservoir with four feet of rubber tubing, together with a glass tube or canula six to eight inches long. Both rubber and glass tubes should have a diameter of one third to one half inch. Have a quart of saline solution at temperature of 112° F. in reservoir, which should hang three feet higher than abdomen. Now have wound held open so that you can see omentum or intestines; also see that the tube and the canula are now full of the hot solution; then insert the long canula beneath the omentum, if possible pushing it upward so that your glass tube penetrates to the posterior peritoneum up behind the transverse mesocolon to the neighborhood of the posterior wall of the stomach, getting as near to the solar plexus as possible. The solution still at 112° F. is now allowed to run in as rapidly as it will. Probably a pint will fill the abdomen and be enough. This will take only five or six seconds. Now during the first two or three seconds of this time the patient feels little or no pain, only feels that the hot solution is permeating among the intestines, but the remaining two or three seconds is much different; the pain is very severe, for then the splanchnic nerves, the solar and hypogastric plexuses are being strongly irritated by the heat and pressure of the hot salt solution. They are well known to be very sensitive. The patient not being under an anesthetic, the reflexes are not depressed by it. Now the irritation of the splanchnic nerves and sympathetic ganglia produced by the heat and pressure at once causes contraction of the intestinal arteries, veins and portal vein, and thus a marked rise in blood pressure. Really a shock is produced by the sudden pressure of this hot solution on this great and important part of the vasomotor nerve mechanism, but this shock is a sudden reversal of the phenomena of surgical shock. The radial pulse returns or its pressure is markedly increased. The glass tube is taken out quickly, a small piece of gauze laid over the wound and a strip of adhesive plaster applied, then a tight abdominal binder to sustain the pressure. If this treatment should not succeed, I strongly advise repeating it in one or two hours. In addition to the above treatment I advise hot salt solution per rectum, 10 oz. every two hours, principally on account of getting the heat near the hypogastric plexus and splanchnic nerves; also full glasses of hot water to drink for similar purposes; otherwise do not disturb the patient with hypodermics or even raising the foot of the bed; just keep her warm and as comfortable and peaceful as possible.

During the last two years before I conceived this treatment of abdominal surgical shock I had no faith in any of the drug treatment unless, perhaps, atropine for the profuse sweating. I had faith only in salt solution under the breast or per rectum by the drop method, or filling the abdomen at the end of abdominal operations and heat to the external surface of the body, together with physiological rest, i. e., mental and physical repose.

I wish to state some more physiology to show you that this treatment is more nearly directed at the real cause of surgical shock than the ordinary methods of giving salt solution which I had most faith in heretofore. It is generally accepted knowledge that, by virtue of the amazing power of accommodation possessed by the vascular system as controlled by the vasomotor and cardiac nerves, the total quantity of blood may be greatly diminished or greatly increased without endangering life, or even causing more than a transient alteration in the arterial pressure. It is not until at least a quarter of the blood has been withdrawn that there is any notable effect on the pressure, for the loss is quickly compensated by a constriction of the smaller arteries and the activity of the heart. An animal may recover after losing considerably more than half its blood. Conversely, the volume of the circulating liquid may be doubled by the injection of blood or normal salt solution without causing death, and increased by 50% without any marked increase in the pressure. This excess is promptly stowed away in the dilated vessels, especially those of the splanchnic area; the water passes rapidly into the lymph and is then more gradually eliminated by the kidneys.[7] These known facts when considered show plainly, I believe, that the putting of more liquid into the circulation, as normal salt solution, by any of the customary routes is not aimed at the real cause of shock. It is of little value as compared with the heat or heat and pressure stimulation of the splanchnic nerves, which produces constriction of the abdominal arteries, veins and portal vein. Also it is to be remembered that the heat applied to these abdominal sympathetic nerve structures, on account of the part they play in the regulation of the body temperature, produces a dilatation of the peripheral vessels, thus relieving the resistance to the heart and also making the heart beat faster and stronger to get the blood or heat to the surface. If it were not for the heat given off, the body would be heated to the boiling point in thirty-six hours.

I will now give you the history of the case on which I finally used this treatment after I had almost abandoned hope.

Mrs. W., age fifty-three, entered St. Anthony's Hospital Nov. 29. Operation, abdominal hysteromyomectomy, Dec. 1, 1908. Tumor measured 6½ by 8½ by 7 inches. Took chloroform well. Operation lasted forty minutes. Sigmoid flexure was adherent to tumor to the extent of 4 or 5 inches. Tumor was well supplied with enlarged veins and arteries; however, she lost very little blood through the operation. Raw surfaces were all covered with peritoneum. Intestines were not allowed out of abdominal cavity and were kept covered with hot salt solution pads. Patient was in good condition during all the time of the operation and was put to bed in the same condition at 11 A.M. with pulse 80, full and normal strength. About twenty minutes later, when she began to become conscious, she received a hypodermic of morphine, ¼ gr., and atropine, 1-150 gr. She rested quietly with good pulse, warm extremities, very little nausea and not much pain until 3.45 P.M., when the nurse noticed the pulse getting weaker; at 4 P.M. pulse 100 and very weak. When I arrived at 5 P.M. pulse was 116 and very weak. Patient was bathed in cold perspiration, temperature 97. This patient had had none of the ordinary causes of shock as loss of blood, prolonged operation, handling or exposure of intestines, but she had a large uterine fibroid removed, causing more or less negative pressure in the abdominal cavity, and she had been subject to nervous weak spells for years. I had been exceptionally particular about keeping the patient's legs warm after the operation and ordered the morphine and atropine, at the same time remarking to the nurse that I thought it beneficial to prevent shock as well as making the patient more comfortable. But notwithstanding the warmth and morphine, she passed into the condition of shock.

It was very difficult in this case to differentiate between shock and hemorrhage. The foot of the bed was elevated about sixteen inches. Eight ounces of hot, black coffee was given by rectum every four hours, alternating it with 8 oz. of salt solution; digitaline 1-100 gr. was given hypodermatically every four hours; extremities were kept warm as possible. Some fear that it might have been due to hemorrhage deterred me from giving salt solution intravenously or subcutaneously.

I had to leave the hospital at 8.30 P.M., at which time her pulse was more faint, scarcely perceptible, but rate 124, and respirations were more rapid and distressing. Patient felt very faint and asked for heart stimulants; she continued to fail and by midnight pulse could only occasionally be felt at the wrist. Dr. Treadway, the house surgeon, was called to see her at 2 A.M. and again at 4 A.M. and could not find any pulse in either wrist at either time. The nurses could not find any pulse at 6 or 7 A.M. and patient's face was blanched and respirations were entirely costal and very distressing. Patient was vomiting some green bile. The nurses and house doctors were looking for her to die any time after midnight. I arrived at the hospital at 8 A.M. and found her barely alive; no pulse could be found at either wrist, and breathing was very difficult and rapid. Her face and lips were blanched. The foot of the bed was still on chairs; I had almost given up hope. I ordered a pint of normal salt solution subcutaneously under the breast and at once took two silkworm-gut sutures out of abdominal wound, and with sharp-pointed scissors and probe pried open the fascia and peritoneum and could see the glistening omentum and intestines, showing no hemorrhage or peritonitis. I at once, with sterilized glass tube of one-third inch diameter inserted into the abdominal cavity to the distance of four or five inches up behind the omentum and transverse colon, allowed one pint of hot normal salt solution to run in rapidly (time about six seconds). She did not have much pain during the first few seconds of the time, but had a great deal during the last few seconds. Abdominal cavity now seemed full. The glass tube was removed quickly and no solution allowed to run out. A narrow strip of gauze and adhesive plaster was applied. I quickly felt the wrist and found a distinct regular pulse of full strength, but radial artery had only one third normal caliber after an absence of the radial pulse for seven or eight hours. This pulse did not disappear or weaken again, but the radial arteries gradually increased in caliber all day, and at 5 P.M. were of normal size. The abdominal binder was kept tight all day. The salt solution under the breast was apparently not absorbed until after the pint of hot salt solution was put in the abdomen nor until after the pulse returned. The return of the pulse was instantaneous or must have been within one or two minutes of the shock and pressure of the hot solution run into the abdomen. Foot of bed was put down on the level, off the chairs, just before the salt solution was put under the breast and the hot solution in the abdomen, showing that elevation of the foot of the bed was probably of little or no use.

Lawson Tait in 1887 advanced the introduction of large quantities of sterile water into the peritoneal cavity before closing the abdomen while the patient was still under the anesthetic. This has been done since that time by many surgeons. Crile states that this method is equivalent to introducing saline solution by subcutaneous infusion. Crile also states that this is a good thing to do at the end of an abdominal operation that is attended by profound shock. But this putting salt solution into the abdominal cavity when the patient is under the anesthetic, the reflexes being depressed, is an entirely different matter from the treatment I recommend. Nowhere can I find in the literature any suggestion or intimation of this treatment of abdominal surgical shock. Although I have as yet only tested it on one case, the reaction was so marked, so immediate and permanent, and the best and latest knowledge of the physiology of the vasomotor nerve mechanism together with the clinical picture of the case I reported, convince me that this treatment is more rational than any yet advocated. But the surgeon must see that every detail of the treatment is carried out accurately and recovery not prevented by too many hypodermics.

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THE DIAGNOSIS OF ULCER OF THE DUODENUM.

BY E. A. CODMAN, M.D., BOSTON,

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(Continued from No. 23, p. 822.)

CASE XXIV. Mr. L. W. P., age fifty. Shoe store. Oct. 28, 1903. Massachusetts General Hospital. Vol. 474, p. 5; vol. 603, p. 104; vol. 593, p. 100.

First note at the hospital is on Oct. 28, 1903. He then stated he had had stomach trouble for past twenty-five years. The last fifteen months had been getting worse. Most distressing symptoms were pain in the stomach at night, gas in the stomach and bowels and frequently vomiting "during distress spells," which usually occurred every week or so. Vomits from a quart to a pint yeasty sour material. Has seen such things as peas and blueberries in vomitus when he had not eaten them for several days. Four weeks ago passed a mucous cast by rectum 18 inches long. Was jaundiced for a whole year between July, 1902, and July, 1903. Two weeks ago he passed a pint of brown-black liquid feces. Had never vomited blood or passed it by rectum. Has lost 17 lb. during the last year. Has passed a number of mucous casts. Examination negative except for visible peristalsis. Gurgling and splashing. No blood in stomach contents.

Treated in medical wards by stomach washing and frequent feeding, so that on Nov. 8 he said he felt better than he had for two years. There was evident dilatation and the residue varied but tended to diminish. On Dec. 12 he was sent home relieved but not well and to consider operation. The diagnosis was dilatation and ptosis of the stomach.

He returned on April 1, 1904. "Since leaving the hospital has been fairly comfortable and improved considerably, gaining 26 lb. For the first three weeks washed his stomach out daily and has continued to do so at intervals since.

On April 16 a laparotomy was done, "stomach somewhat dilated, large plexus on greater curvature, marked cicatrization with adhesion in pyloric region; pylorus not patent to finger invaginating stomach wall." A 16-inch loop anterior gastro-enterostomy was done with a bone bobbin. A vicious circle followed.

Autopsy No. 1205, April 26, 1904.

Anatomical diagnosis. — General fibrinopurulent peritonitis; ulcer of the duodenum; slight fibrous endocarditis of the mitral valve; slight atheromatous endocarditis of the aortic valve; gastro-enterostomy; streptococcus septicemia; arteriosclerotic degeneration of the kidneys.

At a point about 25 cm. from the commencement of the jejunum there is an anastomosis established between the stomach and the jejunum. The anastomosis is situated in the lower portion of the anterior wall of the stomach a little above the median line of the greater curvature and 14 cm. from the pylorus. The anastomosis is tight to water under tap pressure. The outer row of sutures between the jejunum and the stomach in the situation of the anastomosis presents here and there minute collections of pus. The pus in these situations generally does not extend for any distance into the tissues, but at one point there is a small pocket of pus which extends a short distance into the tissues. The wall of the jejunum at this place shows a small, rather sharply defined area to which purulent material is adherent. The purulent material is present in well-marked amounts among the coils of the first portion of the jejunum. In making the anastomosis the jejunum is brought up over the transverse colon.

The stomach is not enlarged, but, on the contrary, is more or less contracted down. On section, the mucosa shows well-developed rugæ and otherwise is not remarkable.

The communicating opening between the stomach and the jejunum is about 3.5 cm. in greatest diameter and easily admits the passage of the middle finger. The pylorus is small and barely admits the passage of the closed blades of a small pair of scissors. The duodenum, on section, contains very little material and its mucosa is not remarkable except that at a point just below the pylorus, posteriorly and laterally to the right, there is an irregular, rather deep loss of substance about 1.5 cm. in greatest dimension. The margins of this ulcer are considerably undermined and the margins of the base extend into the wall of the duodenum from 2 to 5 mm. beyond the edges of the opening, giving to the ulcer a pocket-like structure. The base of the ulcer is fairly smooth, but in one or two places presents small blind dimple-like depressions. There is some fibrous thickening in the tissues at the base of the ulcer and the common bile duct extends across immediately beneath it but is not involved, and there is no evidence anywhere of perforation of the ulcer.

CASE XXV. Mr. W. P. P., age forty-two. Clerk. April 2, 1904. Massachusetts General Hospital. Vol. 472, p. 237; vol. 603, p. 80.

Has had stomach strouble with dyspepsia and gas for seven years. Worst in last six months. Has been treated in Out-Patient Department for gastric dilatation and hypo-acidity (hyper?). Uses the stomach tube himself. This morning, at 9 o'clock, was taken with suddensevere pain in epigastrium, vomited, etc.

A laparotomy was done. "Stomach lay beneath opening, and on its anterior aspect close to the pylorus was a perforation about ¼ inch in diameter. Beneath this perforation in the stomach a firm mass was felt, size of an egg, situated close to pylorus. Mass thought to be cancer." An enterostomy was done and the region of the perforation drained. The patient died on the thirty-ninth day apparently from sub-diaphragmatic abscess. The ulcer was in the duodenum.

Autopsy No. 1213.

Anatomical diagnosis. — Subdiaphragmatic abscess; abscess of the lower lobe of the right lung; arteriosclerosis of the abdominal aorta; cholelithiasis; obsolete tuberculosis of apical pleuræ; ulcer of duodenum; laparotomy wounds, one of which communicates with the jejunum; skin graft (operation in this case for perforation thought to be in stomach).

Stomach large and its anterior wall a short distance above the pylorus is firmly adherent to the abdominal wall at the base of the wound in the median line of this wall previously mentioned. The anterior margin of the right lobe of the liver presents some fibrous adhesions to the anterior abdominal wall in this region. On section, the mucosa of the stomach shows nothing worthy of note. The duodenum, on section, presents at its upper portion, immediately below the pyloric ridge, which is well marked, two parallel thickened lip-like folds of mucosa which extend around the wall and situated between which there is a smooth grayish fibrous band-like depressed area about 1 cm. in greatest width. This area narrows to a point in the wall of the duodenum just below the pylorus, at which point there is a small scar-like depression in the outer surface of the duodenal wall with faint radiating scar-like lines extending through the fibrous-like area which is situated anteriorly and laterally to the right in the wall of the duodenum.

CASE XXVI. Mr. E. H., age forty-nine. May 20, 1904. Massachusetts General Hospital. Vol. 97, p. 15.

Previous history not given. "Three weeks ago began to have considerable indigestion of a rather definite sort accompanied by some pain and distress in the epigastrium which radiated down into both loins. Has noticed nothing abnormal about stools. Has never vomited until yesterday morning. Night before last he was taken with a sudden very severe sharp pain, chiefly in epigastric region, but which also radiated towards flanks. The abdomen was rigid and tender in the right upper quadrant."

Operation. — On opening the peritoneum no free fluid, but omentum and intestines found matted together over gall-bladder region, localized abscess in flank and perforated duodenal ulcer. Ulcer infolded with chromic catgut and reinforced with omentum. Convalescence normal.

CASE XXVII. Mr. E. P. D., age twenty-four. Bookkeeper. May 30, 1904. Massachusetts General Hospital. Vol. 471, p. 81.

Never had similar attack before present one, but has had "indigestion" for three years. Two days ago sudden pain in epigastrium, which has been continuous and severe since. Diagnosis supposed to be appendicitis and the appendix was removed, but appeared normal. Second incision was made from the ensiform to the umbilicus. Perforation in the anterior wall of of the duodenum just below the pylorus and closed. Good convalescence.

CASE XXVIII. Mr. W. A. P., age thirty-three. Mill hand. Dec. 17, 1904. Massachusetts General Hospital. Vol. 494, p. 269.

Has always had good health until six years ago, when he was seized with sudden acute pain in abdomen. Fainted and was unconscious for over an hour. After this was sick abed for one week with nausea and vomiting. Vomiting not characteristic. Since then patient has had several such attacks at irregular intervals and of same nature. No exciting cause known. In this time has vomited blood on four different occasions and once or twice blood has poured freely into mouth from below. Pain is sometimes dull, sometimes sharp, and has been in different parts of the abdomen, but of late is localized to left side. Pain sometimes comes on shortly after eating, but is mostly without relation to food. Stools have often been dark and have contained what resembled clotted blood. Patient has been unable to work steadily because of pain and weakness. No marked loss of weight. Of late, pain has been worse. Bowels regular.

Examination. — Abdomen flat, tympanitic, soft. Just to left of umbilicus, under the left rectus, is felt an indefinite solid mass size of hen's egg and not moving with respiration. Tender on pressure, apparently adherent to posterior abdominal wall. Tender on mass. Has lost weight, 245 to 110.

Operation, Dec. 28. Few filmy adhesions about stomach. Nothing except in second portion of duodenum where posterior wall contained a firm indurated mass size of English walnut. Short loop posterior gastro-enterostomy. Immediate relief of symptoms. Discharged Jan. 21, 1906.

This patient died on Dec. 12, 1908, of "consumption" according to the records of the town of Bridgewater.

CASE XXIX. Mr. D. C., age forty-five. Laborer. March 15, 1905. Massachusetts General Hospital. Vol. 504, p. 53.

For the last ten years has had trouble with his stomach. Attacks occur very far apart, at other times coming on frequently. Pain comes on at first gradually, increasing in intensity and is located for the most part in the lower abdomen. Pain usually comes on several hours after the ingestion of food, and lasts for hours rather than days, and is worse at night. Most severe attack two and a half months ago, and has been wretched since with pain and vomiting.

Operation March 17, 1905. Mass found in duodenum. On the stomach wall there was a scar as if from an old ulcer. Sixteen-inch loop anterior gastro-enterostomy. Replied by letter one year later. Good result.

On June 7, 1909, his wife reports that he is working every day and feels as well as ever.

CASE XXX. Mr. E. C. C., age fifty-seven. Collector for installment house. May 1, 1905. Massachusetts General Hospital. Vol. 623, p. 110; vol. 508, p. 163.

Always well until five years ago, when he began to complain of weakness and dull ache in epigastrium, "occurring every thirty minutes and lasting about ten minutes." After four or five weeks the cramps passed off. Three weeks ago the third attack began. Cramps apt to come on at night without regard to eating or defecating. When the pain is intense may vomit two or three times watery or greenish material which relieves the symptoms. Bowels regular except in these attacks, when he has small movements, no odor or blood. An indefinite mass was felt in the left side of abdomen. The diagnosis was thought to be malignant disease of the intestines. The stools were examined and blood found, marked peristalsis could be seen through the abdominal wall. The pain was somewhat relieved by enemata.

On May 13, 1905, at three in the morning, he had sudden abdominal pain. His temperature was normal and he was relieved by hot water bag. On May 16 he was operated on and a hard nodular mass felt in the head of the pancreas which was suspected to be cancer. Adhesions in the neighborhood. "Mass is size of hen's egg, hard and nodular, and occupying whole head of pancreas." He failed and died two weeks later.

Autopsy No. 1386.

Anatomical diagnosis. — Chronic interstitial nephritis; chronic pericarditis; arteriosclerosis of the coronary arteries; chronic myocarditis; arteriosclerosis of the aorta and its great branches; slight fibrinous endocarditis of the mitral and aortic valves; slight hypertrophy and dilatation of the heart; ulcers of the duodenum; diverticulum of duodenum; chronic peritonitis; chronic perisplenitis; acute general peritonitis; erysipelas of the face; operation wounds; questionable obsolete tuberculosis of the pleuræ of the apices; streptococcus septicemia.

The stomach shows considerable dilatation, but on section its mucosa is not remarkable.

Section of the duodenum discloses two well-marked ovoid losses of its substance situated immediately beneath the pyloric ridge and nearly extending around the circumference of the intestine. One of them measures 3.5 cm. by 1.5 cm., and the other 3 cm. by 1 cm. They have smooth rounded overhanging edges and smooth bases and extend to the muscular coat. A large vessel extends just beneath the base of one of the ulcers and at one point in the base there is a minute, apparently open vessel. Cross sections of the ulcer, however, show minute thrombus-like plugs in them. Between the head of the pancreas and the wall of the duodenum there is a slight amount of fibrous-like tissue. In the median line of the duodenum about 3 cm. below the duodenal papilla there is a small pocket-like diverticulum given off, about 2.5 cm. in length and 2 cm. in circumference, which extends backward and slightly upward in the direction of the head of the pancreas. The pouch ends blindly and its mucosa is directly continuous with the mucosa of the duodenum. The mucosa of the intestine elsewhere is not remarkable.

Case XXXI. Mr. J. A., age thirty-two. Motorman. June 19, 1905. Massachusetts General Hospital. Vol. 114, p. 207; vol. 627, p. 48; vol. 114, p. 257.

Twelve years ago, dysentery with bloody stools. Last two years troubled with indigestion, feeling of weight in stomach after eating. Occasional vomiting. Never blood. Never had jaundice. Twenty-four hours ago discomfort in stomach which soon became severe but went to work as usual. Pain persisted and he vomited once or twice. Slept fairly well in spite of pain. At the time of his entrance at the hospital the abdomen was full and tympanic, liver dullness was present and slightly enlarged downward. There was slight rigidity, especially to right and high up. Temperature, 101.2; pulse, 88; whites, 21,000. He was sent to the ward. During the evening he had pain in the left shoulder blade which could not be accounted for.

On June 21 he was seen by the medical consultant, who was unable to make a diagnosis. On June 25 the stools looked like old blood and the guaiac test was positive. Patient was transferred to the medical side with a question of diagnosis. He was perfectly comfortable until about 10 o'clock in the evening, when he vomited about 14 oz., containing clots and dark red blood. Felt weak and anxious. Temperature dropped and pulse went up. He was again transferred to the Surgical Service. Bloody movements continued. On June 29 he was operated on and adhesions and a small abscess found in the neighborhood of the first part of the duodenum, and evidence of an ulcer in the wall of the latter. This had apparently closed with fibrin and no gas was escaping. The abscess was drained and a posterior gastro-enterostomy done. On July 21 he was discharged well. Had had no vomiting or bloody stools since the second day after operation.

Case XXXII. Mr. E. A. H., age twenty-five. Farmer. Jan. 25, 1906. Massachusetts General Hospital. Vol. 638, p. 12; vol. 670, p. 145; vol. 565, p. 9.

"For the past fifteen years has had pain in region of right costal border which he thought was cramps in the stomach. The pain has never been constant, the attacks lasting from three to five days, then gradually subsiding, leaving him much used up. For the past three years pain has been sharply localized in this region, so that it could be covered with one finger. Attacks have been more frequent the past year (one week to one month, especially if he did heavy work or ate hearty food). Before one year ago average number of attacks was two per year. Pain is not constant during the attacks, but comes in spasms and only relieved by taking 'pain killer' and hot water bag, leaning over back of a chair or by pressure over the part. During two attacks vomited a greenish material. The last attack the pain radiated to the back, never to the right shoulder. Three years ago after an attack noticed a bunch on one side (he does not remember which side) which was tender and gradually disappeared. The attacks of severe pain last from fifteen to twenty minutes, the duration of the whole being about two days. 'Yellow' three years ago and thinks he has been so since. The worst attacks are accompanied by chills and later feels feverish. Last attack was last week and was slightly yellow then. Tired after the attacks. Has had to give up work during the attacks, and for the past year has done light choring, as milking and caring for the herd. Vomited during the attack last week following medicine taken to relieve the pain, etc." "Sleeps well except if he eats solid food, when he has pain in the stomach. No pain in the chest. No cough. Walking on hard pavements or hard floor causes pain in the region above mentioned, especially during the attacks. Shortness of breath. No palpitation. Appetite always good between attacks. No nausea or vomiting. Bowels constipated." "Loss of strength during the attacks; in between them he feels as strong as ever." Heavy lifting or work that requires stooping over following a hearty meal tends to bring on an attack in two to three hours. (The question of "hunger pain" does not appear to have been asked.) Examination of abdomen normal.

He was discharged on Jan. 29, and told to come in during an attack.

May 27, 1907, a year later, he appears again with perforation. "Since leaving the hospital, Jan. 29, 1906, has had more or less pain nearly all the time. Brought on by heavy work or eating heavy food; localized in right upper quadrant under costal margin. Worst attack ten months ago, lasted four hours. In bed a week at that time. For six weeks this spring has had steady pain; often severe enough to keep him awake at night. Has not been jaundiced for four years, but urine always high colored. After an attack almost black. No change in color of stools. In three months has lost 30 lb. and much strength. Examination of abdomen normal except for tenderness on deep palpation over gall-bladder region.

Operation May 29, 1907. Numerous light adhesions about gall bladder, which was much thickened and adherent to the duodenum. This adhesion was freed and disclosed a perforation of the duodenum to which the fundus of the gall bladder had adhered, sealing it. Perforation closed with Pagenstecher. Post-gastroenterostomy. Cholecystotomy. Streptococcus infection and died on June 4.

Autopsy No. 1941.

Anatomical diagnosis. — Operation wounds (gastroenterostomy, suture of the wall of the duodenum, cholecystotomy); ulcer duodenum; peritonitis; sero-fibrinous pleuritis (double); sero-fibrinous pericarditis; streptococcus infection.

The serosa of the intestines shows much injection in places, and here and there is coated with fine grayish fibrinous-like material. An anastomosis is established by the posterior route between the very first portion of the jejunum and the stomach. The anastomotic joint is intact and fluid material passes freely from the stomach into the small intestine. The stomach, on section, other than described, is not remarkable.

On cutting through the anterior wall of the duodenum in the region of the sutures mentioned there is disclosed on the free margin of the wall laterally and to the right a large portion of a loss of substance extending well into the submucosa. This portion measures 3 cm. in length and about 7 mm. in width. Its margins are beveled and the base gray-white and fairly smooth. The intestines on section below the point of attachment are not remarkable.

Case XXXIII. Mr. T. C., age fifty-three. Stonecutter. Jan. 29, 1906. Massachusetts General Hospital. Vol. 638, p. 18.

Had been treated in the Out-Patient Department of Massachusetts General Hospital since Sept. 14, 1903, at which time he had suffered from "stomach trouble" for six years. Diagnosis was made of dyspepsia and myocarditis. There is a long history in the Out-Patient Department records during 1903, 1904 and 1905. The examinations with test meals, etc., were constantly negative. During this time he also had symptoms of bad heart, with dyspnea, etc. The record alternates between stomach complaints and heart symptoms. The patient was evidently in very poor general condition.

On Jan. 29, 1906, he entered the hospital with symptoms of severe loss of compensation and also abdominal distress. On the 30th, while in the hospital, he woke at two in the morning with severe abdominal pain. Not relieved by morphine. Seen the next day by the surgical consultants, who thought his condition too poor to stand operation.

Autopsy Feb. 1, 1906. No. 1586.

Anatomical diagnosis. — Ulcers of the duodenum, with perforation of one of them; general fibrinopurulent peritonitis; arteriosclerosis; insufficiency of the aortic, mitral and tricuspid valves; hypertrophy and dilatation of the heart; chronic passive congestion; anasarca; arteriosclerotic degeneration of the kidneys; obsolete tuberculosis of the lungs and bronchial lymph nodes.

The duodenum, on section, presents in the mucosa of the anterior wall laterally and to the right a small loss of its substance. This loss measures 1 cm. in diameter and presents slightly elevated rounded margins which are beveled down to the margins of the small opening previously mentioned as present in the wall of the duodenum in this situation. The base of the ulcer near the margin of the opening is grayish-yellow in color and rather necrotic looking. The mucosa at a point directly across the folds of the duodenum about 3 cm. from the ulcer mentioned and in the posterior wall on the left shows another small rather shallow loss of substance roughly triangular in shape. It measures about 4 mm. in greatest dimension. The ulcers are situated about 1 cm. below the pylorus. The small intestine is considerably distended and contains a large amount of foul fluid material. On section the mucosa presents no lesions.

Case XXXIV. Mr. H. D., age fifty-nine. Salesman. March 23, 1906. Massachusetts General Hospital. Vol. 127, p. 173.

Never sick before. Never jaundiced. Three weeks ago began to feel that food distressed him and had "empty" feeling. Appetite poor. Never noticed blood in stools. Three hours ago sudden abdominal pain and vomiting. There was blood in vomitus.

At operation a perforation supposed to be in the stomach was found and closed. A posterior gastroenterostomy was also done. The patient died on the 25th with acetone symptoms and glycosuria.

Autopsy No. 1643.

Anatomical diagnosis. — Ulcer of the duodenum (sutured perforation); operation wounds (gastroenterostomy); peritonitis; glycosuria; chronic interstitial pancreatitis.

Stomach: On section the mucosa of the stomach presents no lesions, except the wound of operation. The mucosa of the duodenum at a point very close to the pyloric ridge, and situated antero-laterally to the right, shows a small loss of its substance, measuring at least 8 mm. in diameter. The margins of this ulcer are rounded and smooth. The base is slightly irregular and in its central portion slightly reddish and ragged. This part of the base is situated immediately beneath the sutures previously mentioned as being present in the wall of the duodenum at this point.

The intestines, on section, present no lesions other than a few very slight shallow losses of substance in the mucosa of the rectum evidently stercoraceous ulcers.

Case XXXV. Mr. B. O'C., age forty-five. Longshoreman. Massachusetts General Hospital. Vol. 652, p. 65; vol. 134, p. 97. Aug. 30, 1906.

A case brought in moribund and which was not operated on.

Autopsy No. 1774.

Anatomical diagnosis. — Perforated ulcer of the duodenum; general peritonitis.

In the posterior wall of the duodenum, 1 cm. below the pylorus, there is a punched-out loss of substance in the wall rather circular in outline and 1 cm. in diameter. This loss extends completely through the wall and through it the contents of the stomach and duodenum pass into the peritoneal cavity. A short distance from the periphery of the ulcer on the peritoneal side there is a margin of fibrinous exudative material, but immediately about the ulcer there is none. On the mucosa side, the margins of the ulcer are rounded and there is only at one place, and this very slight, if any, beveling of the margins. The intestine, on section elsewhere, is not remarkable.

Case XXXVI. Mr. J. J. B., age twenty-eight. Salesman. Nov. 26, 1906. Massachusetts General Hospital. Vol. 547, p. 157.

History obtained May 13, 1909.

Always used to have pain about navel when a boy (used to call it bellybutton ache), often higher than navel. He began work at sixteen in a carpet store and has worked at it ever since; now traveling salesman. Habits like most young men. Has taken more or less liquor at times, cocktails, etc. When about twenty, used to have hunger pain a great deal. There was tenderness at time of pain and also bloating. No vomiting. Had been well for several years until Nov. 22, except that four weeks before he had had a mild attack like the one for which he was operated on. Hospital records state that there was also a mild attack nine weeks before. At the time of his hunger pain never tried soda, but food often relieved him, but not always.

Nov. 29, 1906, he entered the hospital with acute perforation. A median incision over the umbilicus down to the pubes was made and the abdomen thoroughly explored and the appendix found relatively normal. As the trouble evidently started in the region of the duodenum, another incision was made along the edge of the ribs; perforation found in the "second part of the duodenum" closed with fibrin. The lower incision was closed up with a small drain. Drainage was also made from the upper incision, which was partly closed by suture. The perforation was not infolded.

After operation he went to the country to rest and was relatively well for ten weeks. In November he returned to work and since that time has had severe epigastric pain occasionally, particularly several hours after meals and at night. At the time of the pain there is tenderness of the epigastrium, and on one occasion he vomited after taking salt and water for the purpose. Had noticed no blood in his stools at any time. His pain has been severe enough to greatly interfere with his work, and he desires an operation if it can be expected to cure him. He was referred again to the hospital for study. Under rest and careful dieting the symptoms quieted down. The guaiac test of the stools was negative and he was discharged with advice to rest, diet and return if the symptoms persisted.

(To be continued.)

Clinical Department.

HYSTERIA, WITH REPORT OF A CASE.

BY D. PEARCE PENHALLOW, M.D., BOSTON.

In modern hospital practice, as well as in private practice, so many cases of nervous disorders are encountered that it was thought that the following paper on hysteria, with the report of a rather well-defined case, might prove of interest. The case was first seen in Dr. Robey's clinic at the Boston City Hospital, and was carefully followed for many months.

DEFINITION.

Hysteria is a psychoneurosis characterized by disorders of the will, perversion of the inhibitory powers of consciousness and by partial cessation or exaltation of the individual functions of the brain.

ETIOLOGY.

Little is known of the etiology of hysteria. At first it was believed to be due to the generative organs, and later was thought to be caused by affectation, conceit and other attributes of puerility and incomplete development. The most modern view, however, considers it simply as a psychoneurosis. It occurs most frequently in women, and usually appears first at about the time of puberty, but the manifestations may continue until the menopause or even until old age. It is by no means rare in children, and may also appear in males of almost any age. When it occurs in men, the manifestations are apt to be more severe than in women. Of late years it occurs commonly in hospitals, and even in private practice in this country. This is probably due to the great influx of Jews, who are particularly prone to the manifestations of this as well as to all other hereditary degenerative nervous diseases.

Histories of witchcraft in New England and of fanatic religious revivals in the south and west of our country give ample proof that the most pronounced forms of hysteria have occurred in this country from the time of its settlement.

Among the predisposing causes other than heredity and education may be mentioned the emotions of various kinds, such as fright or worry. Physical causes are also supposed to be a factor, as, for instance, ovarian and uterine disorders, the rectification of which sometimes cures the disease. There is also a group of cases caused by severe traumata, such as a railroad accident, which are known as acute hysteria, and these are of importance from a surgical point of view, as an actual injury may or may not exist.

Hysterical individuals are degenerates, but the greater number belong in the class of superior degenerates rather than of inferior degenerates. The disease is closely allied to neurasthenia and hypochondriasis, especially the forms of these neuroses that are not entirely acquired. Hysteria is rarely, if ever, purely an acquired neurosis. Although there are a large number of factors which seem to play an important rôle in the immediate occurrence of hysteria, these agencies could not cause the phenomena of the disease were it not for the inherited psychopathic predisposition. Most important agencies are unquestionably caused by mental and moral traumata.

The various and complex symptoms associated with hysteria may, perhaps, best be illustrated by means of a case:

A. M. K., widow, age forty, came into the outpatient department on April 18, 1906, with the following history:

Family history. — Father died at seventy-nine of apoplexy. Mother died of a "tumor." Four brothers and sisters living and well. No history of nervousness in the family.

Past history. — Has never been particularly well. Always has worked hard since she was eleven years old. Eighteen years ago, following the birth of her first child, she had a protracted convalescence, from which time she has never been so well. In October, 1901, began to have pains of increasing severity in her back and abdomen. Considerable soreness and tenderness in left ovarian region. At this time also felt weak and run down, and complained of various nervous symptoms, such as numbness of feet and headaches. Was admitted to the gynecological service of the Boston City Hospital at this time, and vaginal examination made after entrance showed a retroflexed and retroverted uterus.

At the operation the appendages were found to be normal, and the malposition of the uterus was corrected by means of a ventral suspension.

Has been a widow for the past four years and during that time has been the sole support of a daughter, who is now fourteen years old, and who is herself not especially well or strong. During the past four years has had considerable care and worry.

For the past three weeks has had a sharp pain in the back of her head. Pain is worse at night and prevents her from sleeping. Feels chilly at night. Sometimes also has pain in left inguinal region and in left chest. She says that there is a constant tingling and feeling of numbness over the whole of the left side of her body. Gets tired and out of breath very easily. Work necessitates considerable bending over, and she gets faint and dizzy. Perspires very easily and has hot flushes occasionally. Patient states that she is very nervous and that three years ago she had a burning sensation in the left side of her face, that her lips were drawn, that she could not close her left eye and that she had difficulty in talking. She sometimes now feels a lump rise up in her throat, loses all power of movement and falls to the floor, but does not completely lose consciousness. Associated with these attacks is severe pain in the top and back of her head and a slight twitching of left side of neck and left shoulder, together with a feeling of stiffness in the neck. Habits are good. Menses are very irregular and are attended with considerable pain and often with menorrhagia. Sleeps poorly. Appetite poor. Digestion good. Bowels constipated. Micturition normal. Has lost considerable weight.

Present examination. — Fairly well-developed but very nervous woman. General condition fair. Color fair. Slight tremor of left upper lip noticeable. Eyes: Pupils equal and react; vision of left eye blurred; vision of right eye normal. Tongue: Slight white coat; deviates to right when protruded; throat negative. Pulse: Regular; fair volume and tension; eighty. Heart: Area not enlarged; no murmurs made out. Lungs: Auscultation and percussion normal. Abdomen: Soft and tympanitic throughout; no tenderness; no masses; linear scar in median line below unbilicus, three inches in length. Knee jerks: Equal and very lively. Left hand and wrist cold, and there is considerable pain in left shoulder when the arm is moved. On percussion of chest and back, hypersensitive areas were found over nearly all of left back and upper part of left chest. Grasp of left hand very weak. Large amounts of visible perspiration from axillæ.

Patient was given sodium bromide, gr. x, three times a day and was told to report again in a week.

April 28. Patient returned and said that she felt somewhat better, but that she still shakes and has her hot flushes. Is sleeping better than formerly and the pain in her head has gone. Had two attacks on April 20, when she became semi-conscious. Knee jerks are unchanged. Tongue protrudes straight. Grasp of left hand is stronger than at last visit. Still has tingling on left side. Can hear a watch at a distance of eighteen inches with her left ear and at a distance of three feet with her right ear. No tremor on left side of face today. Patient was told to increase the bromide to gr. xl if she could not sleep, and to report in another week.

May 3. Feels much better and is sleeping more. Has been troubled with diarrhea for the past four days. Neck still feels stiff. Said that she had a slight "globus" yesterday, but no attack. Complains that left leg began to burn and swell on April 30 and that she also had shooting pains in the calf. Pain in occiput much relieved since she has been sleeping. Appetite is improved. On examination the left foot was found to be cold and somewhat cyanotic, but pulsations in the dorsalis pedis and posterior tibial arteries were felt. No strength in left hand to-day. To continue treatment and to report in another week.

May 10. Patient looking better. Left foot much improved; toes not cold; color fair. No trismus in face. No strength in left hand. Stiffness in neck and shoulder gone. Knee jerks not quite so lively. Massage to be tried.

May 14. Had an attack yesterday. Does not feel so well as at last visit. Feels discouraged.

May 16. Is beginning to feel dizzy again, and pain in head has returned. Throat slightly sore. Grasp of left hand better than at last visit. Patient was given a gargle for her throat. Also given asafetida, 3 gr., and strychnia, 1-60 gr., in capsules three times a day. To continue the bromides also.

May 22. Still has pain in side, but is feeling better. Has had no attacks lately. Patient looks much improved. Pain in foot has gone. Grasp of left hand stronger. Field of vision tested. Knee jerks not nearly so lively. Vaginal examination was made, but nothing was found in the uterus to account for the hysterical condition. To continue her treatment and to come back tomorrow to be massaged.

May 26. Comes in for massage. Is feeling worse and is discouraged. Has developed a paralysis in right arm. Retrograde manifestations probably due to the fact that her minister told her that she was not doing well, and that it would be a year or more before she recovered, if she ever did. Feels better for being massaged.

It was thought that if she could be admitted to some sanatorium where she could be under constant supervision and treatment regulated from day to day it would be much more beneficial for her, and arrangements were accordingly made, with the result that she was admitted to an institution on July 10, 1906. She remained under treatment until Dec. 11, 1906, when she was discharged unimproved. Her symptoms while under observation were practically the same as when she was in the out-patient department, although she seemed to be much more depressed and at times rather garrulous. The treatment which she underwent consisted essentially of general tonic measures, hydrotherapy, electricity and massage.

DIFFERENTIAL DIAGNOSIS.

In the diagnosis of this case the important things to be considered were: (*a*) Hemiplegia (hemorrhagic); (*b*) lateral sclerosis; (*c*) hysteria.

Hemiplegia. — The fact that all of her symptoms were referable to one side was at first rather suggestive of a half-sided paralysis, but a careful physical examination, in connection with a careful study of the case, tended to rule this condition out. In the first place, the paralyses were all on the left, but when the tongue was protruded it constantly deviated to the right, which fact was in itself rather against an organic hemiplegia. Another condition against a hemiplegia was the fact that the knee-jerks were equal and very lively on both sides. In a true hemiplegia these would be either absent or diminished on the affected side during the hemorrhage and later increased. Organic hemiplegia can, therefore, be ruled out.

Lateral sclerosis. — In this case lateral sclerosis could easily be ruled out, as the legs are usually first affected, and there is a feeling of stiffness and weakness in the leg so affected. There were no such symptoms in this case, so we may safely assume that it was not a lateral sclerosis.

Hysteria. — After a careful study of the case and of the various symptoms which it presented, this was thought to be the most probable diagnosis. The variations in the paralyses from day to day tended to show that they were not of an organic nature. With a history of these various attacks of semi-consciousness associated with pain in the head and a *globus hystericus*, taken in connection with the other findings, the diagnosis of hysteria was finally made.

In this case no definite etiological factor could be found to account for the condition. It might possibly have been caused by the hard work to which she had been subjected, and then the additional worry incident to her being the sole support of herself and family for the past four years. Again, it may have been the pre-existing surgical condition, namely, the retroverted and retroflexed uterus and the still earlier protracted convalescence following the birth of her first child, from which she had never fully recovered.

TREATMENT.

The treatment in this individual case was rather unsatisfactory, as conditions ideal for the treatment of hysteria could not be obtained while she was an out-patient. Even after she was under constant observation and could be treated daily, the improvement was slight, if any.

Most writers agree fairly well as to the treatment of hysteria, and the consensus of opinion seems to be as follows: The physical condition should be carefully looked into and the life of the patient be so regulated as to insure order in everything. Congenial occupation is suggested as a remedy for many of these manifestations. All functional disorders should be attended to and remedied. It is especially important that the action of the bowels should be regular. Hypnotism is also recommended, and psychotherapy plays a very important part in the general treatment.

Among the drugs, there are few which are of service in the treatment of this condition. Valerian and asafetida are often used with good effects. Morphia should never be given. Bromides may be used as a nerve sedative where there is much loss of sleep.

Osler recommends leaving the patients alone, especially at the times of the convulsive seizure, for, as he states, "when she comes to and finds herself alone, and without sympathy, the attacks are less liable of repetition."

Hysteria should not be treated as a physical disorder, as it is essentially a mental and emotional anomaly, and the important element in the treatment is moral control. Home surroundings are not always the best for the treatment of hysteria, as the patient is surrounded by too many sympathizing friends and relatives. Weir Mitchell proposes a line of treatment from which especially good results have been obtained. It is more particularly applicable to the advanced cases which have become chronic and bedridden, and to the lean rather than to the fat, flabby hysterical patient. The treatment consists essentially in isolation, rest, diet, massage and electricity. The patient must be absolutely separated from sympathizing friends and relatives. An intelligent nurse is also a very important factor in this form of treatment. The patient is confined to bed and is not allowed to get up, or even, in the more severe cases, to read, write or to feed herself. Daily massage is given, at first for twenty minutes or half an hour, later for a longer period. This is used as a substitute for exercise. The induction current is applied to the various muscles and to the spine. The use of electricity is, however, not so necessary as the massage. The diet may at first be entirely of milk, 4 oz. every two hours. It is better to give skimmed milk, and this may be diluted with soda water or barley water, and, if necessary, peptonized. After a week or ten days the diet may be increased, the amount of milk still being kept up. A chop may be given at mid-day and a cup of coffee or cocoa with toast or a biscuit with the milk. The patients usually fatten rapidly as the solid food is added, and with the gain in weight there is usually a diminution or cessation of the nervous symptoms. The milk is the essential element in the diet, and is in itself amply sufficient.

Dubois mentions several cases of persons suffering from hysterical manifestations in whom he practically obtained cures by gaining the confidence of the patient and by the force of suggestion.

As a summary it may be said that hysteria, with its manifold symptoms and conditions, and occurring as it so often does in connection with surgical conditions, presents a complex problem to the attending surgeon or physician. Every means in one's power should be tried to combat the condition, and above all the absolute confidence of the patient must be gained and held.

Reports of Societies.

AMERICAN LARYNGOLOGICAL ASSOCIATION.

Thirty-first annual meeting, held in Boston, May 31, June 1 and 2, 1909, A. Coolidge, Jr., M.D., President; James E. Newcomb, M.D., Secretary.

(Concluded from No. 23, p. 828.)

THE ACTION OF THE RESPIRATORY MUSCLES IN THE PRODUCTION OF VOICE.

By Dr. G. Hudson Makuen, of Philadelphia.

The proper action of the respiratory muscles is exceedingly important from the standpoint of the vocalist, and it should be taught by every teacher of voice culture.

There are various methods of controlling the breath, but for artistic purposes there is but one best method, and it must be acquired by practice. There are two schools which seem to be diametrically opposed in their opinion as to the action of the diaphragm in the production of voice — the one regarding it as an inspiratory, and the other as an expiratory, muscle. The confusion arises from the fact that the diaphragm has a slight inspiratory function during passive breathing, but for purposes of vocalization, when the greatest possible amount of air must be used, and when the ribs are drawn upward and outward to the greatest possible extent, the diaphragm must be entirely relaxed during inspiration and contracted only during expiration. Its function now must be to draw the ribs downward and inward and to convert the abdominal viscera into a more or less unyielding mass, over which the contracting abdominal muscles may the more effectually pull downward and inward upon the ribs. Moreover, this downward and inward pulling of the abdominal muscles is also increased when the abdominal viscera are compressed and slightly protruded by the action of the diaphragm, thus holding in a firm and unyielding position the recti muscles to which the internal, external and transverse muscles are attached by their tendinous aponeuroses.

The precise action of these muscles in the production of voice is somewhat difficult of demonstration, and to prove the correctness of one's theory or method to those having other and preconceived notions is scarcely possible with our present instruments of precision, but it is hoped that the Röntgen method may be so improved in technic that it will soon be possible to make some kind of moving pictures of the action of the diaphragm during the process of singing and speaking. Until then I think we must accept the opinion of the physiologists who have given special attention to this subject. Among these are Drs. John Howard, A. Ransome, Charles Benson, Hutchinson, Landois, Sibson and Rosenthal. It is true there are those also who oppose the theory which I have herein advanced, but they seem to me not to have made out a good case against it.

Dr. J. H. Lowman, of Cleveland, made some remarks upon the movement of the diaphragm in the production of voice.

Dr. J. Payson Clark, of Boston, inquired whether Dr. Makuen had ever used the fluoroscope or radiograph in demonstrating the action of the diaphragm.

Dr. G. Hudson Makuen, of Philadelphia, said that Dr. Leonard, of Philadelphia, had tried to make radiographs, using Dr. Makuen as the subject, to show the difference between false inhalation and exhalation, endeavoring to produce both pictures on the same plate, but unsuccessfully.

REPORT OF A FATAL CASE OF STATUS LYMPHATICUS OCCURRING IN A PATIENT OPERATED ON FOR TONSILLAR HYPERTROPHY UNDER COCAINE-ADRENALIN INFILTRATION.

By Dr. Thomas J. Harris, of New York.

The patient was a Russian Jew aged thirty, apparently in good health. One-sixtieth grain sulphate of strychnine was administered by the mouth after a fluid lunch. One-half hour later there was injected into the tonsils one fifth of 1% of cocaine hydrochlorate in a normal saline solution containing 2 dr. of 1–1000 adrenalin-chloride freshly prepared.

The doctor states as his belief that there was retained not more than one twelfth of a grain of cocaine and from eight to ten minims of 1–1000 adrenalin-chloride — the contents of the first syringeful having escaped and been expectorated. Immediately following the second injection the patient became pale and vomited. This was followed by deep cyanosis. The operation was speedily concluded, whereupon it was discovered that he was pulseless and unconscious. Respiration continued for some time. All of the symptoms were those of thymic death.

The autopsy showed a markedly dilated right auricle and swollen right ventricle, slightly enlarged glands of the axilla and groin and a thymus gland weighing 18 gm. The cause of death was, in all probability, an over-dilated right ventricle due to the enlarged thymus gland, with the cocaine-adrenalin injection acting as exciting cause.

Dr. Thomas Hubbard, of Toledo, reported a case of death from adrenalin-chloride. He thinks this drug is used too recklessly and would advocate more care and smaller dosage when the drug is used.

Dr. H. L. Swain, of New Haven, referred to a case of enlarged thyroid gland where by the simple external application of adrenalin the gland shrank so in size that no operation was necessary, although previous to this treatment a Jackson operation had been contemplated.

Dr. J. O. Roe, of Rochester, said he would hesitate to lay all the blame in Dr. Harris' case to the use of adrenalin, suggesting that some of it might have been due to the cocaine, as he had known of several instances where there was a great idiosyncrasy to this drug.

Dr. Thomas J. Harris, of New York, did not believe that the cocaine had any part in the fatal result. He appreciates that there is often a reckless use of adrenalin, but considered that he himself had not been indiscreet in the amount administered to this patient.

NASAL AND NASOPHARYNGEAL CONDITIONS AS CAUSATIVE FACTORS IN MIDDLE EAR DISEASE.

By Dr. George A. Leland, of Boston.

Most disturbances of the middle ear come from affections or abnormalities of the nose and nasopharynx because of the loss of normal protection afforded especially by the Eustachian tube and the mechanism of its functions. Its outer end is for half an inch enclosed in the hardest bone; it is a mere slit for about one and a half inches imbedded in the soft tissues of the neck, its inner end being about three inches from the outside, at the tip of the nose. Its lumen is covered with ciliated epithelia whose motion is towards the throat and working to drive out infective agents; its mouth is pulled open by the tensor palati, the true dilator; its floor is pushed upward by the swelling of the rounded belly of the levator palati, and its posterior or cartilaginous lip is pushed backward by this same contraction and pulled backward by the retractor. These movements open its mouth, and the relaxation of these muscles, especially the levator, cause a pumping or sucking motion which clears it and, assisted by the elasticity of the membrana tympani, even sucks air and fluids from the tympanum itself. But if the region of its mouth is covered in, or pressed upon, by tumors fibroid or adenoid, or by swollen mucous membranes, then these motions are lost or curtailed and the protection afforded by normal ventilation and drainage is in abeyance, secretions cannot get out and infections can make their way in. That this protection is effective may be concluded from the rarity of aural troubles in cases when the sides of the nasopharynx are not affected by growths or swellings, and by their frequency in opposite conditions.

Earaches in children, especially under puberty, rarely or never occur without the presence of adenoids in the fossa of Rosenmüller (except from trauma), and progressive deafness in older individuals is always accompanied, and hence caused by curtailment of normal movements of the Eustachian tubes, by swollen mucous membranes in the sides of the naso-pharynx or by remains of adenoids or adhesions which block the fossa of Rosenmüller.

Hence the rational method of treatment of acute earaches (especially recurrent earaches, if they are carelessly allowed to be recurrent), especially in the young, is to restore those movements by relieving the sides of the naso-pharynx of growths, adhesions and swellings; and in older patients the treatment of earaches, of deafness due to tubo-tympanic catarrh (including effusions) and of progressive deafness even from chronic, adhesive or dry catarrh, is imperatively the same.

A second factor in the physiological protection of the middle ear is found in normal uninterrupted nasal respiration. The rationale of this is that, the introitus nasi being smaller than any other part of the cavities into which it leads (the nostrils, pharynx, trachea, lungs), with inspiration a rarefaction of air takes place and with expiration a condensation, so that there is a continuous interchange of air in the accessory cavities, and in this respect the tympanum may be considered but an accessory sinus of the nose. Hence normally the air passes to and fro through the Eustachian tube caused by this alteration of air pressure, and these respiratory movements which have been proved to move the membrana tympani by several observers are essential to the flexibility and proper function of the membrana tympani and middle ear.

These conditions point out the rational treatment, which is, in a word, to restore these sides of the nasopharynx to normal conditions and to establish nasal respiration, absolute and continuous, by removing nasal and naso-pharyngeal obstructions, and especially overcoming the pernicious habit of mouth breathing.

Certain symptoms referred to the ear are found to be caused by lesions elsewhere, and as they occur with normal as well as catarrhal ears, most certainly ears with normal or excellent hearing should not be meddled with until the remote cause has been eliminated. Among these symptoms, and the most common, are: 1. Pain, which may come from larynx, tonsils (most frequently), lateral pharyngeal lymph bands, pressure in nose, ethmoid or sphenoid regions and teeth. 2. Pressure or full feeling in the ear, reflex from intranasal pressure. 3. Tinnitus, roar or dull low-toned pulsation, from increased circulation in sides of nasopharynx, especially in fossæ of Rosenmüller; and the high-toned hiss from certain changes in the Eustachian tube in a limited number of cases. 4. Vertigo, frequently from turbinal engorgement, or from pressure in the top of the nose, from ethmoiditis or frontal sinusitis.

In this paper only certain principles have been brought forward, together with methods of treatment based on them, which have given satisfaction; many conditions and obstructive lesions have only been hinted at. There is some apparent repetition which, however, has been allowed only to lay emphasis on certain points. And the primary object of this contribution to the symposium is to again call the attention of our medical colleagues to the importance of the early recognition of conditions and lesions which may be not only of present danger to life and comfort, but which almost inevitably lead to loss of pleasure and usefulness in the future.

NASAL AND PHARYNGEAL CONDITIONS AS CAUSATIVE FACTORS IN MIDDLE EAR DISEASE.

By DR. NORVAL H. PIERCE, of Chicago.

After stating the main ways by which the middle ear may be affected by conditions in the nose and throat, the author calls attention to the fact that the most important nervous conditions are those associated with hyperplasia by adenoids and tonsils. He drew attention to the fact that important bodies of these tissues appear in the Eustachian tube itself, the so-called Eustachian tonsil. However, it is rare that the mere volume of adenoids and tonsils cause ear disease. This is largely due to inflammatory elements manifest by large quantities of mucus which these adenoids secrete. Because of inflammatory or mechanical means the ventilation of the middle ear is interfered with. He drew attention to the results of this in the middle ear, and said that here we have in tubal insufficiency the keystone of a great part of aural pathology. He questioned the theory as to the cause of the pressure vacuum established in the middle ear as due to atmospheric absorption alone. He said that the capillaries are incapable of absorbing so much oxygen, and drew the parallel that in the lung four fifths per volume of oxygen remains after respiration. He said that Koerner's hypothesis that the absorption occurs by means of the lymph spaces in the epithelial cells of the mucosa is more probable, and likens the condition in the middle ear to that which occurs in the absorption of a pneumothorax. Whether the tensor tympani contributes to the retraction of the tympanic membrane in recent cases is, in the author's opinion, an unsettled question, and he advances the theory that possibly the absorption of plus carbon dioxide which is present in the middle ear in these cases acts on the tympanic muscle. The writer believes that the hydrops that occurs in these cases, so called hydrops *ex vacuo*, cannot be explained on theory of a vacuum. He compares the exudate to that which occurs in meningitis serosa and in pleural exudates, and says that, although he proved in 1906 that the serous aural exudates, especially as they occur in young children with tubal stoppage, are not only sterile, but are occasionally possessed of certain bactericidal power, it is more in accordance with general pathology to assume that serous exudates result from inflammatory channels, if not directly from bacterial invasion of tissue involved, at least indirectly from the action of bacterial toxins elaborated elsewhere. The neglected cases that occur in childhood form no inconsiderable number of these instances of defective hearing in adult life where the changes in the aural apparatus are permanent. Among these he mentions malposition and malformations of the conducting apparatus, malformations resulting from long-continued malpositions, adhesions, atrophy of the tympanic membrane, luxation of the long processes of the ambus from the head of the stapes, stapes ankylosis, spontaneous rupture of the membrane with consecutive cholesteatoma formation. He states the belief that nasal obstructions *per se* do not cause aural disease, and calls to witness those cases of congenital atresia of the choanæ in which the auditory apparatus remains normal in cases of post-nasal fibroma in which the ear is unaffected until pressure necrosis causes a breach in the surface continuity of the tumor and hemorrhage, accompanied by inflammatory phenomena, occurs, or cases of nasal polypoid in which the ears are unaffected. There must always be, in addition to the mechanical obstruction, inflammatory features present to produce disease of the middle ear, especially those of a chronic character.

He then enumerates the causes of nasal insufficiency and tries to place them in their proper relationship to aural disease. He says that not infrequently the conditions which render the nasal and pharyngeal mucosa especially liable to inflammation may be brought about by factors other than mechanical, such as errors in living, excesses in drink and tobacco, lack of fresh air, exercise, overwork, worry and a weak heart the result of degeneration due to nicotine or alcohol, and further states clinical experience teaches that if the inflammatory factors are not superadded to nasal obstruction this may be most extensive and pronounced without the occurrence of aural disease.

In conclusion, he took the opportunity to raise a protesting voice against the widespread and irrational removal of slight irregularities of the septum and turgescent turbinated bodies in the mistaken belief that such slight irregularities play any considerable part in the production of aural disease. The idea of nasal insufficiency has been carried to unwarranted extremes by many operators, and no little unnecessary suffering has been caused by their misguided enthusiasm. In not a few instances which have come to his observation have these unnecessary operations been performed on patients whose conducting apparatus had been long or permanently injured by previous pathological conditions, and in which such operations could in no way be expected to effect their improvement. He was especially impressed by the unnecessary nasal and pharyngeal operations undertaken with the vain hope of relieving cases of uncomplicated otosclerosis, a disease that has no etiological relationship with nasal obstructions. He concluded with the remark that the anemic, overworked clerk might need fresh air, nutritious food and fair fields more than sharpened scissors and nasal saws.

THE IMPORTANCE OF THE THOROUGH STUDY OF THE NASOPHARYNX IN TREATMENT OF DISEASES OF THE EAR.

By Dr. Francis R. Packard, of Philadelphia.

The point I would particularly emphasize is the necessity for a thorough examination of the nasopharynx before undertaking the treatment of any aural condition. It seems to me that this examination is much too frequently either altogether neglected, or carried on in such a manner as to be practically useless. In teaching in a post-graduate institution, I have frequently been struck with the fact that the physician-student in the aural clinic, who has been told repeatedly to make an examination of the nasopharynx in every case of ear trouble, considers that he has carried out his directions when he has inserted the tongue depressor in the patient's mouth and has examined what is revealed in that manner. As Politzer says in his textbook, " Often, however, without the slightest visible changes on the posterior pharyngeal wall, affections of the mucous membrane of the nasopharynx may nevertheless be found which are very far advanced. The absence of changes on the posterior pharyngeal wall does not, therefore, render the examination of the post-nasal space unnecessary."

Excluding the infectious diseases which involve the throat, some of the pathological conditions in the nasopharynx which may give rise to disease of the ear are:

1. The presence of adenoid growths in the nasopharynx which may act either as a mechanical obstruction, interfering with the ventilation of the Eustachian tubes, or as a source of infection to the middle ear, because, as is well known, practically every adenoid mass is inhabited by numerous pathogenic microorganisms which, under favorable circumstances, find easy access to the middle ear through the Eustachian tube. Every aurist must be familiar with the frequency with which chronic suppuration of the middle ear completely ceases after the removal of a mass of adenoid tissue from the nasopharynx. This has occurred so frequently in my own work that it has become an automatic process with me to at once turn to the nasopharynx as a possible source for the continuation of a chronic discharge from the ear in almost every instance. I believe that in very many of these cases, such nasopharyngeal examination is neglected, and the attention of the aurist is devoted almost solely to finding the origin of the trouble in some local condition within the ear, such as the presence of dead bone or suppuration within the mastoid.

2. So-called catarrhal infections of the nasopharynx are frequently a source of disease of the middle ear, chiefly by the mechanical occlusion of the Eustachian tube which results from a swollen mucous membrane. Personally I feel that, in most instances, so-called nasopharyngeal catarrh is generally the result of some more serious condition in the nose or its accessory sinuses, especially the sphenoid, but the term " naso-pharyngeal catarrh" is probably firmly fixed in rhinological literature, whether it is used to express a distinct entity or to signify the condition of the mucous membrane of the nasopharynx as the result of disease elsewhere in the nose or accessory sinuses.

3. The atrophic condition of the mucous membrane of the nasopharynx which is usually seen in association with chronic atrophic rhinitis leads to the accumulation of decomposing crusts in the nasopharynx, and under these circumstances the orifices of the Eustachian tubes are more patulous than normal, and it is quite common to see disease of the middle ear result from the patient's blowing or washing infective material into the tubes.

4. Tumors other than adenoid growths may occur in the nasopharynx. The author has personally seen a case in which a sarcoma protruded into the nasopharynx from the sphenoid region, first manifesting itself by aural symptoms, the patient complaining of increasing hardness of hearing and tinnitus.

5. The occurrence of adhesions in the nasopharynx, generally the result of previous operative work, is, I believe, a not uncommon and a frequently unlooked-for source of disease of the Eustachian tubes and middle ear.

Since my attention was drawn to the subject by Dr. Jervey's publications, I have had the opportunity of studying a number of cases in which ear trouble undoubtedly originated from the existence of adhesions in the fossa of Rosenmüller and the nasopharynx, the breaking up of which resulted in a gratifying improvement in the aural condition. These cases presented almost identical histories, namely, prolonged Eustachian and middle ear trouble, with increasing deafness, without relief from the usual measures of treatment by Politzerization, massage, hot air, etc. Several of these cases had had adenoid operations in childhood. The method I pursued in the treatment was identical with that of Dr. Jervey's, namely, after the nasopharynx is thoroughly cleansed and cocainized, the index finger of the right hand is introduced and the adhesions forcibly torn across, after which silver nitrate solution or a solution of albuminate of silver is applied over the torn surfaces.

1. That in every case of middle ear disease which presents itself for treatment, one of the most important measures to be employed is to make an examination of the nasopharynx.

2. The examination of the nasopharynx should be made, not only with the mirror, but with the finger. The examination should be made, first, before cleansing the nasopharynx, and again after cleansing it. If the nasopharynx is examined while it is full of mucus or other discharges, important alterations within it may be concealed. On the other hand, a visual examination should be made, or at any rate attempted, before cleansing it out, in order that we may ascertain whether there are any accumulations of discharge or morbid materials within it. In the case of children or adults in whom it is impossible to use the mirror, the nasopharynx should be cocainized through the nares and a digital examination made. The digital examination of the nasopharynx is, as a rule, so much disliked by patients that the rhinologist is very apt to neglect it. Of its great value, however, there is no doubt, and I believe it should be made the routine practice in every case in which it is not possible to get a thorough view with the mirror.

3. Although the presence of obvious growths, such as tumors or adenoids, or the existence of inflammatory

conditions in the nasopharynx, have had the importance of their presence as a source of aural disease recognized for many years, the existence of adhesions in the nasopharynx as a cause of pathological conditions within the ear has been largely overlooked, chiefly because of the difficulty attendant upon the examination of the nasopharynx which would lead to the discovery of their presence.

Dr. E. A. Crockett emphasized one point brought out by Dr. Pierce, namely, that the nose is frequently operated upon without regard to the pathologic conditions. He considers a favorable prognosis in cases of otosclerosis with regard to improvement in hearing as unjustifiable. It is of frequent occurrence to see patients without septal deviation, with extreme deafness, and those with septal deviation without deafness, and it therefore seems improbable to him that operations upon the nasal septum and anterior portions of the nasal turbinate will affect the hearing in any way. He states that it is not infrequently the case that, where adenoids have been removed, subsequent examination of the patient will show that the lateral portions of the pharynx have not been touched, and this should always be remedied. When it comes to the nose itself, it is an infrequent thing to get improvement in hearing or cessation of a progressive deafness from intranasal surgery.

Dr. Otto T. Freer, of Chicago, referred to a case where operation upon a marked deflection of the septum resulted in complete restoration of hearing in chronic deafness of a year's standing.

Dr. W. L. Ballenger, of Chicago, agreed with Dr. Pierce that simple obstructions in the nose are not often the cause of middle ear disease. He mentions three conditions, one of which is usually the cause of middle ear deafness and inflammation, and these conditions are ethmoiditis and sphenoiditis, enlargement of the posterior ends of the middle turbinate associated with epipharyngitis, and the presence of adenoids usually associated with peri-adenitis. He is of the opinion that adenoids do not necessarily atrophy at the age of puberty, as is generally believed, but that while the mouth breathing stops at this period, the adenoids are just as large in adults as in children.

Dr. G. L. Richards, of Fall River, made especial reference to the office examination of the patient, advocating the use of thin rubber finger stalls, which cannot only be made perfectly sterile, but make the examination much easier. He referred to an adenoid curette which has been devised by a man named Vogel which is admirably adapted to follow the fossa of Rosenmüller. He cited a recent case of removal of tonsils in which he also cleared out a band of adhesions from the nasopharynx, with a resulting improvement in hearing.

Dr. Emil Mayer, of New York, spoke regarding the pharyngoscope, which is on the plan of a cystoscope, making examinations and the detection of conditions much easier than by the finger.

Dr. Friedlenburg (member of Otological Society), spoke also in commendation of the pharyngoscope, especially in examination of the nasopharynx. He states that another advantage of the instrument is that it can be retained in place during prolonged examinations without discomfort to the patient, and that it is also possible to study the various changes which take place in deglutition, coughing or gagging, seeing what happens to the muscles of the soft palate and muscular structures about the orifice of the tube. This instrument enables one to control with the eye the introduction of a catheter into the Eustachian tube, and is not only valuable as an operative aid, but also in teaching.

Dr. Shambaugh (member of Otological Society) said he thought all were agreed that middle ear trouble has its origin in many cases in diseases of the nose and throat, and that an exudated form of middle ear trouble, mucous discharge, serous accumulation or suppuration of the middle ear is very often improved by operation upon the nasopharynx. The time to improve the hearing in these cases is during the active stage, and not after years of chronic suppuration of the middle ear. In cases of very severe deafness, which are bound to be associated with abnormal conditions of the labyrinth, we can expect no improvement by treatment of the middle ear.

Dr. Greening (member of Otological Society) said that the inventor of the pharyngoscope was Dr. Harold Hays, of New York City.

Dr. W. K. Simpson, of New York, said he had seen a number of instances where a certain amount of so-called hypertrophied tissue in the nasopharynx had been removed and a very marked condition of atrophy had been produced, and he wished to know if this had been the experience of others.

Dr. J. F. Barnhill, of Indianapolis, said that it was unreasonable in cases of greater or less ankylosis of the stapes to expect the breaking up of adhesions to be of any effect. This breaking up of the adhesions has proved of use in producing a certain amount of hemorrhage, thus relieving the tinnitus. He referred to the psychic element in these cases. He does not think it warrantable to give a favorable prognosis in these old chronic middle ear diseases.

Dr. G. Hudson Makuen, of Philadelphia, spoke of a personal experience along this line, stating that he had had a slight nasal spur with intranasal pressure removed with most satisfactory results. He cited a case in which he recently broke up the adhesions in the nasopharynx with the subsequent relief of deafness which had distressed the patient for many years. He suggests in adenectomies the putting of the finger into the vault before the adenoid is removed, and thoroughly cleaning out the vault at this time, as it can then be done much more easily and the adenoid can be more completely removed following this procedure.

Dr. J. Payson Clark, of Boston, considers the removal of adenoids in all cases where there is simply an inflammation of lymphoid tissue as very radical, believing that many of these cases can be successfully treated by medicinal measures.

Dr. F. B. Emerson, of Boston, does not believe the fossa of Rosenmüller is accountable for all diseases in the middle ear, as would be concluded from some remarks made. He says that one will be surprised to find, in examining adult cases without regard to age, the large amount of degenerated tissue in the depth of the fossa, usually in cases of unilateral deafness accompanied by low-pitched tinnitus which are affected by climatic changes. These cases have been overlooked very largely because they cannot be recognized by the mirror, and digital examination is not used frequently enough.

Dr. B. Alexander Randall, of Philadelphia, referred to the physical massage and gymnastics in adhesions in cases of middle ear disease. He does not consider it possible to have permanent removal of adenoids if there is a stuffed nose in front. He considers the question of Rosemüller's fossa as of considerable importance, although it has not been his experience to see great improvement following the clearing out of this area.

Dr. George A. Leland, of Boston, said that the adhesions occurring in the middle ear when too great cannot be influenced by physical gymnastics, but when they are not too great the continual action of these gymnastics does produce some effect. He believes the tympanum as well as the adhesions can be made flexible by this method of gymnastics.

Dr. N. H. Pierce, of Chicago, questioned whether a case of hydrops of the antrum can cause ectasis of the walls of the maxillary sinus. He stated that in the case of insufficient ventilation of the middle ear there was a partial vacuum plus atmospheric pressure in the external auditory canal which might go on for a considerable length of time; in fact, until the pressure atrophy caused by this compression caused complete atrophy of the tympanic membrane, so that almost every cavity will be obliterated without serous exudate in the middle ear. Hydrops of the antrum occurs from the same cause, — insufficient ventilation, either from congenital or inflammatory closure of the osteum.

Dr. James E. Hogan, of Kansas City, said he did not agree with Dr. Richards in the use of the rubber finger tip, as he found he could not feel as sensitively with it as without it. He does not consider that cases of deafness can be cured by the clearing of the adhesions in the fossa of Rosenmüller, but is sure they can be relieved. In reference to Dr. Simpson's remarks regarding atrophy, he said that following his method of stripping in these cases he had never seen atrophy result in any of his cases.

Dr. Francis R. Packard, of Philadelphia, emphasized the fact that it is very true that the nasopharynx is the most important site of origin of middle ear disease, and its examination is very frequently overlooked or improperly made.

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Book Reviews.

Medical Record Visiting List or Physicians' Diary for 1910. New revised edition. New York: William Wood & Co.

The Medical Record Visiting List for the ensuing year has been revised both with reference to increasing the amount of matter likely to be useful to the physician in emergencies and also with reference to eliminating matter which might properly be sought for elsewhere. This revision applies especially to the list of remedies and their maximum doses in apothecaries' and decimal systems and the indication of such as are official in this country. The list of the table of contents gives an excellent idea of the value of this little pocket book which will unquestionably be found a useful possession by the practising physician.

Atlas of the External Diseases of the Eye, Including a Brief Treatise on the Pathology and Treatment. By Prof. Dr. O. Haab, of Zürich.

Atlas and Epitome of Ophthalmoscopy and Ophthalmoscopic Diagnosis. By Prof. Dr. O. Haab, of Zürich.

W. B. Saunders Company have brought out a third edition of Atlas of the External Diseases of the Eye by Dr. O. Haab, of Zürich, and a second edition of Atlas and Epitome of Ophthalmoscopy and Ophthalmoscopic Diagnosis by Dr. Haab, edited by Dr. G. E. de Schweinitz.

Both have been previously reviewed in these columns, but have been revised, and a certain amount of new matter is incorporated in the present editions.

They will no doubt still continue to be of great use to the medical student.

Borderland Studies. Miscellaneous Addresses and Essays Pertaining to Medicine and the Medical Profession and their Relations to General Science and Thought. Vol. II. By George M. Gould, M.D. Philadelphia: P. Blakiston's Son & Co. 1908.

As the sub-title of the volume suggests, the essays forming this collection are rather of sociologic and literary than of medical interest. They are written in an original and stimulative style, and are entertaining to read, however much one may agree or disagree with the author's opinions. The chapters on "Disease and Sin" and the "Seven Deadly Sins of Civilization" contain some appalling statistics about alcoholism, crime and prostitution, but even these hardly seem to warrant the depressing conclusions drawn from them. After all, the world does keep getting better, though it may temporarily get worse in spots. Probably most of the moral and social diseases of humanity are self-limited, like most of its physical ailments, and spontaneous recovery may conceivably occur when the zeal of reformers has failed to effect a cure. Natural process may involve a pitiable sacrifice of individuals, but in the long run it produces more permanent results than do artificial measures. At all events, Dr. Gould's exposition of the darker aspects of civilization is convincing, even though it convinces some readers that these have a brighter and ultimately hopeful prospect.

Studies in Immunity. By Prof. Jules Bordet and his collaborators. Collected and translated by Frederick P. Gay, A.B., M.D. First edition. New York: John Wiley & Sons. 1909.

This valuable collection of papers presents chronologically the successive steps of investigation made by Bordet and his pupils in study of the phenomena and problems of immunity. It has been characteristic of Bordet's work that, unlike Ehrlich and Metchnikoff, he has made little generalization and has suggested no theory, but has persisted in experimental demonstration of facts; and in the general résumé which he has written especially as a concluding chapter of this book, he emphasizes the dangers of deduction in a science as yet so elementary. Though in no sense an attempt to supply a theory of immunity, the present volume serves to correlate Bordet's hitherto discrete contributions to the subject, and in so doing shows not only the logical sequence of his research, but also its underlying unity of purpose. Dr. Gay's lucid and idiomatic translation contributes still further to simplify the technical aspects of the work and to make his volume an admirable exposition of the present status of knowledge of immunity.

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TESTING OF REFRACTION IN GENERAL PRACTICE.

At a recent meeting of the Ophthalmic Section of the American Medical Association, which was attended by upwards of a thousand members, a committee of three, of which Dr. Leartus Connor, of Detroit, is chairman, was appointed for the purpose of promoting a working knowledge of simple refraction among family physicians. This committee has found that many physicians are using such knowledge in their practices, which is urged as a proof that others might do so if they so desired. As in most other matters, however, a certain amount of compulsion is necessary in order to make such knowledge universal, and to this end it is considered essential that state boards of registration require such knowledge for license to practice, and that medical schools teach practical refraction as a prescribed part of the course. A beginning has apparently been made in this direction. The Michigan State Board of Registration, for example, early this year took the stand that it would grant licenses to practice only to such applicants as demonstrated practically their working knowledge of refraction through the use of simple spherical lenses and test types. The committee feels that every state board of registration should make a similar requirement, thereby forcing medical schools to qualify their students in this practical and important branch of practice.

The situation with regard to refraction has for some years been one of growing importance, inasmuch as the rank and file of the medical profession has not had the knowledge and training necessary in testing refractive errors, and the ophthalmologists have been too few to cope with the entire matter. It has naturally and inevitably followed that this work has in great measure devolved upon opticians, who willingly or unwillingly have been forced to make such examinations. In certain states, also, a determined effort has been made on the part of the so-called optometrists to step into this somewhat neglected field, basing in part their right to do so on the ground of the insufficient preparation of regular physicians for such work. However this may be, it is apparent that a need exists in the community which has not been fully met by the medical profession, and we are, therefore, in complete accord with the efforts of this committee of the Ophthalmic Section of the American Medical Association to impress upon medical schools the vital importance of teaching simple refraction, not in special courses, but rather as part of the general medical discipline. The pressure necessary to bring this about must, no doubt, in a measure come from the state examining boards, but we do not question that the medical schools will be quick to recognize the desirability of instituting such undergraduate instruction. It is probable that a certain opposition to this legitimate exercise of the medical art will come from opticians and other interested persons, but we have no doubt that the best interests of the public will ultimately be subserved through the complete assumption of this work by the medical profession, to which it properly belongs.

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THE MEDICAL SCHOOL AND THE COLLEGE.

In our issue of Nov. 25 we discussed editorially the plan recently advocated by Drs. Henderson and Southard relative to the present involved relation of medical and so-called academic studies. A further stimulus is now given to the controversy, if such it may be called, by Prof. George V. N. Dearborn, of the Tufts College Medical School, who, writing in the *Harvard Bulletin* of Dec. 1, finds himself in rather definite opposition to the Henderson and Southard ideas. Whatever may be said on the one side or the other, it must forthwith be admitted that Dr. Dearborn has struck at the weak side of his opponent's argument when he maintains that there is danger in interfering too greatly with the somewhat rigid organization of our medical schools. A somewhat definite change in the present situation is, no doubt, both desirable and inevitable, but it should not be forgotten in our enthusiasm for improvement that such changes should come as a gradual evolution rather than as a more or less complete reversal of policy. No doubt some compromise will be reached. In the meantime, it is well to recognize, as Dearborn points out, that practitioners of medicine, whether special or general, are what the public demands from the medical school and what the medical schools are in their turn bound to supply. The main issue should not be ignored or lost sight of in the wholly commendable effort to develop highly trained specialists and original investigators. We have no doubt that the discussion which is now taking place is altogether salutary and will do much toward clearing the way for the changes which, we trust, will come gradually, but none the less surely on that account.

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NEW HARVARD DENTAL SCHOOL BUILDING

The new building of the Harvard Dental School, recently erected in immediate proximity to the Harvard Medical School buildings, was formally opened this week by appropriate exercises in Sanders Theater, Cambridge, by an afternoon tea and reception at the building, and by a dinner at the Hotel Somerset, given by the administrative board of the Dental School. The new building is a model of its kind and is to be devoted essentially to laboratory and practical purposes. All lectures hereafter to dental students are to be given in the adjoining Medical School buildings. The Harvard Dental School has long suffered because of inadequate facilities for the prosecution of its work, both on the laboratory and clinical sides. The purchase of land near the Harvard Medical School and the erection thereon of an admirably equipped building is due largely to the devoted efforts of the Dental School faculty, materially assisted by the faculty of the Medical School. It is fitting that this department of the university work, essentially a sub-department of medicine, should be carried on near the medical school. The advantage to the dental department from this arrangement is apparent, and the advantage to the medical school, especially if clinics be later established in connection with it, is not to be underestimated. With the improved equipment and a very much increased entering class this year, it is not to be doubted that the dental school has before it a future of increasing usefulness unhampered by the limitations under which it has been struggling for many years.

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MEDICAL NOTES.

Dedication of Watts' Hospital. — An endowment has recently been made to Trinity College, Durham, N. C., in the amount of nearly half a million dollars for the establishment of a medical, pharmaceutical and dental department. The Watts' Hospital has been built at an expense $250,000, and was formally opened in the early part of this month. The institution is to be under the control of the Durham County Medical Society and will be the joint property of the city and county.

BOSTON AND NEW ENGLAND.

Acute Infectious Diseases in Boston. — For the week ending at noon, Dec. 7, 1909, there were reported to the Board of Health of Boston the following cases of acute infectious diseases: Diphtheria 56, scarlatina 34, typhoid fever 12, measles 74, smallpox 0, tuberculosis 57.

The death-rate of the reported deaths for the week ending Dec. 7, 1909, was 16.49.

Boston Mortality Statistics. — The total number of deaths reported to the Board of Health for the week ending Saturday, noon, Dec. 4, 1909, was 185, against 234 the corresponding week of last year, showing a decrease of 49 deaths and making the death-rate for the week 15.48. Of this number 92 were males and 93 were females; 181 were white and 4 colored; 112 were born in the United States, 72 in foreign countries and 1 unknown; 46 were of American parentage, 117 of foreign parentage and 22 unknown. The number of cases and deaths from infectious diseases reported this week is as follows: Diphtheria, 72 cases and 6 deaths; scarlatina, 31 cases and 0 deaths; typhoid fever, 11 cases and 3 deaths; measles, 77 cases and 0 deaths; tuberculosis, 48 cases and 9 deaths; smallpox, 0 cases and 0 deaths. The deaths from pneumonia were 27, whooping cough 0, heart disease 29, bronchitis 5 and marasmus 1. There were 10 deaths from violent causes. The number of children who died under one year was 24; the number under five years 37. The number of persons who died over sixty years of age was 62. The deaths in public institutions were 69.

Of the above infectious diseases the following were non-residents: Consumption: 1 case and 1 death. Diphtheria: 1 case and 1 death. Typhoid fever: 1 case and 1 death.

Deducting deaths of non-residents, the total is 158 and the death-rate is then 13.22.

New England Pediatric Society. — The officers for the ensuing year of the New England Pediatric Society are: President, Dr. Charles P. Putnam, Boston. Vice-President, Dr. P. S.

Potter, North Adams, Mass. Secretary and Treasurer, Dr. Fritz B. Talbot, Boston. Members of the Council, Dr. John Lovett Morse, Boston; Dr. Arthur H. Wentworth, Boston; Dr. Henry I. Bowditch, Boston.

Prize Offered for Consumption Cure. — It is stated through the *Yale Alumni Weekly* that an anonymous alumnus of the college has offered a prize of $100,000 to the person first discovering an adequate remedy for tuberculosis. The faculty of the Yale Medical School are to act as the trustees of this fund, and several physicians have been asked to become members of a board whose duty it will be to pass on the merits of the cures suggested.

NEW YORK.

A Rest Home for Convalescents. — With the death of John Masterson Burke, of New York, which occurred on Dec. 2, there becomes operative a provision made by him in 1902 for the Winifred Burke Foundation (named after his mother) for the establishment and maintenance of a rest home for convalescents. The amount designated for this purpose is stated to be $4,500,000.

Skin Grafting on an Aged Patient. — There is now in the Kings County Hospital, Brooklyn, a patient, Samuel Epstein, reputed to be one hundred and seven years old, in whose case it is purposed to use skin grafting for a severe burn in the back. Notwithstanding his great age, he is still vigorous, stating that he has never been ill in his life, and the surgeons in charge are confident of his recovery. He is a barber by occupation, and it was in his own shop that he was burned, on Dec. 2, by the taking fire of his coat while standing with his back to a stove.

Deportation of Insane and Defective Persons. — The annual report submitted to the State Commission in Lunacy on Nov. 25 by its Board of Deportation shows that during the fiscal year just ended 489 insane and defective persons were deported from New York, and it is estimated that from these deportations about $978,000 was saved to the state. With the aid of the Lunacy Commission the Board secured the removal to other states of 165 additional insane patients who had found temporary domicile in the New York State hospitals.

Weekly Mortality Reports. — The weekly reports of the Health Department show that during the month of November the mortality in the city represented an annual death-rate of 15.56, as against 15.04 in October and 14.64 in November, 1908. The corrected death-rate, excluding nonresidents and infants under one week old, was 14.54. As a rule, the mortality falls to its lowest point in the month of November, but this year it was higher than in September as well as October. In the present year the minimum was reached in September, when the death-rate was only 14.33 and the corrected rate 13.53, a result probably due largely to the marked reduction in the number of deaths from summer diarrhea.

Quarterly Mortality Report. — The condensed quarterly report of the Bureau of Records, City Health Department, shows that in the quarter ending Sept. 30, 1909, the death-rate per thousand of the population was 15.23, as against 18.18, the average for the corresponding quarters of the preceding five years, a decrease of 2.95 points. In the corresponding quarter of 1908 the death-rate was 16.24. The principal decrease in mortality as compared with the preceding quinquennial averages were in the following diseases: Diarrheal diseases under two years of age, 1,222; pulmonary tuberculosis, 378; apoplexy, 383; Bright's disease and acute nephritis, 274.

Opposition to the Tuberculosis Preventorium. — There has, unfortunately, developed considerable local opposition to the establishment of the tuberculosis " preventorium " at Lakewood, N. J., and on Dec. 1 Dr. Sherburn Wheelwright, the superintendent of the institution, was held in $2,500 bail by Justice Cowan for the action of the grand jury on a charge of violation of the statute of 1907, which prohibits the bringing of dependent children, unsound in body or mind, into the state of New Jersey without depositing with the State Commissioner of Charities a bond of $1,000 for each child. Since then it is reported from Trenton that the attorney-general has expressed the opinion that this law relates only to children who are to be " placed out," and that the inmates of the preventorium do not, therefore, come within its scope of operation. Furthermore, it is contended that these children are not dependent in the sense evidently referred to in the statute, as each one has come from its parent's respectable home.

Animal Experimentation. — At a meeting of the Société des Beaux Arts held on Nov. 23. vigorous addresses in favor of animal experimentation were made by a number of prominent physicians, among whom were Health Commissioner Darlington; Simon Flexner, of the Rockefeller Institute; James Ewing, of Cornell; Alexander S. Lee, of Columbia University, and William H. Park, of the Health Department. Professor Ewing, who is President of the American Society for Cancer Research, declared that all the knowledge of cancer which we possess to-day came almost solely from this source. "Up to 1900," he said, "medical science offered no hope of prevailing against the disease; it seemed barren ground. But then it was shown that cancer could be transferred from one animal to another, and soon institutions for its study began to spring up. From inoculation of animals, too, and transference, we have learned that those to recover are immune to an extent and that their blood, infused into other victims, somewhat limits the growth of the tumor. I can confidently state that these experiments will ultimately result in the cure of the disease."

MORTALITY STATISTICS. — The report of the City Health Department for 1908, just issued, shows that last year 16,431 cases of diphtheria and croup were reported, as against 15,276 in 1907 and 14,757 in 1906; scarlet fever, 24,426, as against 15,788 in 1907 and 7,881 in 1906; measles, 38,276, as against 16,622 in 1907 and 38,653 in 1906; smallpox, 17, as against 58 in 1907 and 100 in 1906. The death-rate from tuberculosis per thousand of the population appears to be slowly decreasing. In 1908 it was 2.29; in 1907, 2.39, and in 1906, 2.45. The death-rate from this cause in 1908 in the different boroughs was as follows: Queens, 1.38; Brooklyn, 1.92; Manhattan, 2.25; Richmond, 2.54; Bronx, 4.90. The excessive rate in the Bronx is to be attributed to the number of large institutions situated there. During the year 547 prosecutions were instituted against milk dealers, while 2,940,329 lb. of meat and 18,626,596 lb. of fish, fruit and other foodstuffs were condemned. The inspection of the oyster supply of the city is being rapidly systematized. Charts are being prepared of all the points along the coast from which oysters are obtained, and in connection with these charts there is maintained a card index of the locations from which all dealers procure their supplies. In the report Commissioner Darlington devotes considerable attention to the matter of summer camps. There can be no question, he says, that these camps are of great value, but they become a serious menace to public health when not provided with proper sanitary accommodations, and they require constant supervision. He cites one instance in a camp at Gravesend Bay, which had to be closed by the department, where 500 persons were living on a plot of ground 250 feet square, with no sewage arrangements.

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Current Literature.

NEW YORK MEDICAL JOURNAL.
Nov. 27, 1909.

1. VON PIRQUET, C. F. *The Relation of Tuberculosis to Infant Mortality.*
2. BARROWS, C. C. *The Surgical Treatment of Posterior Displacement of the Uterus.*
3. KING, A. F. A. *The Significance of Posture in Obstetrics.*
4. KOPLIK, H. *The Percentage Principle as Applied in Infant Feeding.*
5. CHAPIN, H. D. *Biology as the Basis of Infant Feeding.*
6. CARR, W. L. *The Question of Clean Milk.*
7. LA FETRA, L. E. *The Feeding of Infants during Illness.*
8. KELLEY, T. J. *Expert Testimony.*
9. MUNSON, J. F. *Post-Epileptic Albuminuria.*

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION.
Nov. 27, 1909.

1. *VAUGHN, V. C. *Value and Limitations of Salt-Free Diet and Restriction of Fluids in Nephritis.*
2. *MUSSER, J. H. *Causes of Hypertension in Nephritis.*
3. *CHRISTIAN, H. A. *Clinical Value of Recent Studies in Experimental Nephritis.*
4. WELLS, E. F. *Management of Uremia.*
5. GRAD, H. *Ovariotomy and Myomectomy Early in Pregnancy, with Full-term Delivery.*
6. SHAW, H. L. K. *Transmission of Bovine Tuberculosis to Children.*
7. LEWIS, D., AND SCHRAEGER, V. L. *Embolomycotic Aneurisms.*
8. HENDLEY, F. W. *Field Training of Militia Surgeons.*

1. Vaughn states the following fairly well-established facts: Urea and uric acid are not important constituents of the urine so far as their toxicity is concerned, i. e., neither can be regarded as the active agent in the causation of the symptoms that result if the kidney fails to functionate properly. About 85% of the toxicity of the urine is due to its inorganic constituents, the most toxic of which is potassium chloride. There are organic poisons present in the urine, the nature of which we do not yet know. Withholding salts from nephritics does not withhold the direct cause of uremia.

2. The salient points in Musser's paper are somewhat as follows: If it is the same poison which causes both hypertension and uremia, it is possible to conceive that in small amounts it affects the vasomotor apparatus (hypertension) and in large amounts exerts a toxic effect on the nervous system (uremia). In support of this chemical theory is the frequent clinical experience that the degree of the uremic manifestations (headache, vomiting, coma) and the recovery from these have a close relation to the blood pressure. Moreover, true uremia without hypertension seldom occurs. In connection with this chemical theory, also, are the important and suggestive effects of diet. Müller describes a patient in whom a change from milk and carbohydrate diet to rich meat diet caused the blood pressure to rise from 140 to 190. Rich meat diet in nephritics causes headache, one of the earliest and most constant symptoms of uremia, which has a definite relation to hypertension. This probably means a retention of the products of nitrogenous metabolism. Hypertension is essentially, however, a conservative process, having for its object the maximum functioning power of the kidney.

3. Christian speaks of the results of studies in experimental nephritis, showing the great value of this kind of work and the need for more. It was found that irritants which produced marked degenerative changes in the epithelium of the tubules gave rise to a more abundant cast formation than did the other group of irritants. The urine of the animals employed was collected and the number and character of the casts studied. By studying histologically

kidneys of animals receiving different irritants in varying degrees, cast formation could be traced morphologically. The granular casts come early, the hyaline casts late; there is a progressive transformation between granular and hyaline casts. The granular casts appear to be formed quickly and excreted early, while the hyaline casts are formed slowly and excreted late.

It cannot be said that studies of experimental nephritis have thrown much light on the condition of uremia beyond giving support to the view that the condition is a toxic one associated with the renal lesion.

There is a growing skepticism toward the theory that salt retention is a primal cause of nephritic edema, though in many cases salt retention may be a contributing factor. Many failures in the treatment of edema by withholding salt show the limited applicability of the theory. On the other hand, there is increasing evidence to show that peripheral vascular lesions play a large rôle in the production of edema. [E. H. R.]

The American Journal of the Medical Sciences.
November, 1909.

1. *Jopson, J. H., and Gittings, J. C. *Intestinal Perforation during Typhoid Fever in Children.*
2. *Kober, G. M. *The General Movement of Typhoid Fever and Tuberculosis in the Last Thirty Years.*
3. *Friedenwald, J. *Experiments Relating to the Bacterial Content of the Feces, with Some Researches on the Value of Certain Intestinal Antiseptics.*
4. Giffin, H. Z. *A Case of Carcinoma on Diverticulitis of the Sigmoid.*
5. Goodhart, S. P. *Cervical Rib and Its Relation to the Neuropathies.*
6. Dercum, F. X. *The Interpretation of Aphasia.*
7. *Rotch, T. M. *School Life and Its Relation to the Child's Development.*
8. *Fetterolf, G. *Compression of the Pulmonary Veins, the Pressure Factor in the Etiology of Cardiac Hydrothorax.*
9. Barringer, T. B. *A Practical Hospital Polygraph.*
10. Eshner, A. A. *Locomotor Ataxia and Paralysis Agitans in the Same Patient.*
11. Rudolf, R. D., and Mackenzie, J. J. *A Case of Cerebral Tumor Presenting a Very Unusual Clinical Course.*

1. Jopson and Gittings have collected from the literature since 1903 forty-five cases of intestinal perforation in typhoid fever in patients under fifteen years of age. They conclude that perforation is very rare under five years of age, but that after that age it occurs about half as often as in adults. Perforation generally happens at the end of the second or during the third week. The diagnostic symptoms and signs and the technic of operation do not differ materially from those described for adults. The prognosis, however, seems to be more favorable than in adults, the mortality being somewhat less than 50%.

2. Kober's article is a striking collection of statistics showing the great diminution of mortality from typhoid fever and from tuberculosis since the introduction of prophylactic measures. It is a concise and conclusive proof of the value of municipal sanitary regulations.

3. Friedenwald and Leitz have conducted experiments as to the effect of drugs and of diet upon the numbers of bacteria in the feces. They conclude that regulation of diet is more efficient then any drug treatment in reducing the excessively high bacterial content of the feces. Betanaphthol and bismuth salicylate effect some reduction in normal individuals, but in patients with gastro-intestinal disturbances the reduction is not marked.

7. Rotch proposes that the stage of development of the bones of the wrist and hand as revealed by radiographs be taken as a criterion of the age of children and of their fitness for industrial employment and other activities.

8. Fetterolf and Landis discuss the disputed point of the cause of the effusion in cardiac hydrothorax in the light of certain dissections which they have made. Their evidence seems to overthrow the theory of Steele and Stengel that hydrothorax is the result of compression of the azygos veins. They believe that the fluid comes not from the parietal, but from the visceral pleura, and that it is due to the pressure of distended auricles upon pulmonary veins. [F. W. P.]

Bulletin of the Johns Hopkins Hospital.
November, 1909.

1. Baker, F. *The Two Sylviuses. An Historical Study.*
2. Williams, H. V. *The Epidemic of the Indians of New England, 1616–1620, with Remarks on Native American Infections.*
3. *Cullen, E. K., and Derge, H. F. *The Use of Silver Wire in Opening the Kidney.* (Preliminary report.)

3. In this preliminary report the writers have confined themselves to a study of the comparative amount of hemorrhage following nephrotomy with the knife and with silver wire. By passing a long needle down through the kidney parallel to the two large vessels and their branching, tree-like arterioles which supply the kidney, and by drawing through a silver wire, they demonstrated that only one fourth to one eighth as much blood was lost as in opening the kidney with the knife. They are to continue their researches and report later. [J. B. H.]

Annals of Surgery.
November, 1909.

1. *Mason, J. M., and Lester, B. S. *A Study of Burns Involving the Periosteum of the Vault of the Skull.*
2. Brewer, G. E. *The Operative Treatment of Cancer of the Larynx.*
3. *Wiener, J. *The Closure of the Wound after the Radical Amputation of the Breast.*
4. *Wroth, P. *The Post-operative Treatment in Cases of Typhoid Perforation.*
5. *Bryan, R. C. *Spontaneous Rupture of the Spleen in the Course of Typhoid Fever.*
6. Sherren, J. *Ileocolic Intussusception in an Adult.*
7. Ware, M. W. *A Very Early Form of Renal Tuberculosis Revealed by Nephrectomy.*
8. *von Eberts, E. M. *The Surgical Treatment of Non-Resilient Diverticula of the Bladder.*
9. Stow, B. *Fibrolymphosarcoma of Both Ureters Metastatic to a Primary Lymphosarcoma of the Anterior Mediastinum of Thymus Origin.*
10. Guthrie, D., and Wilson, L. B. *Congenital Unilateral Absence of the Urogenital System.*
11. *Clark, G. O. *Peri-Ureteral Pelvic Phleboliths.*
12. Buerger, L., and Oppenheimer, A. *Cyst of the Prostatic Urethra.*
13. Ransohoff, J. *Interilio-Abdominal Amputation.*
14. Van Meter, S. D. *A New Operation for Ingrown Toenail.*
15. *Hartwell, H. F. *The Treatment of Gonorrheal Arthritis with Vaccines Made from the Gonococcus.*

1. The authors consider two cases of extensive burns involving the periosteum of the skull. The expectant plan of treatment was adopted (antiseptic dressings) until the denuded bone plates might be cast off. In one case this occurred in three and one-half months. Progress in the other case was satisfactory for a month, when abscess of the brain developed. Owing to the blood supply of the bone tables, the outer is cast off over the entire area primarily denuded of periosteum, but the inner only over a small area corresponding to the center of the necrosed outer table. Brain infection occurs from this inner area of inflamed bone. The authors, therefore, recommend antiseptic treatment only until the sloughs of the soft parts have been cast off, and then trephining over the center of the clean exposed bone with the removal of a button one-half inch in diameter down to the dura.

3. Prompted by the feeling that the removal of the breast is such an extensive and severe an operation as to warrant every effort to bring about a speedy recovery with the best possible cosmetic results, Wiener always completely closes the wound. By freeing the loose areolar tissue lying between the breast and the fascia of the pectoralis major, he has in ten years always succeeded in transplanting the breast from the opposite side. Apposition is secured by the use of two or three shot-and-plate sutures placed two and a half or three inches from the margins of the wound and separated from the skin by thick gauze pads to prevent pressure necrosis. A running silk suture then makes accurate approximation.

4. Without ill-effect on the subsequent course of the fever, Wroth has employed the Fowler-Murphy treatment of peritonitis in four cases after closure of typhoid perfora-

tions. He regards as a valuable diagnostic sign the rapid and complete disappearance of liver dullness, with no or very slight abdominal distention, and cites three other operated cases to demonstrate its reliability. Associated with distention the sign is suspicious, but its absence without other very definite signs, even with enormous distention, is good ground for the belief that the intestinal tract is not the seat of a perforation. He emphasizes the fact that the pain is not only sudden, sharp and severe, but paroxysmal, and has observed patients fall asleep between attacks.

5. Bryan adds one case of spontaneous rupture of the spleen in typhoid fever to a series of twenty-four collected from the literature and proven by autopsy or operation. Epitomes of these cases are given. In the author's case the condition was discovered at operation for perforation and hemorrhage. Splenectomy was done, with death in one hour. The symptoms are those of hemorrhage plus hyperpyrexia and pain in splenic region and abdominal rigidity and distention without loss of liver dullness. The hyperpyrexia is due to an overwhelming absorption by the lymphatic channels of the peritoneal roof of the escaping poison. Bryan recommends the careful observation of typhoid patients with pain under the left costal arch, despite the size of the spleen, and immediate operation in Fowler's position upon the development of the above-stated signs.

8. Von Eberts presents a case with symptoms of cystitis and pyelitis and a large, boggy mass above and to the right of the prostate. Bladder lavage and vaccines failed. Nephrectomy was followed by cessation of pyrexia, but the urine remained cloudy. Suprapubic cystotomy revealed a pocket to the outer side of the right ureteral orifice, which was drained by a tube. A sinus persisted. The patient passed 250 ccm. of urine, the stream declined, and a few minutes later a similar amount was passed. Cystoscopy revealed the pocket to be a diverticulum, with a capacity of about 250 ccm. An extravesicular, extraperitoneal excision of the diverticulum was performed, with re-establishment of suprapubic drainage and counter-drainage through the perineum. After dilatation of the sphincter urinæ, the suprapubic wound was closed. Four months after operation the urine showed few pus cells and bacteria and a residual of 1–2 oz. Epitomes of eleven cases from the literature are given. The etiology of bladder diverticula, types of operation and prognosis are then considered.

11. Clark presents a convincing piece of work on periureteral pelvic phleboliths. A specimen consisting of bladder, prostate, rectum, seminal vesicles, phleboliths undisturbed as they existed in the vesico-prostatic plexus and ureters was obtained at an autopsy. Probes were passed in the ureters. From a cadaver were removed the pelvic organs and everything which might be expected to cast a radiographic shadow "not anatomically a normal portion of the bony pelvis." The specimen was then anchored *en bloc* in proper anatomical position. X-rays were taken with the tube in at least two positions. The phleboliths cast shadows and the shifting of the tube altered the relations of the shadows cast by them and those cast by the ureteral probes. Lines connecting the shadows showed an axis at variance with the ureter's course. To avoid mistaking phleboliths for ureteral calculi, Clark recommends ureteral bouging and several x-ray exposures, with variation of the relative positions of the light, patient and plate.

15. Hartwell contributes a careful study of fifty-one cases of gonorrheal arthritis treated with gonococcus vaccines. In all the diagnosis was proven according to accepted clinical standards, and in all sufficient time had elapsed since treatment to warrant definite conclusions regarding the permanency of the results. The dosage ranged in acute cases from 10,000,000 to 100,000,000, and in chronic cases to 600,000,000. Intervals of inoculation were from two to four and five to seven days respectively. Twenty-one positive cultures were obtained from the urethra and two from joints. No lasting immunity was demonstrated. Six cases had a recurrence of joint infections at intervals varying from three to seventeen months. Five of these followed a fresh gonorrheal infection. Cases treated with autogenous vaccines contrasted with those treated with stock vaccines showed more rapid amelioration in symptoms and a greater percentage of good functional results in chronic as well as acute cases. Upon the subsidence of acute symptoms massage and passive motion was instituted in all cases. In five cases of chronic stiff back the improvement was striking. [T. W. H.]

SURGERY, GYNECOLOGY AND OBSTETRICS.

NOVEMBER, 1909.

1. LUSK, W. C. *A Technic of Resection of the Male Rectum, with the Report of a Case.*
2. *KELLY, H. A. *Post-Operative Psychoses.*
3. VAN HOOK, W. *The Use of the Lenses by the Surgeon.*
4. MYER, W. W. *Malignant Leiomyoma of the Uterus.*
5. *ALLPORT, W. H. *Tuberculous Infection of the Peritoneum.*
6. BONNEY, C. W. *Spontaneous Rupture of Pyosalpinx into the General Peritoneal Cavity, Producing Acute Diffuse Peritonitis.*
7. RUSHMORE, S. *Ovarian Cyst with Twisted Pedicle Complicating Pregnancy. Operation. Report of One Case and Review of the Literature.*
8. LEWIS, B. *Pitfalls of Urinary Diagnosis.*

2. Kelly believes that the majority of the post-operative psychoses are of the acute hallucinatory confusional type of insanity. One half of all the cases in women occur between the ages of thirty-five and forty-five. The disturbance is as common in men as in women. Psychoses seem as common after mild as after severe operations. Kelly's statistics go to show that double removal of ovaries is not, as commonly supposed, more commonly followed by psychoses. Heredity probably does tend to be an influencing factor. There are about 50% of recoveries. Prophylaxis consists in quieting and reassuring the patient. Mild aberrations of a transitory nature are very common.

5. Peritoneal tuberculosis is never primary. The most common avenue of entrance is the bowel; next, the lymph glands, then the female genitals. Bowel infection or infection of the female genitals may, however, be secondary to a peritoneal infection. Gravity plays an important part in the spread of intraperitoneal tuberculosis. Temperature of a markedly febrile character is an indication of mixed infection. This is especially true of remittent fever. The theory that ascitic fluid has a protective, curative function is incapable of proof. Simple incision, with evacuation of all fluid possible without drainage, is a great aid to hygienic treatment. Drainage leads to great evils and should not be employed. [E. H. R.]

THE LANCET.

NOV. 13, 1909.

1. *OSLER, W. *An Address on the Nation and the Tropics.*
2. *BLANDFORD-SUTTON, J. *A Lecture on an Improved Method of Removing the Testicle and Spermatic Cord for Malignant Disease.*
3. ALLBUTT, C. *Typical and Fractional Pneumonia.*
4. *BUTLIN, H. T. *On Radium in the Treatment of Cancer and Some Associated Conditions.*
5. MERCIER, C. *Brain and Mind.*
6. *LANE, W. A. *Civilization in Relation to the Abdominal Viscera, with Remarks on the Corset.*
7. JONES, H. L. *On Rhythmic Interrupters for Use in Electro-Therapeutic Work.*
8. EVANS, W. *The Treatment of Chronic Ulcer of the Leg.*
9. WILLIAMSON, R. T. *Atrophic Paralysis of the Muscles of Both Hands and Forearms; Recovery.*
10. SAMUT, R. *The Enumeration of Blood Corpuscles by Simplified Methods.*
11. SHEEN, W. *Case of Simultaneous Fracture of the Patellæ.*
12. HEARNS, W. H. *Large Vesical Calculus Weighing Twenty-Six and One-Quarter Ounces Removed by Suprabupic Lithotomy. Recovery.*
13. GLAISTER, J. *The Plea of Lunacy in the Criminal Courts of Scotland.*
14. HIRSCH, C. T. W. *The Motor Exhibition at Olympia.*

1. Osler reviews the subject of tropical diseases and the great conquests which have been made against them in the last ten to fifteen years. In particular he dwells on the eradication of yellow fever from Cuba and of malaria from the Panama Canal Zone.

2. Bland-Sutton describes the anatomy of the testis and the details of his operation for its removal for malignant disease. He gives the statistics of the frequency of malignant disease of the testis at the various London hospitals during the past ten years.

4. Butlin gives the details of eight cases of rodent ulcer or epithelioma treated with radium. He believes it is admirably adapted to rodent ulcers of small extent. The application is almost painless, with very little danger to life or health. Small epitheliomatous ulcers are treated with nearly equal success. In any but those of the smallest size, however, he does not believe that we are justified in advising this treatment unless for some good reason an operation is contra-indicated.

6. Lane discusses the effects of modern civilization, especially the wearing of corsets, on the position and action of the bowels and other abdominal organs. Much of the constipation and auto-intoxication from which women suffer are due to tight-fitting corsets. He believes that married women, and those who have borne children especially, are less liable to this auto-intoxication, and is of the opinion that "one of the greatest men of whom America can boast," Brigham Young, has done a great service to mankind in popularizing polygamy, and hopes that this custom will become more common than it now is. [Whether or not this entertaining point of view will find favor in America is, however, somewhat doubtful. — J. B. H.] [J. B. H.]

British Medical Journal.

Nov. 13, 1909.

1. Mott, F. W. *The Present Position of the Neurone Doctrine in Relation to Neuro-Pathology.*
2. *Jonnesco, T. *Remarks on General Spinal Analgesia.*
3. O'Connell, M. D. *The Departmental Committee on Humidity and Ventilation in Humid Cotton-Weaving Sheds.*
4. Huggard, W. R. *Classification of Cases of Pulmonary Tuberculosis.*
5. Beetham, F. *A Case of Acute Lupus Erythematosus.*
6. Day, L. *A Case of Henoch's Purpura.*

2. Jonnesco describes his method of spinal anesthesia in an article illustrated with photographs, diagrams and furnished with complete statistics of both his operations and those of his pupils. His conclusions are: (1) In spinal analgesia the fundamental principles are that puncture of the arachnoid may be performed at all levels, and that strychnine should be added to whatsoever anesthetic is used — stovaine, tropacocaine or novocain. (2) Puncture of the arachnoid at whatever level is harmless and the fear of pricking the cord unfounded, and no harm done if it is pricked. (3) Medio-cervical puncture is useless and dangerous; puncture between the first and second dorsal vertebræ, superior dorsal puncture, or puncture between the last dorsal and first lumbar vertebræ or dorso-lumbar puncture are the correct points at which to introduce the anesthetic. (4) The strychnia does away with harmful effects of the anesthetic on the bulb. (5, 6 and 7) Stovaine seems the best drug to use; neither it nor the strychnia should be sterilized, as it destroys some of its properties; the water should be sterilized but not distilled. (8) The injection should consist of 1 ccm. of the solution. (9, 10) There are no contra-indications to this method of anesthesia. (11, 12) This method is absolutely safe; it has never caused a death nor produced any complications, early or late. It does away with the need of an assistant to give the anesthetic, and in his opinion is far better than any inhalation method. He firmly believes that it will be the anesthetic of the future. He reports 412 cases of analgesia by this method, of which he gives brief details. [J. B. H.]

Deutsche Medizinische Wochenschrift. No. 44.

Nov. 4, 1909.

1. Oppenheim, H. *Diagnosis and Treatment of Tumors within the Spinal Canal.*
2. Hoostmann, C. *Pathology and Treatment of Sympathetic Ophthalmia.*
3. *Schumacher, G. *The Sero-Diagnosis of Syphilis in Diseases of the Eye, with Remarks on the Relation of Tuberculosis to Syphilis in Eye Diseases.*
4. Herzenberg, R. *Etiology of Tumors of the Forehead.*
5. Eliasburg, J. *Deviation of Complement in Leprosy with Syphilitic Antigen.*
6. Friedlaender, J. *Pernicious Anemia and Lesions of the Spinal Cord.*
7. Graef, W. *Acute Yellow Atrophy of the Liver with Secondary Syphilis.*
8. Brückner, M. *The Prognostic Importance of Blood Pressure in Diphtheria.*
9. Mallinckrodt, K. *A Clinic for Infantile Tuberculosis.*
10. Meyer, O. *Mobilizing an Ankylosed Hip-Joint.*

3. Schumaker takes up a series of forty-five cases of diseases of the eye and uses the serum method of diagnosing syphilis. He studies in these cases the relation between syphilis and tuberculosis. He does not agree with Bests that the absence of a positive reaction will exclude hereditary syphilis in these eye cases. As a result of his work he concludes that the serodiagnostic method offers in a great number of doubtful cases considerable aid, not only when positive, but also when negative. In hereditary syphilis which has shown no symptoms for some time the percentage of positive tests is low. On the foundation of a hereditary syphilitic eye injury tuberculosis may be superimposed. In these cases a combined syphilitic and tuberculin treatment is the correct procedure. [C. F., Jr.]

Münchener Medizinische Wochenschrift. No. 45.

Nov. 9, 1909.

1. Jesionek and Meirowsky. *Practical Value of the Wassermann Reaction.*
2. Lentest, E. *Bacteriological Studies of the Blood in Inflammation of the Middle Ear.*
3. Königstein, H. *Post-Mortem Formation of Pigment.*
4. Hamburger, F., and Schey, O. *Systemic Swelling of the Lymph Glands in Measles.*
5. Koch, H. *Complement-Binding in Tuberculosis.*
6. Wolff, P. *Latent Occurrence of Merck's Form of the Tubercle Bacillus.*
7. Köhler, A. *Deep Treatment with Röntgen Rays.*
8. Müller, A. *Banti's Disease.*
9. Seiffert. *Tropical Syphilis.*
10. Baermann, G. *Death from Quinine.*
11. Kraemer, F. *Action of the Fluid Extract of Apocynum Cannabinum.*
12. Merck, O. *Taking of Blood for Serological Tests from the Nasal Septum.*
13. Rücker. *Severe Hematemesis from Lesions of the Nasal Septum.*
14. Guleke, N. *Surgical Impressions from Travel in North America.* (To be continued.)

Berliner Klinische Wochenschrift. No. 45.

Nov. 8, 1909.

1. *Sonnenburg, E. *Early Operation in Appendicitis.*
2. Hymans van der Bergh, A. A., and Grutterink, A. *Is Cholera a Nitrite Poisoning?*
3. Fränkel, B. *Further Communication on the Decrease in the Mortality from Tuberculosis.*
4. Müllerheim, R. *Early Getting Up after Childbirth.*
5. Donath, K. *The Wassermann Reaction in Aortic Disease and the Significance of the Use of Mercury in the Serum Diagnosis of Lues.*
6. Lipschitz, F. *The Treatment of Scabies with "Perugen."*
7. Siegheim. *Dermatitis from Satinwood.*
8. Likudi, G. *The Therapeutic Value of "Medinal."*

1. Sonnenburg discusses the types of appendicitis in relation to their pathology and etiology, differentiating the simple catarrhal type from the destructive type. The two forms may be only stages in one process, but the catarrhal form often gets well and is generally an extension of a catarrhal process in the gut, while the destructive type is more often hematogenous in origin, is much more severe and demands immediate operation. It is often merely a local manifestation of a general septic process, like osteomyelitis, typhoid, dysentery or influenza, or it may be associated with emboli into the meso-appendix. The destructive type is more common in children because general hematogenous infections and intestinal catarrhs

are more frequent in children than in adults. When appendicitis is merely the local manifestation of a general septic process, operation may have little influence on the disease. The author considers the "leucocyte curve" of almost equal importance with the temperature and of considerable prognostic value. Operation within the first twenty-four or forty-eight hours is always indicated in the face of a severe or increasingly severe process. It is a question of degree which can be judged with remarkable accuracy from the classical signs. A good surgeon should be able to give the pathological anatomy of the appendix before operation. [H. P. G.]

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Correspondence.

LONDON LETTER.

Professor Jonnesco's Method of General Spinal Anesthesia.

[*From Our Special Correspondent.*]

London, Nov. 20, 1909.

Mr. Editor: My long silence must not be taken to mean that medical London has been barren of events or dead to progress. Nevertheless, the stimulus that has made me take up my pen derives from so far a spot as Bucarest. Yesterday afternoon I had the pleasure of seeing a demonstration by Professor Thomas Jonnesco, at the London School of Clinical Medicine, of his method of general spinal analgesia. Although, technically speaking, the results he obtained there were imperfect, every one who heard him and saw him at work was decidedly impressed. In the first place, the personality of the man inclines one to a sympathetic consideration of his thesis. In fluent French he gives an admirably precise account of his technic; his claims on behalf of his method are uncompromising, but they are stated with charming modesty; his punctures are made without any fuss, and his incision is commenced without any preliminary trial of the skin sensation. He has complete confidence in the reliability of the analgesia.

The first case I saw him operate upon was a young man with breaking-down tuberculous glands in the neck. Beyond an initial tendency to retching, which soon passed off, and a little pallor, the patient gave no sign of suffering. Indeed, he was asked several times how he felt and replied that it was not hurting him. At the conclusion of the operation his cornea was found insensitive, and an ophthalmologist expressed his opinion that any ocular operation could have been performed. The pharynx, too, and superior aperture of the larynx were analgesic. This morning I asked the man how he felt. He said he really had no pain, but was not very comfortable; that, he admitted, was probably partly due to the general conditions; there were such a lot of people looking on, and, although he was blindfolded, he knew what was going on, and so on. He vomited once in the night, and his temperature went up to a little over 99° F.; he had had some headache, but it had passed off.

The second case was an exploratory laparotomy for carcinoma of the stomach. The analgesia was not quite perfect, and this morning the patient, who is a voluble old Irishman, is full of bitter complaints about his sufferings. He felt "as though they was pulling my heart out," and again as though "all my insides was being tugged out." At the same time he was in much better condition than many similar patients who have had laparotomy performed under inhalation narcosis the day before. He had vomited incessantly, it is true, but that was part of his gastric complaint. He was almost as eloquent about the inability he had experienced for nearly two hours after getting back to bed of lifting his legs. The pulse and respirations were normal.

The third case was for a mastoid operation in a boy of fifteen, and the analgesia was insufficient. When the periosteum was reached it became necessary to resort to chloroform. It is only fair to say, however, that for the last two cases Professor Jonnesco had to use stovaine as to the source of which he had no knowledge, and he thought probably it had been sterilized, a process by which it is deprived of four fifths of its potency.

More then seven hundred cases have now been operated upon under general spinal analgesia by Jonnesco and his pupils. In the whole list there has been no single accident. The secret of safety is the combination of strychinne with stovaine. After a preliminary trial of atropine as a means of safeguarding the heart and respiration, he found by experiment on animals that strychnine was infinitely superior, and he now uses this combination with complete confidence. The pulse, which with stovaine alone is often slowed, with strychnine added may be a little increased in rate, but it remains of good volume and tension.

Respiration is not embarrassed and persists of the costal type, and that even when the arms and muscles of the face and neck are in a state of paresis. A solution of neutral strychnine sulphate is prepared beforehand, but the stovaine should be dissolved at the time of operation; the water should be sterilized but not distilled, and the stovaine should not be sterilized as its solution is itself antiseptic, and by sterilization it is deprived, as above stated, of its potency.

Although the analgesia produced is regional, it has been found by experience that two regions suffice, and correspond to two points of puncture, each of which is easy to find and to penetrate. For operations on the head, neck, upper limb and thorax, a puncture is made between the first and second dorsal vertebræ, accurately in the middle line. The vertebra prominens is found and the spines counted down; the head is bent upon the thorax until the chin touches the sternum; the needle follows the slope of the spinous process of the second dorsal vertebra and encounters no opposition to speak of until the dura is reached. At this level the fluid escapes only drop by drop, or may require an effort of coughing on the part of the patient to make even a drop appear. It is undesirable to let any cerebrospinal fluid escape, and the solution should be injected slowly. After one minute in the upright sitting position, the patient is lain upon his back and the head lowered to about 30° below the horizontal for another minute. When brought level after this he is ready for an operation on the neck or lower face; to obtain analgesia of the top of the head it may be necessary to employ the deep Trendelenberg position for three or four minutes, but when obtained it is possible to perform an extensive craniotomy and to have the patient talking and laughing during its course.

Temporary aphasia has, however, been observed on more than one occasion after the use of the head-dependent position.

Now as to the dose: This is less for the higher injection than for the lower, and as the quantity of fluid is the same, 1 ccm., it follows that the specific gravity of the latter is higher; in consequence, diffusion is slower and a longer time must elapse between the moment of injection and commencement of the operation. Two standard solutions of strychnine are used, one containing 5 cgm. in 100 gm. of sterilized water, and the other 10 cgm. In the former, 3 cgm. of stovaine are dissolved for high injection in an adult, 2 cgm. for those of age five to fifteen, and 1 cgm. for children under five. For the low injection the stronger solution is used and the amount of stovaine may reach 10 cgm. In the case of failure to obtain analgesia, a fresh puncture and a second or a third dose, equal in amount to the first, is given. It is to be taken that there is no idiosyncrasy, but that the first dose has not reached the arachnoid space.

Well, as to the feasibility of the method, there is no longer any doubt. As to the desirability of establishing it as a routine, there is naturally still considerable doubt. To have done seven hundred cases without accident is satisfactory, but there is time for many accidents to happen before a figure is reached that will render the safety comparable with that of ether. Professor Jonnesco says that the dangers and disasters with inhalation narcosis are far greater and more numerous than the statistics lead one to suppose. No one who has seen the way in which anesthetics are given in many continental hospitals will fail to sympathize with his complaint, but surgeons here at any rate have not much ground for grumbling and I am sure they have not with you. It is put forward that there need be no division of responsibility, but even if the surgeon makes his injections himself, he will need extra assistance for the preparation of the materials, and the pharmacist must be impeccable. Again, what may be an ideal anesthetic from the point of view of the surgeon may not be so from that of the patient. It is open to grave question whether the Saxon people, whatever may be the case with the Celts, will readily submit to the mental strain which even a painless operation entails. The people of Roumania, at any rate, do not seem to mind, for Jonnesco says he has not done an operation under inhalation narcosis, even in private, since October, 1908.

I think I ought to mention that the professor showed a very striking photograph of one of his pupils sitting on the operating table performing a radical cure of hernia upon himself; of course the injection in his case was a low one, but it illustrates in histrionic fashion the detachment with which one under the influence of stovaine *can* regard the analgesic parts of his anatomy!

The reception accorded Jonnesco by the surgical section of the Royal Society of Medicine was cordial, but reserved.

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AN APPEAL.

The Anti-Tuberculosis War and the Red Cross Christmas Stamp.

New York, Dec. 1, 1909.

Mr. Editor: Last fall it was my privilege to address the two Red Cross branches, one in Brooklyn and one in New York, pleading with them to help in the anti-tuberculosis war through the aid of a Red Cross Christmas stamp. I published the two addresses in the form of an article in the New York *Medical Journal* of Nov. 28, 1908. I know that hundreds of others, nay, even thousands, have also pleaded, and perhaps more eloquently and more successfully than I, but this shall not prevent me from pleading again for this holy cause, particularly since I have been honored by the officers of the American National Red Cross with an invitation to do so.

The history of the Red Cross is known to most people. It owes its origin to the feeling of sympathy awakened throughout Europe by the sufferings occasioned by the Crimean War. The object of the Red Cross Society is, in the main, to mitigate the evils inseparable from war. All the civilized nations of the world have branches of this truly international association. Founded in Geneva in 1863, it is now not quite fifty years old, but what a glorious work it has done! Throughout the many bloody wars of the last half century, the Red Cross servants were truly the ministering angels who lessened suffering and saved countless lives. And not only in wars, but also in other disasters such as floods, earthquakes, mining and railroad accidents, fires and pestilences, a great army of Red Cross soldiers are always present to ameliorate conditions, dress the wounded, nurse the sick, feed the hungry and improve sanitation, so as to limit the fatalities as much as may be possible. The heroism of the Red Cross workers, both men and women, has never been surpassed by the gallantry of the bravest soldiers.

Now this great association has undertaken to fight the most formidable enemy of mankind: one which, unfortunately, cannot be met openly in battle; one which, by its insidiousness, and because it is unseen and unrecognized by the naked eye, is all the more dangerous and difficult to combat. There are probably at this moment 500,000 people in the United States suffering from tuberculosis in one form or another, and 1,000,000 school children who are probably destined to die of tuberculosis before they reach the age of eighteen, and yet modern medical science has demonstrated beyond a shadow of a doubt that tuberculosis is a preventable and curable disease. Its prevention depends upon bettering the hygiene of the masses and improving their living conditions, on the early recognition of the disease, and on the suppression of all centers of infection arising from advanced cases. This is to be accomplished not with cruel isolation or treating the unfortunate consumptive as an outcast, but by removing the consumptive poor to special hospitals where they will be kindly treated and the utmost care exercised to improve their condition and at the same time minimize danger of infecting others. The home of the conscientious, well-to-do consumptive, in the advanced stages, can be arranged so that there is really no danger of contagion.

The cure of the tuberculous depends upon the early recognition of the disease and the timely treatment in well-arranged sanitary homes or in special institutions, sanatoria, hospitals or camps, and there is urgent need for such institutions in nearly every state of the union. Of course, for the tuberculous children we must have many open-air schools and children's sanatoria; and for the tuberculous adult, cured or sufficiently improved to do some work, we must have agricultural or horticultural colonies or other means to give outdoor occupation.

Unfortunately, tuberculosis is a disease which is most prevalent among the poor, and after what has been said I need not explain any further that in order to prevent and cure tuberculosis in our own beloved country, we need a great deal of money. All the skill of the physician and the devotion of the nurse is of no avail when the tuberculous patient lacks the means to buy good food, cannot afford to live in a sanitary home, have proper clothing, or rest when rest is his only salvation. The patient's anxiety for those depending upon him must also be removed. The wife or children, the aged father or mother deprived of their supporter, must be cared for. Tranquillity of mind is as essential to the cure of tuberculosis as all other factors. To do all this, I say again we need money, much money.

Fortunately, this country is rich and it does not lack in philanthropy and brotherly love, and I know that this appeal which is now going out from the Red Cross will not be in vain. It will give opportunity to the humblest of the humble, to the richest among the rich, to help in this great, good and holy cause of saving lives, making tuberculous children into strong and healthy citizens, the curable consumptives into breadwinners for their families, and rendering the hopelessly ill consumptive comfortable and happy as far as it is in human power to do.

The whole nation will reap the benefit of a successful war against tuberculosis, and this benefit will not only be sanitary and moral, but even financial, for every restored breadwinner and healthy citizen is an addition to the wealth of the nation.

But let us put aside for a moment the financial aspect. Christmastide is not a season when we calculate on returns for what we give. We find pleasure and delight in giving, in making others happy, and surely here is a splendid opportunity to do this. Let each one buy as many stamps as he can; tell the little children that every penny they can spare for stamps will help to save a little child's life, and although they may not see the little sufferer and receive direct thanks, they as well as the adults can rest assured that their gifts will be appreciated and the unknown donor remembered in the grateful prayers of some tuberculous invalid.

The 1909 Red Cross Christmas Stamp is not good for postage. It will not carry any kind of mail, but any kind of mail will carry it except matter going to England or Germany. The use of the beautiful Red Cross stamp carrying Christmas and New Year's greetings gives an excellent opportunity to every one to help the anti-tuberculosis cause according to his means. The layman will thus be the coworker of the physician, a true brother and helper. He who makes his Christmas offering by the purchase of as many of these stamps as he can afford to buy will surely feel the season's joy all the more, knowing that through his participation in this work somewhere some consumptive sufferer has been helped, some dark home made brighter, some little child saved.

Very truly yours,
S. Adolphus Knopf, M.D.,
Professor of Phthisio-Therapy at the New York Post-Graduate Medical School and Hospital.

RECORD OF MORTALITY

FOR THE WEEK ENDING SATURDAY, NOV. 27, 1909.

CITIES.	Reported deaths in each.	Deaths under five years.	CITIES.	Reported deaths in each.	Deaths under five years.
New York	—	—	Waltham	5	0
Chicago	586	136	Pittsfield	4	1
Philadelphia	—	—	Brookline	7	—
St. Louis	—	—	Gloucester	5	2
Baltimore	179	45	North Adams	5	2
Cleveland	—	—	Northampton	5	1
Buffalo	—	—	Chicopee	5	2
Pittsburg	—	—	Medford	2	—
Cincinnati	—	—	Beverly	3	—
Milwaukee	—	—	Leominster	8	2
Washington	—	—	Hyde Park	3	—
Providence	—	—	Melrose	2	0
Boston	191	42	Newburyport	7	—
Worcester	41	11	Revere	5	—
Fall River	41	17	Westfield	2	—
Cambridge	23	8	Woburn	5	—
Lowell	37	12	Peabody	—	—
New Bedford	31	13	Marlboro	3	0
Lynn	30	5	Attleboro	2	0
Springfield	33	7	Adams	4	1
Lawrence	26	12	Clinton	5	1
Somerville	20	5	Gardner	5	0
Brockton	20	4	Milford	3	1
Holyoke	25	8	Watertown	7	3
Malden	5	1	Plymouth	—	—
Chelsea	16	2	Southbridge	4	1
Newton	7	1	Weymouth	5	0
Salem	9	5	Framingham	3	1
Haverhill	8	2	Wakefield	—	—
Fitchburg	—	—	Webster	—	—
Everett	8	1	Arlington	4	—
Quincy	10	2	Greenfield	2	—
Taunton	12	4			

LIST OF CHANGES OF STATIONS AND DUTIES OF COMMISSIONED AND OTHER OFFICERS OF THE PUBLIC HEALTH AND MARINE-HOSPITAL SERVICE FOR THE SEVEN DAYS ENDED NOV. 24, 1909.

IRWIN, FAIRFAX, surgeon. Relieved from duty on U. S. Revenue Cutter "Thetis," effective Nov. 22, 1909, and granted one month's leave of absence. Nov. 19, 1909.

PARKER, HERMAN B., passed assistant surgeon. Relieved from duty at Ellis Island, N. Y., and directed to proceed to Guayaquil, Ecuador, for duty in the office of the U. S. Consul. Nov. 22, 1909.

ANDERSON, JOHN F., passed assistant surgeon. Directed to proceed to Mexico City, Mex., upon special temporary duty. Nov. 16, 1909.

WHITE, M. J., passed assistant surgeon. Directed to proceed to Flint, Mich., upon special temporary duty. Nov. 22, 1909.

LLOYD, BOLIVAR J., passed assistant surgeon. Upon the arrival of passed assistant surgeon Herman B. Parker, directed to proceed to New York, N. Y., and report by wire to the Bureau for further orders. Nov. 22, 1909.

LLOYD, BOLIVAR J., passed assistant surgeon. Granted one month's leave of absence en route to United States.

SPRATT, R. D., passed assistant surgeon. Leave of absence for twenty days from Nov. 17, 1909, amended to read twenty days from Dec. 10, 1909.

LYON, R. H., assistant surgeon. Granted seven days' leave of absence from Nov. 14, 1909, under paragraph 191, Service Regulations.

DUKE, B. F., acting assistant surgeon. Granted twenty-five days' leave of absence from Nov. 18, 1909.

CASTRO-GUITIERREZ, J. L., acting assistant surgeon. Granted seven days' leave of absence from Nov. 18, 1909.

HALLETT, E. B., acting assistant surgeon. Granted three days' leave of absence from Nov. 24, 1909.

NAULTY, C. W., JR., acting assistant surgeon. Granted five days' leave of absence from Nov. 24, 1909.

SCHUSTER, B. L., acting assistant surgeon. Granted three days' leave of absence from Nov. 25, 1909.

SINCLAIR, A. N., acting assistant surgeon. Granted fifteen days' leave of absence from Dec. 16, 1909.

WARD, J. LA BRUCE, acting assistant surgeon. Granted ten days' leave of absence from Nov. 17, 1909.

WILSON, J. G. acting assistant surgeon. Granted twenty-five days' leave of absence from Dec. 2, 1909.

LAGRANGE, J. V., pharmacist. Granted four days' leave of absence from Nov. 18, 1909, under paragraph 210, Service Regulations.

RYDER, L. W., pharmacist. Granted five days' leave of absence from Nov. 22, 1909, under paragraph 210, Service Regulations.

SOUTHARD, F. A., pharmacist. Relieved from duty at Chicago, Ill., and directed to proceed to Fort Stanton, N. Mex., and report to the medical officer in command for duty and assignment to quarters. Nov. 23, 1909.

BELL, J. M., pharmacist. Relieved from duty at Fort Stanton, N. Mex., and directed to proceed to Chicago, Ill., and report to the medical officer in command for duty and assignment to quarters. Nov. 23, 1909.

BOARD CONVENED.

Board of medical officers convened to meet at the Marine Hospital, Baltimore, Md., Nov. 29, 1909, for the purpose of conducting a physical examination of four cadets and three cadet-engineers of the U. S. Revenue-Cutter Service. Detail for the Board: Surgeon W. P. McIntosh, chairman; Passed Assistant Surgeon M. K. Gwyn, recorder. Nov. 19, 1909.

SOCIETY NOTICE.

BOSTON MEDICAL LIBRARY IN CONJUNCTION WITH THE SUFFOLK DISTRICT MEDICAL SOCIETY. — Surgical Section Meeting, John Ware Hall, Wednesday, Dec. 15, 1909, at 8.15 P.M. "The Prevention and Inhibition of Peritonitis with Especial Reference to the Effects of Cathartics," Albert J. Ochsner, M.D., of Chicago. Discussion by Drs. F. B. Harrington, C. A. Porter, J. B. Blake, J. T. Bottomley, and others. Light refreshments after the meeting.

FRED T. MURPHY M.D., *Secretary*, 309 Marlborough St.

FRANKLIN G. BALCH, M.D., *Chairman*, 279 Clarendon St.

RECENT DEATHS.

BLANCHARD, ALBERT HENRY, M.D., M.M.S.S., died in Sherborn Dec. 5, aged 81 years.

DR. WILLIAM GEOGHAN, of New York, died suddenly from cardiac disease, on Nov. 28, at the age of fifty-five years. He was graduated from the Albany Medical College in 1874, and at the time of his death was one of the staff physicians of the Metropolitan Life Insurance Company.

DR. SAMUEL BLACKWELL SMALLWOOD, of Astoria, Borough of Queens, New York, died on Nov. 28, in his sixty-ninth year. He was graduated from the Medical Department of the University of the City of New York in 1864.

DR. WOLFARTH, a retired physican, committed suicide at his summer home at Grantwood, Bergen County, N. J., on Nov. 29. He is said to have been suffering from melancholia for some time.

BOOKS AND PAMPHLETS RECEIVED.

Ueber eine neue Methode der Nephropexie. Von Dr. Carl Beck. Reprint.

Annual Report of the Brockton Hospital Company for the Year 1908.

The Department of Physical Instruction. By Thomas A. Storey. Reprint.

Treasury Department. Public Health and Marine-Hospital Service of the United States. Hygienic Laboratory. Bulletin No. 57. I. The Presence of Tubercle Bacilli in the Circulating Blood in Clinical and Experimental Tuberculosis. By John F. Anderson. II. The Viability of the Tubercle Bacillus. By M. J. Rosenau. Washington. 1909.

Culture in Vitro des Cellules Cancéreuses. Par Marie Bra. Illustrated. Paris: A. Poinat. 1909.

Some Plans and Suggestions for Housing Consumptives. New York: The National Association for the Study and Prevention of Tuberculosis. 1909.

Festschrift zur Vierzigjährigen Stiftungsfeier des Deutschen Hospitals. Reprint.

The Annual Address of the President of the State Medical Society of Wisconsin. By Gilbert E. Seaman, M.D. Reprint.

The Epidemic of the Indians of New England, 1616-1620, with Remarks on Native American Infections. By Herbert U. Williams, M.D. Reprint.

Medical Gynecology. By Samuel Wyllis Bandler, M.D. Second revised edition. Illustrated. Philadelphia and London: W. B. Saunders Co. 1909.

Modern Materia Medica and Therapeutics. By A. A. Stevens, A.M., M.D. Fifth edition, thoroughly revised. Philadelphia and London: W. B. Saunders Co. 1909.

Original Articles.

RENAL SUPPURATIONS IN TYPHOID FEVER.*

BY CHARLES F. WITHINGTON, M.D.,
Visiting Physician, Boston City Hospital.

Typhoid fever is now generally admitted to be a septicemia, the organism not being limited to the intestinal lesions, but existing in the blood current and thus being carried to many different parts of the body. It occurs in the urine in from a third to a quarter of the cases. These bacteria, like those of other infections, may be eliminated through the kidney without producing demonstrable lesions, or they may cause local inflammatory or even suppurative lesions. Roux showed, twenty years ago, that the typhoid organism was pyogenic. These suppurations, like those occurring elsewhere in typhoid, may be due to the typhoid bacilli alone or in conjunction with other pyogenic cocci. The soil is rendered more receptive, as has been pointed out by various observers, by such local conditions as pelvic calculus, hydronephrosis, stagnation in a displaced kidney, and in general by the possible irritation due to the elimination through the kidneys of toxins, waste products, etc.

Vincent,[1] writing of the mixed infection of typhoid bacilli and streptococci, says that this mixture of infections has for its customary cause a previous lesion, due, for example, to the streptococcus in a sore throat, to abscess, otitis, erysipelas, parotitis and blister or bedsore. Also, that the bronchitis and bronchopneumonia, so frequent in typhoid, are often due to streptococcus and may become the point of departure of a mixed infection. On account of its invasion by the typhoid bacilli, the organism becomes powerless to defend, by the phagocytic barrier, the field of culture against the streptococcus. The danger lies less in any local development of the streptococcus than in the readiness with which its diffusion takes place in the blood of typhoid patients. The same may be true of bacillus coli and other organisms.

Hewetson[2] classifies the pathological changes in the kidney attributable to typhoid fever as (*a*) the lymphomatous nodules immediately beneath the capsules; (*b*) parenchymatous changes; (*c*) abscesses in the kidney; (*d*) infarctions. He says that the kidney lesions show no pathological unity, but may be due to typhoid bacillus or to micro-organisms which enter the circulation through the diseased intestinal wall, or sometimes to bacteria which travel up from the lower urinary passages, and that the toxic products of the bacteria may cause most extensive lesions.

In typhoid fever bacteriuria often occurs without pyuria or other evidence of inflammation. Here the bacteria are being simply secreted. The kidneys are passing off the bacteria, but there is no evidence that the kidneys themselves have received an infection. In like manner the gall-bladder of typhoid patients shows very frequently, perhaps generally, a culture of typhoid bacillus, but this, ordinarily, is of no clinical importance except as it may store up organisms which may produce later a recrudescence of the disease. In a few cases the organisms, however, grow there and cholecystitis results. Possibly the bruising of the gall-bladder mucosa, resulting from an antecedent gallstone, may conduce to this infection. In like manner, in the kidney the typhoid bacillus, usually effete and in the process of being eliminated, may at times take on active growth, evinced by the production of sensible amounts of pus and often accompanied by pain. Clinically the urine may show with these pus corpuscles caudate cells from the pelvis, if actual infectious pyelitis exists. If the pelvis does not communicate freely with the bladder, there is a pyonephrosis with stretching and disintegration of the kidney.

Neufeld[3] does not accept the view, often held, that the typhoid bacilli are usually only excreted by the kidney as a measure of defense to the economy, but assents to Konjajeff's opinion that the typhoid bacilli establish themselves in the kidneys and there form little metastatic foci before they pass into the urine. The author was able to demonstrate such little necrotic foci, most thickly under the capsule of the kidney, and from these to obtain by culture and in stained sections the typhoid bacillus. These kidney metastases may be regarded as pathologically equivalent to skin metastases, namely, the rose spots. They both correspond in time to the height of the fever, when we may believe there is a copious migration of bacilli to all parts of the body. They may remain in the kidney a long time before passing to the urine. If several such foci exist, they may consecutively open into the urinary current. Whether we view the presence of typhoid bacilli in the urinary tract as an excretion, or take the view last referred to, we may believe that they are capable of producing lesions in the kidney, either in the form of parenchymatous nephritis or of small abscesses in the kidney, or of a pyelitis.

There is, then, among the possibilities of typhoid fever, one not very frequent and apparently little known, which may acquire sudden clinical importance at the time when the patient is apparently nearly convalescent from his typhoid fever, causing recrudescence of the temperature, which otherwise would be unexplained, pain, pyuria, often followed by vesical tenesmus. This condition is to be borne in mind in some cases of apparent relapse. It adds much to the gravity of any given case and, as will be seen later, has an important bearing as suggestive of the need of surgical interference.

Louis,[4] as long ago as 1841, in his classical researches on typhoid fever, mentions one case in which the pelvic mucosa was notably thickened and contained from 28 to 30 gm. of pus.

Tapret and Roger[5] quote Rayer as having described, even one year earlier than Louis, an occurrence of miliary abscesses in the kidney of a typhoid patient which appears to be the first observation of the kind to be made. These authors also describe a fatal case of typhoid in which, after marked improvement at the end of the third week, a recrudescence of fever occurred with abscesses of the submaxillary and epitrochlear gland and a large amount of albumen in the urine. Death occurred on the fortieth day. The kidneys showed many miliary abscesses. This was evidently a case of general septicemia, the organism present in the kidneys, of course, not being stated.

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*Read before the Association of American Physicians, Washington, D. C., May 12, 1909.

Regarding the existence of typhoid organisms in the urine, Richardson[6] demonstrated their existence in the urine in 25% of the cases, in large numbers and practically in pure cultures. They first appeared in later stages of the disease and persisted, in the majority of cases, far into convalescence. The continuance of these organisms in the urine of patients, after their discharge from care, has been pointed out by several observers, among others by Graham and Oberlander, Joslin and others.[7] Richardson found bacilli associated always with albuminuria and presence of renal casts, but, on the other hand, urines showing considerable amounts ot albumen and casts often showed no bacilli.

Biss[8] attempts to classify 31 cases of urinary disease found in 311 cases of typhoid fever into (*a*) bacilluria and (*b*) cystitis. He regards 13 of these (4.18%) as cystitis and 18 (5.78%) as bacilluria and makes no mention of the kidney or renal pelvis. His observations as to the frequency of bacilluria are obviously imperfect, as he examined only cases showing ocular evidences of pus, while Richardson and Horton-Smith, examining all cases of typhoid, found a far higher percentage of bacilluria, viz., in 21 to 35% of patients.

Rolly[9] reports concerning the cases of nephritis in typhoid observed in the Leipzic clinic, but makes no reference to suppurations. Among 1,700 cases of typhoid were 26 cases (1½%) with nephritis, generally hemorrhagic. Of these 26, 13 died, 12 recovered and 1 developed chronic disease. In 15 patients the nephritis occurred in the first fortnight and in 5 in the first week. Except for the bad prognosis these cases were not in their course different from the other cases of typhoid. The blood pressure was not increased. High fever was generally not synchronous with the onset of the nephritis. Only once was a diminution of the albumen observed to come with a fall of the temperature and the great increase of albumen to accompany a relapse, when it reached 2.4%. The usual sediment of acute nephritis was found with typhoid bacilli abundant in pure culture. On section there was generally a glomerulonephritis, and it was noted that in exceptional cases, where the albumen, renal epithelium and epithelial casts had been most abundant, only slight alterations were found in the kidneys.

In comparison with the above, Selby[10] quotes Stolte as finding albuminuria in 60% out of 371 cases of typhoid. He believed that in the ordinary run of typhoid the kidneys are little, if at all, infected. Acute parenchymatous nephritis existed in 3.2% out of 793 cases of Skutezky, exactly corresponding to 3% in Talley's series of 18,000 cases. Edema is not often produced and nephritis seldom becomes chronic. Hemorrhagic nephritis is an exaggerated form of parenchymatous and strongly tends toward uremic termination. "Suppurative nephritis occurs occasionally and in these cases the typhoid bacillus is usually present."

Bouchard[11] shows that infectious diseases have a tendency to the involvement of the kidney through a carrying of the specific organism of the given disease to these organs; that this is especially true of typhoid fever, whose tendency to implicate the kidneys is declared to be parallel to the tendency of the rheumatic infection toward the endocardium. Bouchard points out that these cases in which the kidneys are thus involved by the typhoid bacillus are graver than the usual cases of typhoid. He makes no mention of renal suppuration due to such infection, but dwells on the involvement of the convoluted tubules in whose epithelium these specific bacteria are to be found in section and also in the urine.

Roth[12] says that while many writers recognize the existence of renal symptoms in typhoid fever, it remained for Gubler and Robin, in 1878, to describe a special so-called renal form of typhoid in which the intestinal symptoms were relatively subordinate to those occurring in the urine. Many other writers laid emphasis upon the involvement of the parenchyma of the kidney in typhoid, but the occurrence of pyelitis as a typhoid manifestation was first emphasized by Mygge, in 1881, cited in Virchow-Hirsch's *Annual* from the Norse. In frequent examinations, every two or three days, in 72 cases of typhoid, he found albumen fifty-two times. In 9 cases there were only traces, which generally appeared at the end of the second week. In 16 cases it was transient, lasting less than three days, and in 36 from five to eighteen days. The longest duration was in those cases where cystitis and pyelitis occurred, namely, up to one hundred and ten days. The cause of the albuminuria in half the cases was kidney disease; in one half, cystitis or pyelitis. Roth points out that this view of the relatively great amount of pyelitis in typhoid is in contrast to the general teaching of the best textbooks of the time. Strümpell makes no mention of it. Liebermeister speaks of acute Bright's and pyelitis as sequels. Only by Ebstein is pyelitis mentioned as a concomitant in the typhoid symptom-complex. Roth himself contributes a case in which a man was taken with acute febrile symptoms accompanied by scanty, red, turbid urine containing much albumen (⅓%), caudate epithelium, many white cells, no casts. Sharp pain, increased by pressure, was felt in the region of the right kidney, less in the left. On the eighth day, for the first time, rose spots and enlarged spleen were demonstrated and the true character of the disease as typhoid recognized. Roth points out that, while careful examination will reveal a pyelitis occurring in the course of typhoid, when the initial symptoms are those of pyelitis, the typhoidal origin of the disease may for some time escape recognition.

Troisier and Sicard[13] report the case of a painter with lead poisoning (paralysis) who had been sick for two weeks. He had no distinctive sign of typhoid. The urine was heavily albuminous, so that it was a question of sclerosis of the kidney with uremia. He showed a positive Widal reaction. Shortly before death meningeal symptoms appeared. At the autopsy a fibropurulent exudation was found at the base of the brain which contained the bacillus of typhoid. An abscess existed in the right kidney, size of a nut, just beneath the capsule. This contained the bacillus of typhoid and the authors add that, to their knowledge, the demonstration of this organism in a renal abscess of a person with typhoid fever had not before been made.

Fernet and Papillon[14] give a case of a man, aged twenty-six years, who entered on the sixth day of typhoid. On the thirtieth day he complained of pain in left flank, at the site of spleen, which was enlarged and painful. Diagnosis was made of perisplenitis. The temperature fell and the typhoid seemed well on the twenty-second day. Patient did not improve and a tumor was demonstrated behind the spleen at the site of the kidney. A pocket of pus was incised on the twenty-sixth day. Peritonitis developed and he died a week later. (At no time during sickness had the urine been purulent or turbid.) The perirenal tissue was healthy. The kidney and its pelvis formed a large tumor descending to the crest of the ilium. The pelvis was dilated and communicated freely with an abscess the size of a nut. Three or four other abscesses existed in the kidney. The ureter was obstructed, being sharply bent at an angle, which closed its lumen but did not obliterate it. The pus in the isolated abscess contained a pure culture of typhoid bacillus; that in the pelvis contained bacillus coli and saprophytes.

Rovsing[15] relates a case of a man who, immediately after typhoid fever, had pyuria without having experienced either retention or instrumentation. There were no vesical symptoms until the pyuria had existed some time. Then for the first time tenesmus and pain indicated that the infection had reached the bladder. For these bladder symptoms a suprapubic cystotomy was performed, which the patient survived for a month. The autopsy showed small abscesses through each kidney. The right pelvis contained a large uric acid stone, evidently antedating the fever. The mucous membrane of the right pelvis showed only ulcerations, which had spread by the ureter to the bladder. The organism found here was typhoid bacillus. Rovsing states, evidently wrongly, that there exists in the literature only one case in which a suppurative affection of the urinary passages has supervened on typhoid fever where the typhoid bacillus was considered the cause of the infection. He combats very strongly the view of Melchior of one of the latter's cases — a young woman who, when three days convalescent from an attack of typhoid fever, had vesical pain and tenesmus with frequent micturition. Melchior considered that this was a primary cystitis; Rovsing insists that this was a case of pyelitis, because (1) of the great amount of albumin (1.2%), the masses of pus, with little blood; (2) the entire relief of the symptoms in a week, with no bladder treatment; (3) the epithelial cells ascribed to the bladder are indistinguishable from the superficial layer of the pelvic cells, and there were, besides, the flat epithelial cubes, which might have well been of renal origin. Moreover, Rovsing adds that in many cases pyelitis may be accompanied by frequent tenesmus and pain in the region of the bladder, without any implication of the latter organ. Only cystoscopy can reveal the source of the inflammation. In his own case Rovsing believes that the primary infection of the kidneys consisted of the renal abscesses. Only on the right side, where the calculus was, could the microbes fix themselves on the mucosa, and this was by reason of the lesions which the stone had produced and which formed a nidus favorable to the growth of the organisms. The ulcers thus formed by the typhoid bacillus were completely analogous to those usually found in the intestine. This ulcerative process was propagated to the upper ureters, and hence to the bladder. Such a case differs widely from those of simple bacilluria in that the former demands a pre-existing lesion of the mucosa, and when such infections do take place, resulting ulcerations are exceedingly malignant.

Brownlee[16] reports 5 cases of pyelitis occurring in typhoid fever. Four recovered and 1 came to autopsy. The first 4 bore a general resemblance to each other. In all, the ordinary symptoms appeared at about the period of convalescence or during the relapse. The urine contained, at first, considerable blood, some caudate epithelium and pus, with epithelial and granular casts, and much albumin, indicative of a nephritis. The blood and albumin first showed improvement, and the casts disappeared before the pus, that is, the accompanying nephritis got well before the pyelitis. The pus usually lasted two or three weeks. In 1 case the left kidney was found enlarged to palpation after the disappearance of pus for two days, and after the manipulation a very large amount of pus appeared in the urine. In one other case the left kidney was noted as tender on bimanual palpation. The fatal case died on the twenty-sixth day of his illness. Two days before his death the urine contained blood, tailed epithelial cells and a few pus cells, but no casts. At the autopsy of this patient the right kidney showed a localized area one-half inch long and one-eighth inch broad, extending from a pyramid up to the boundary of the cortex. Most marked here, but also occurring in other parts of the kidney, was an extreme degree of congestion, with some hemorrhages and degeneration of the tubular epithelium. The pelvis of this kidney was markedly congested and contained thin, slightly stained, opaque fluid, which gave an almost pure culture of bacillus typhosus. The most marked change here was the destruction of epithelial cells. Almost everywhere the superficial cubical cells had been separated, leaving only a few of the deeper, tailed cells, while in other areas the degeneration of the epithelium was complete and the underlying connective tissue of the mucous membrane was directly exposed. Some of the remaining tailed epithelium was flattened. All the vessels of the mucous membrane were congested, and some of the smaller ones had flattened, causing small hemorrhages.

Blumer[17] found that 17% of cases of typhoid showed pyuria, oftenest occurring at end of second or in the fourth week. Pus was usually associated with casts, epithelial cells and bacteria. In 10 cases the bacteria isolated were as follows: Colon bacillus, 7; typhoid bacillus, 2; staphylococcus, 1. The source of bacilli could be either kidney or bladder, and probably the pus is from the same source as the bacteria. In typhoid nephritis and in abscess of the kidney following typhoid the colon bacillus and pus cocci have both been found at times. There was no case in which colon bacilli were found in typhoid lymphomata, and in the latter typhoid bacilli have always been found alone. No cases of pyelitis due to typhoid bacillus are reported. Blumer concludes that "pyuria, while present fairly frequently in typhoid, is a complication of no gravity, and is only important from its association at times with typhoid bacillus."

Hugh H. Young[18] reports a case of typhoid followed by cystitis (chronic) in which bacillus typhosus was recovered, and adds that "the autopsy records of Johns Hopkins show several cases of typhoid abscesses of the kidney, and several are to be found in the literature in which typhoid bacillus alone was present."

Pageot, in a thesis,[19] has collected some 30 cases of renal suppuration occurring in typhoid fever, to which he has added one case of his own. Many of these cases have been referred to above. He groups these cases under the following heads: (1) Miliary abscesses of the kidney without pyelitis, 11 cases; (2) miliary abscesses with pyelitis, 4 cases; (3) pyelonephritis with retention and renal distention, 4 cases; (4) pyelonephritis with no retention or distention, 12 cases.

Of the first and second groups, all the patients died, and the conditions of miliary abscesses respectively without or with pyelitis were all demonstrated at autopsy.

Of the third group, one patient died after nephrotomy with the evacuation of a liter of pus. A second died after a suprapubic cystotomy performed for the relief of suffering. Post-mortem, a large calculus was found in the right renal pelvis with pyonephrosis. The left pelvis was normal, but the cortex contained many small abscesses. The cystitis was believed to be due to a descending inflammation. A third patient recovered unoperated, after a marked tumor of the right kidney had evacuated itself by the ureter. The reason that no operation was performed on the patient was that a phlegmasia of the left leg made the condition so grave that the surgeon feared to perform a nephrotomy. The fourth patient of this group had a nephrotomy, with relief for a time, but two and a half months later there was septic fever with local infiltration. The kidney was then removed and found to be riddled with abscesses, and the patient died four and a half months afterward. At autopsy the remaining kidney was found enlarged and filled with abscesses. The bacillus of Eberth was found in these abscesses, as it had been in the urine during life.

Of the last group, of pyelitis without retention, eleven of the patients recovered. In the case which died there was pyelitis of one kidney, but also a considerable degree of degeneration of the epithelium of all the tubules, convoluted and straight, which with blood cells largely occluded their lumen.

At what period of the typhoid is the suppurative accident most likely to occur? In many of the cases of miliary abscesses, of which no definite symptoms existed during life, the patient died in the third or fourth week, and the autopsy alone revealed the lesion. But in the cases where definite pyelitis existed, the clinical symptoms were more marked, and these occurred most frequently in Pageot's cases, early in the stage of convalescence, from three to seven days after the subsidence of the fever. In one case it was as late as the eighty-ninth day from the beginning of the fever.

In one patient the onset of the illness was characterized by intense pain in the left lumbar region, with tenderness; the urine was turbid and scanty, with much albumen; the sediment contained epithelial cells, many white corpuscles, but no casts. This state of things lasted about eight days, when the picture of a typhoid infection was complete, the first announcement having been made by a pyelitis.

In most of these cases of Pageot's no bacteriological examination was made to determine the nature of the bacteria in the pus, but in six in which such an investigation was conducted the Eberth bacillus was found present in all. It is well known, however, that other observers, as has been noted above, have found in the pyuria of typhoid not only the Eberth bacillus, but other organisms, as bacillus, as coli and the pyogenic cocci.

The following cases occurred under the observation of the writer:

Case I. M. N., female, aged twenty-three years, entered the Boston City Hospital on Sept. 6, 1900. She had had a sore throat two weeks previously — one positive diphtheria culture, followed by two negative ones. Had been in the South Department for two weeks, in bed, with symptoms suggestive of typhoid. Diagnosis was made positive, on admission to main hospital, by enlarged spleen, rose spots, positive Widal reaction. Urine was 1022, large trace of albumin, many hyaline, coarse and finely granular casts, also epithelial casts, with fat droplets and a rare blood cell. These elements gradually diminished. Considerable amounts of pus appeared Sept. 19, which increased. Temperature ran a moderate course for about three weeks and then dropped nearly to normal. She appeared convalescent when, on the fortieth day of her fever, she complained of pain in the left hypochondrium, had chill and temperature rose to 105.5°.

White count, 13,900. There was apparent swelling in the left hypochondrium, with spasm of the abdominal muscles, at site of the indicated pain. Under surgical counsel she was transferred for operation. There she was found to have much muscular spasm in the left hypochondrium, leucocytes 21,800, stupor, delirium, was passing small amount of urine containing much pus. The operation found no pus in the perirenal tissues, but they were much inflamed. Cultures from the perinephritic tissues were sterile. The kidney was examined and found normal in size and consistency, and was not incised. Wound was drained. Temperature reached normal on the fourth day. She was discharged in about a month, well.

In this case the renal involvement was so severe as to lead to surgical interference, which, while followed by a good recovery, seems, in view of the findings, to have been unnecessary.

Case II. Mrs. E. B., aged thirty years, entered May 3, 1901. For six days had been suffering from frontal headache, general pains, chills, fever, sweating, nausea, vomiting. Urine contained from the first a large trace of albumen, many brown granular casts, with abnormal blood. Later, large amount of pus appeared. Of specimen, on May 14, Dr. Ogden reported as follows: " It consisted chiefly of pus in large amounts, mostly free and degenerated, with numerous small, round, epithelial cells and considerable squamous epithelium and occasional cell, as from the neck of the bladder. Considerable abnormal red globules, very rare and doubtful granular cast." She exhibited an enlarged and hard spleen, with a few rose spots, which soon disappeared. These established the diagnosis of typhoid, although several Widal tests were negative. Several blood examinations showed white count from 6,000 to 8,000. Slight icterus, present at the beginning, lasted but a few days. Began to complain of moderate pain in the left side, but there was no tenderness. Temperature ran a moderate and a typical typhoid course for about a month, at which time, with the change of service, she passed out of my hands. Soon after this the pain previously complained of became worse. There was tenderness in the left lumbar region corresponding to the left lower edge of the spleen; the white corpuscles rose to 11,200; pain became much more severe. There were chills, with rise of temperature to 104°, spleen being distinctly felt. At this time there was some pain in micturition and a large amount of pus in the urine. A gynecologist who saw at her this time found tenderness over the left kidney and left ureter where it passes over the brim of the pelvis and thought there was pus in the left renal pelvis. She had several spasmodic attacks in the next few days; pain in the left side radiated downward, requiring morphine.

With the consent of two consultants, she was recommended for transfer for operation. At that time an x-ray photograph showed no calculus of the kidney; urine was scanty and showed considerable pus. The operation exposed the left kidney, which was found moderately enlarged, with no fluctuation. Incision two inches long into the kidney reached no pus. The calices were somewhat dilated. Wound was drained and she did well, except that about a month after the operation she had a marked uremic attack, with slight convulsions, relieved by hot-air baths, and she finally recovered. At the time of discharge the urine was low in amount, without albumen or casts and but few leucocytes.

Case III. Eva R., aged thirty years, single. Intemperate and "fast." Occasional rheumatic attacks. Entered Feb. 25. Ill three days with lumbar pain and vomiting. Somewhat alcoholic, temperature ranges 103° to 104°. Urine, 1,020; albumen, trace; sediment, many pus corpuscles, free and in clumps; few bladder cells and vaginal cells; few small round epithelial cells, some slightly fatty, degenerated; few hyaline and two finely granular casts; some casts with renal epithelium and leucocytes adherent; occasional abnormal blood corpuscles.

March 2, complains of pain referred to upper abdomen. Marked tenderness over right upper quadrant, especially by bimanual pressure over right kidney. Also tenderness behind on both sides of the spine in lumbar region.

Frequent examinations of the urine continued to show substantially the same results as the first. Dr. Ogden considered the kidney disease secondary to some other trouble.

March 4, positive Widal reaction. Leucocytes, 7,000.

The typhoid ran an average course with moderate delirium.

A swelling of the tibial periosteum occurred, which a surgical consultant inclined to consider syphilitic rather than typhoidal. It subsided without suppuration.

March 15, a catheter specimen was 1,014, with very slight trace of albumen, much pus, free and in clumps, many squamous cells, chiefly from bladder, occasional abnormal blood globule, many small round epithelial cells, no casts seen. Dr. Ogden reports that from the urine the process is probably "a chronic cystitis or pyelitis." Of course, without knowledge of the previous condition, we cannot say that the patient did not have urinary disease before the onset of the typhoid, but the absence of previous symptoms, the early occurrence of pain in the kidneys, the lack at any time of pain in the bladder, and the consecutive urinary picture, even in the absence of bacteriological evidence, make it probable that the patient had an early typhoidal invasion of the kidney.

By the middle of March the temperature had become normal. The recovery was rapid and complete and she was discharged, well, March 22.

Case IV. Melanie F., aged twenty years, married. Malaise for a month. Three days in bed with fever, vomiting. On entrance, positive Widal, palpable spleen, rose spots. Urine, 1,027. Trace of albumen. Frequent pus cells, free and in clumps, frequent small round cells, few epithelial, hyaline and granular casts, some with abnormal blood and small round cells adherent, frequent squamous epithelium. At this time patient had not been catheterized, but required it later. The course of the typhoid was brief and, except for a slight otitis media, favorable. Aug. 22 there was still a very slight trace of albumen present, frequent hyaline and occasional granular casts and an occasional abnormal blood corpuscle; no pus. Sept. 3 she was discharged well.

Case V. Hector M., steam-fitter, aged twenty-four years, single. Oct. 16, sick thirteen days. Marked signs of typhoid on entrance, including rose spots and positive Widal. The urine on entrance had a slight trace of albumen, 1,026. Few abnormal blood globules. Occasional hyaline and granular casts, some with epithelial cells and abnormal blood cells adherent. Occasional squamous and small round cells and leucocytes.

Oct. 22 he had retention and required catheterization, which was continued uninterruptedly until Dec. 11 and then occasionally until Dec. 19. Nov. 5 there were casts, epithelium, blood and pus about as before and, in addition, frequent small and round and caudate cells, as from the superficial layers of the pelvis of the kidney. These conditions continued until Dec. 5, when the pus was found to be about the same, but no casts were to be seen.

The fever ran a very long course until the middle of December, no other cause for its protraction being evident save the nephritis and pyelitis. During his convalescence he developed a peripheral neuritis and when he was discharged, Jan. 16, he still had a shuffling gait, but was otherwise well.

Case VI. Represents a type, probably not uncommon, where the pyelitis had very little effect on the clinical course of the disease.

Mrs. A., aged thirty-five years, entered the hospital, March 21, with typhoid of two weeks' duration. Urinary examination one week later showed no albumen and no pus. April 15, the temperature still being slightly elevated, but without any untoward symptoms, there appeared in the urine much pus, with a slight trace of albumen. The temperature was settling toward the normal, but did not fully reach it. The same condition continued in the urine April 28, though the amount of pus was less. After this date the temperature never rose above 99.5°. May 2 a catheter specimen, collected with antiseptic precautions, still showed many pus cells, but no other abnormal elements. The bacteriologist reported from the culture a motile organism which had not been fully worked up at the time of writing, but was believed to be B. coli. Convalescence favorable.

Case VII. (Service of Dr. Jackson.) Male, aged thirty-two years, single. Contracted typhoid in camp of the volunteers of the Spanish War. Entered the hospital on the tenth day. On the fourteenth complained of pain in his left side; painful micturition, requiring catheter. A long series of urinary examinations beginning at this time showed traces of albumen, considerable pus and blood normal and abnormal. Dr. Ogden reported that the sediment contained many medium and small round cells, with much pus and blood, caudate cells, and a few fatty ones. Rarely a brown granular cast with blood. He was of the opinion that the cells undoubtedly came from the pelvis of the kidney. On about the thirty-eighth day of the disease patient complained of much pain in the back, on the left side, extending to the testicles. In another attack, four days later, with pain in the back, the urine was very turbid and alkaline. Irrigations of the bladder were practiced for two days, but were discontinued at the advice of the surgical consultant. Search for tubercle bacilli was negative. No typhoid organisms were sought for. The patient recovered and the urinary symptoms disappeared.

A few cases at autopsy at the City Hospital have shown renal lesions in typhoid in patients who exhibited, so far as is known, no urinary symptoms. In one there was injection of the stellate veins of the kidney, the substance looked slightly opaque throughout, the pyramids were darker than the cortex. The pelvis of the right kidney contained puriform serum which showed streptococcus, bacillus coli and typhosus.

In another case, dying of perforation of the intestine, there were beneath the capsules of the kidney in their substance numerous gray areas, pinhead and larger, in a radical direction, and containing only bacillus coli.

The pathogenesis of renal suppuration appears to include, besides the presence of the typhoid organisms in the urinary passages, as above referred to, some local disease or irritation which determines their growth in that locality. Such developments in other organs than the kidney are well established. For instance: Widal and Ravenant,[20] writing on the localization of the bacillus of Eberth in typhoid patients at the seat of organs previously diseased, refer to a patient who had had a tuberculous submaxillary adenitis for years, contracted typhoid, and during convalescence the gland became acutely inflammed. It was incised, and the pus contained a pure culture of the typhoid bacillus. Another patient, at the end of the third week of typhoid, had severe abdominal symptoms, which lasted a week, then quieted down, but on an attempt to sit up they reappeared. A cystic ovary was discovered and removed, which contained a pure culture of typhoid bacillus.

So in the kidney a stone, as in the instance already referred to, or even the presence of toxins circulating in the kidney, may account for the development, on this soil, of the typhoid organisms.

The relation of renal suppuration in point of time to typhoid may fall under any of the three following classes: First, it may be the original symptom and may mask the character of the infection which produces it, thereby obscuring the diagnosis. In the case of Roth, previously referred to, the disease was not recognized as typhoid until the patient had been ill eight days with what was apparently an acute nephritis.

Wilson,[21] in a very valuable paper read before the Association of American Physicians, early called attention to the possibility of the renal symptoms overshadowing the typhoidal character of the infection. In this case an extended febrile movement covered an obscure primary attack in which the kidneys manifestly bore the brunt of the infection and the relapse occurred without interval, after five weeks. In this intercurrent relapse the ordinary symptom complex of typhoid appeared for the first time with a renewed evidence of inflammation of the kidney.

Napier and Buchanan [22] report a case of typhoid fever in which the action of the typhoid virus was directed mainly to the kidney, which strongly suggests the case of Wilson just referred to. The patient, a man aged twenty-six years, had for three days a cold in the head. Then for two days a "measly eruption"; then for two days the urine was red, but became and remained clear. Two weeks from the onset of symptoms the temperature was 105°, pain in the lumbar region, albumen $1\frac{1}{2}\%$, casts numerous and varied with much blood — an acute nephritis. An organism was present, which was identified as bacillus typhosus. At this time appeared a positive Widal reaction; no spots nor enlarged spleen. Temperature subsided by lysis about a month from the beginning of the illness. The possibility here suggests itself, though not considered by the author, of measles, with nephritis, on which soil the quickly succeeding typhoid infection engrafted itself. Trozier and Sicard's case, above referred to, also had renal symptoms for two weeks before distinctive signs of typhoid appeared.

In the second type of case the renal symptoms are concomitant with typhoid.

In the third group, the most numerous, they appear during convalescence and often suggest a relapse.

Musser[23] believes that many so-called relapses are really localized infections, and Kelly[24] says he feels chagrined if he cannot put his finger on some definite cause for a return of a fever in a relapse — in many cases an infected gall bladder; in others, infection of the urinary tract, etc.

Benneke (case already referred to) says that there occur after the course of a typhoid fever irregular disturbances of temperature, which are to be regarded not as relapses, but as complications produced by the typhoid toxin or by circumscribed localized foci of typhoid bacilli, even though they clinically present the picture of typhoid relapses.

Diagnosis. — Pageot, in the thesis above referred to, discusses the question of diagnosis at length. The symptoms of pyelorenal suppuration include (1) those having to do with the urine, frequent micturition, particularly at night, and a sediment of pus, with blood. The pus cells in a mild case are 5,000 per cmm.; in a moderate one, 10,000 to 20,000; in a severe case, 50,000. If there are casts, it indicates an involvement of the parenchyma of the kidney. Albumen is always present and in larger quantities than the pus and blood will account for. Possner, for instance, says that 80,000 to 100,000 corpuscles per mm. will produce only 0.1% of albumen.

Renal pain is generally present, even in light cases. Exceptionally, if there are clumps of pus being expelled, the pain takes on the qualities of a renal colic. The location of the pain is usually about the kidney, and pressure in the lumbar fossa and under the costal angle generally reveals tenderness.

Bazy[25] insists on certain pathognomonic points of tenderness: (1) Above on a line passing horizontally through the navel at a point three fingers' breadth from the navel exactly at the outer edge of the rectus muscle (para-umbilical or superior ureteral painful point), also less frequently under the costal arch, and posteriorly at the apex of the costomuscular angle; (2) below, the inferior ureteral point is disclosed, in women, by pressure with the finger at the junction of the anterior and lateral vaginal walls, where one feels a cord rolling under the finger, which is painful, as one proceeds from behind forward, and which corresponds to the vesical orifice of the ureter. This lower end of the ureter is harder to reach in the male, but pressure on the base of the bladder above one or the other cornua of the prostate will produce the sharp pain characteristic of ureteritis.

Muscular rigidity is detected in pyelonephritis, but as it exists in all other forms of intra-abdominal inflammation, it is of no diagnostic value.

A swelling of the kidney is only to be looked for where there is a closed pyelitis. It therefore does not co-exist with pyuria, but when the pus begins to discharge into the bladder it is because the obstruction has been overcome, and therewith the swelling of the kidney has subsided.

The development of renal suppuration is evinced by chills, fever and other signs of sepsis. Its duration is variable, sometimes several days, most often several weeks, rarely several months.

When in course of a typhoid convalescence such a febrile reaction occurs, and is not due either to too hearty food, to premature leaving the bed, to intestinal, gall-bladder or phlegmonous infection, one should think of renal abscess. In some cases the pain of renal suppuration has been wrongly ascribed to a perisplenitis.

Prognosis. — As has already been said, the prognosis in cases attended with renal disease is somewhat worse than in typhoid generally. This is due in part to interference with renal function (in one of the cases above described uremia developed); in part to the fact that such cases usually are those in which the typhoidal septicemia is most marked; and in part to the frequency with which the renal involvement appears with all the clinical characters of a relapse, when the patient has already gone through the run of a typhoid and appeared convalescent.

Treatment. — If a parenchymatous nephritis be demonstrated, a largely milk diet is indicated, which the modern view of typhoid dietetics no longer insists upon in the uncomplicated case. Urotropin, already more or less used as a bactericide, is especially indicated in all suppurative conditions.

The question of chief importance is that of surgical interference, the necessity for which must be relatively rare. One condition alone seems imperatively to demand this, namely, a closed pyonephrosis. The self-emptying pyonephrosis requires no operation. The occurrence of great pain, with spasm, in the lumbar region, is liable to be taken as an indication for operation. If the kidney can be made out to be enlarged, nephrotomy in these circumstances is probably justified. But the two cases above cited, in which pain was acute and was accompanied by spasm of the overlying muscles, with abundant pus in the urine, did not show any attainable focus of pus, and while the patients each made a good recovery, it appeared that the operation was not a necessary one.

In one of the cases above referred to, reported by Pageot, a suprapubic cystotomy was performed on account of pain. What cystitis there was, was found post-mortem to be one of a descending inflammation from pyonephrosis with pelvic calculus. The possibility pointed out by Rovsing of dysuria and tenesmus being caused by pyelitis should lead to conservatism in the matter of cystotomy in typhoid.

In the case of Brownlee, above mentioned, manual manipulation of the enlarged kidney resulted in the discharge of large amounts of pus through the urethra, with relief of symptoms.

Garnier and Lardennois,[26] discussing the treatment of pyonephrosis of typhoidal origin, say that it is chiefly surgical. Interference, which should always be early, is nephrotomy, which may be sufficient and with little risk may give excellent results, but nephrectomy will often be indicated secondarily when the abscesses are numerous or badly drained, and if one has reason to believe in the integrity of the other kidney. The absence of pus in a closed pyonephrosis may obscure the necessity for intervention, as in the case above referred to, of Fernet and Papillon, but where an obstruction is complete, the pain, swelling and spasm are usually sufficient to indicate the need of operation.

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BACILLUS OF ACNE — B. ACNES.

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AND
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THE acne bacillus was first described by Unna[1] in 1893. He found a short, rather plump bacillus constantly present in comedones and pustules, although he did not cultivate it. From its abundance and its situation in these lesions he regarded it as the cause of comedo formation and of acne in general. Sabourand,[2] in 1897, was the first to grow the bacillus. He regarded it as the cause of seborrhea, but not of pustulation, which he thought was due to the invasion of pus cocci. Gilchrist,[3] in 1899, demonstrated the bacillus in smears made from all acne pustules and obtained it in culture from a number, either pure or mixed with staphylococcus pyogenes albus. He was able to produce suppuration in animals with the bacillus. He called it bacillus acnes and considered it the cause of acne. Recently Flemming[4] has demonstrated the acne bacillus from a large series of patients with acne pustules and has cultivated it from many of these cases. He reports the successful treatment of acne with vaccines of the bacillus either alone or in combination with staphylococcus albus. He produced a suppurative folliculitis by rubbing a pure culture of bacillus acnes into the arm of a susceptible patient. He considers the bacillus the chief bacterial factor in the etiology of acne.

All who have successfully cultivated bacillus acnes find that its growth requires special media and that it is attended with considerable difficulty. All have grown it in the presence of oxygen, and the reason it has not been easily cultivated so far is that no one has attempted to grow it anaerobically. In three cases of acne which we have studied, a bacillus of similar morphology, together with staphylococcus albus, has been constantly found in pus smears. Frequently large clumps of these bacilli were seen in the smears, though they were usually more evenly distributed and were both intra- and extracellular. They usually out-numbered the cocci. From two of these cases the bacillus, although mixed with a few staphylococci, was easily obtained in pure culture when grown under anaerobic conditions.

This bacillus stains by Gram's method and often shows an irregular or beaded appearance. It is moderately wide and of variable length, especially in cultures, where it frequently shows branching forms. It forms no spores. Abstracting oxygen, by Wright's method[5] it grows on all the common media, best on glucose agar, either in suspension or slant. In bouillon it forms a white flocculent sediment. It was most easily grown from the lesions by smearing the pus on the surface of glucose agar slants. On this medium, in the absence of oxygen, it produces fair-sized colonies in three to five days. It forms raised, grayish-white, opaque, colonies, considerably smaller than those of the staphylococcus albus, which are purer white. On acid agar, as noted by Flemming, it grows in the presence of oxygen, but much more slowly. The bacillus is, therefore, essentially an anaerobe, but will grow in the presence of oxygen when planted in masses, by reason of the anaerobic conditions which are thereby created within the masses.

We regard this bacillus as identical with the bacillus acnes of Gilchrist and other observers from its similarity in morphology and cultural characteristics. From the ease which it could be obtained from these two cases when grown anaerobically, we think it can probably be cultivated from all cases of acne.

The accompanying photographs by Mr. L. S. Brown show the bacillus acnes in culture and in smears.

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THE TREATMENT OF BACILLUS AEROGENES CAPSULATUS INFECTIONS BY PROXIMAL INJECTIONS OF HYDROGEN PEROXIDE.

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THE intention of these experiments was to demonstrate the efficacy or inefficacy of injections of hydrogen peroxide proximal to a localized process caused by the bacillus aerogenes capsulatus. For example, if a process were situated just above the hock in a guinea pig, a circular injection of hydrogen peroxide would be injected proximal to it, in hopes of limiting the process to the area below the ring of injection. As the bacillus is an anerobe, it

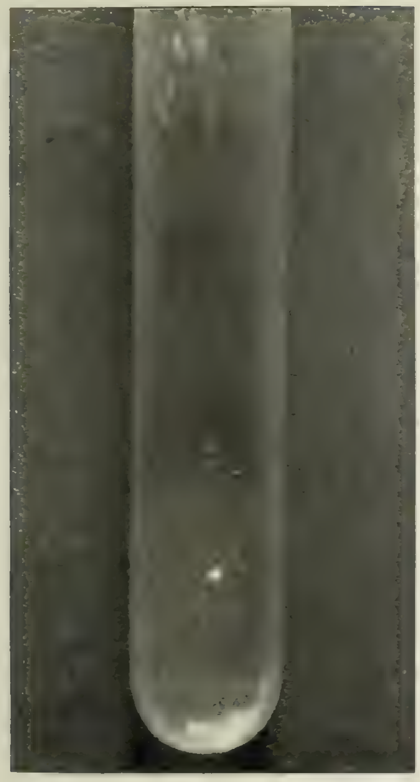

FIG. 1. Single colony on acid agar slant, growing with oxygen, twenty-one days old.

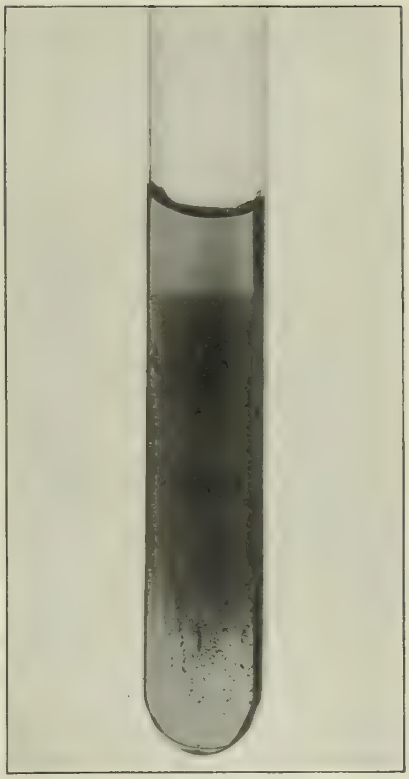

FIG. 2. Suspension culture, in glucose agar, four days old, showing growth only in that portion of the medium where oxygen does not penetrate.

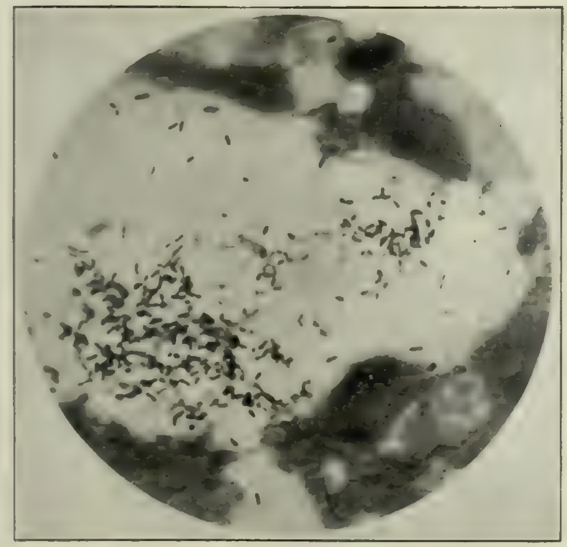

FIG. 3. Smear of pus from acne pustule. Gram stain. x 1500.

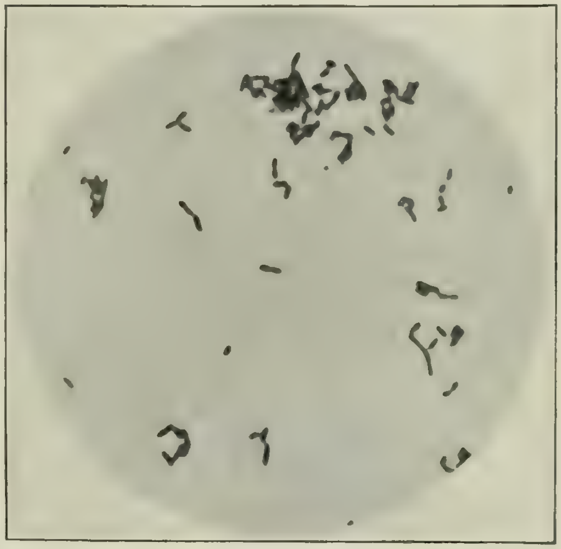

FIG. 4. Smear from acid agar culture. Gram stain. Showing branching forms. x 2000.

was assumed that it would be killed during its progress through the ring of peroxide in its journey up the leg. It was upon this ground that the work was instituted, and is of value only in showing that the lesion may be prevented from extending, but that the injections would in no way be justifiable in humans.

It was impossible at the time this work was begun to find any cases of emphysematous gangrene in the hospitals from which the bacilli could be obtained for inoculation. So loam which had been freshly turned over at the side of the City Hospital tennis court was made into a bouillon suspension and 5 ccm. of this injected into the ear vein of a rabbit. This was allowed about two minutes in which to get into the general circulation and the rabbit killed by a blow behind the ears, breaking its neck. The body was placed upon the top of an incubator for about twelve hours (the rabbits frequently distend to such a degree if put inside over night that the skin breaks and intestinal contents, etc., are scattered all over the incubator and whatever else it may contain). In the morning the body showed the typical reaction of bacillus aerogenes capsulatus infection; that is, marked distention with emphysema everywhere. Cultures from the liver, subcutaneous tissue and heart's blood showed bacillus aerogenes capsulatus with a typical reaction and growth in litmus milk. Transplants aerobically from litmus milk culture from above rabbit showed glucose agar stab, pure culture at the end of twenty-four hours, glycerine blood serum, bacillus aerogenes capsulatus present in a very small proportion to a Gram-negative coccus which occurs in great numbers; in bouillon, no growth; on plain blood serum, large numbers at the end of twenty-four hours. To test these a bouillon suspension from the growth, occurring upon plain blood serum at the end of twenty-four hours, was injected into the ear vein of a rabbit, and as in the previous case the body put upon the top of an incubator. As a control a normal rabbit without inoculation in any way was killed and put upon the incubator. The inoculated rabbit blew up with emphysema everywhere, bacillus aerogenes capsulatus being recovered from the heart's blood and subcutaneous tissues. The uninoculated rabbit also blew up, but to a lesser degree, and the bacillus aerogenes capsulatus was recovered as in the inoculated case.

At this point an attempt was made to plate anerobically to obtain pure cultures. It was not successful owing to poor technic, and a second one, likewise unsuccessful, resulted in the loss of all living gas bacilli.

At about this time an arm infected by bacillus aerogenes capsulatus, which had been amputated at the City Hospital, was obtained. A painting first having been made, cultures were taken, one at the upper part of wound, the other at the lower part of wound, both of which produced gas bacilli in pure culture. Three cultures from the point of amputation, one subcutaneous, one intramuscular and one intermuscular, were taken, all of which proved negative. This is interesting in that the tissues at this point were pale, edematous and abnormal in appearance. Smears from lower part of wound showed only occasional bacillus aerogenes capsulatus with numerous cocci. Smears from middle of wound showed only small numbers of bacilli aerogenes capsulati with many Gram-positive cocci and streptococci in considerable numbers.

Smears from upper part of wound showed bacilli aerogenes capsulati in considerable numbers with almost no other organism present.

Again the same difficulty was met with as with the soil cultures; that is, the difficulty in getting pure cultures. Fermentation tubes supplied with animal organ tissue were inoculated and upon smear found to be contaminated by a Gram-negative bacillus and also a coccus. Several sets of agar plates inoculated from the original litmus milk culture and grown anerobically showed colonies of cocci, but no gas bacilli, and again all living gas bacilli organisms were lost.

At this time, also, simple injections of peroxide were made into the hind legs of animals to determine the effect upon them before trying it upon inoculated animals. Two of the pigs into which 60 minims of peroxide were injected in a circle around the thigh immediately began to struggle and cough. They were put down upon the board and both died in less than a minute in convulsions. The pericardium was immediately opened and the heart cavities found to contain in both cases frothy blood with quite large bubbles. These were the first two pigs injected. The next two pigs were given 40 minims of peroxide in the same way. Both of these pigs coughed immediately after the injection and it was thought that the same thing would happen, but after a period of eight to ten minutes, during which the pigs remained absolutely quiet and could not be made to move by prodding, they began to run about as before the injection. The next two pigs were given but 20 minims of peroxide and had no symptoms. Using this dose, no pigs were lost by injections of peroxide.

Injections of peroxide were also made into cats' hind legs as in the pigs', but all of the cats eventually died, refusing food, growing thin and apparently finally dying from malnutrition. In one case an ulcer was developed, spreading over all the area of skin covering injections.

It might be of interest to note here the occurrence of a nerve tumor in one of the guinea pigs injected. Immediately following the injection, the pig's leg was drawn up and carried in that position all of the time following the injection. As the pig recovered from the injection the leg gradually shriveled up until it was completely atrophied. On killing the pig and opening the leg, a tumor the size of a bean was found in the sciatic nerve at the site of the injection, part of the injection evidently having been made directly into the nerve. Care being taken to avoid the sciatic nerve, this accident did not happen again. Being satisfied that a guinea pig could live with a moderate dose of peroxide injected into leg, the next thing was to obtain a gas bacillus process in an extremity.

Although it was known that guinea pigs were susceptible to bacillus aerogenes capsulatus, cats and dogs were tried in hopes that a process might be started in them, owing to the size of their extremities. Although several were tried, none were successful. Even using small doses of turpentine first to lower the resistance of the tissue at the proposed site of inoculation, it was impossible to start a process.

Because of lack of success with previous cultures, Dr. Theobald Smith was consulted. He advised that guinea pigs be used exclusively and kindly provided a virulent culture known to be fatal to guinea pigs, and the following experiments were done:

To prove the virulence of the culture, two guinea pigs, one weighing 700 gm. and the other 650 gm., were inoculated in thigh with 15 minims of the culture. The following day both pigs were found dead in their cage completely distended with gas and with much emphysema beneath the skin. On autopsy, the process was found to have extended over the body beneath skin, and everywhere the tissues were liquefied and contained gas. The bacillus aerogenes capsulatus was recovered from all parts of the body. This proving the virulence of the organisms, the cases cited below were inoculated and injected with peroxide with the following results:

Guinea pig. Brown. 650 gm. Feb. 4, 1909.

One o'clock. Inoculated with 15 minims bacillus aerogenes capsulatus culture in right hind leg just above hock.

Four o'clock. Large indurated process occupying nearly whole thigh and slightly distending skin. Around and above this area, taking care to avoid femoral vessels and sciatic nerve, was made an injection of 20 minims of peroxide.

Feb. 5. Leg markedly indurated and swollen, but process still localized to leg.

Feb. 6. Condition as yesterday. Process has not extended.

Feb. 7. Pig found dead in cage. Bacillus aerogenes capsulatus recovered. Autopsy shows microscopically no extension beyond area injected, but complete destruction of tissue at site of gas bacillus infection, no liquefaction, but muscle pale and friable and of the consistency of paste. Unlike the cases in which the virulence of the organism was tried, there was no general distention and emphysema.

Guinea pig. Brown. 675 gm. Feb. 4, 1909.

One o'clock. Inoculated with 15 minims bacillus aerogenes capsulatus culture in right hind leg just above hock.

Four o'clock. Large indurated swelling occupying nearly whole thigh. Twenty minims peroxide injected around leg and just proximal to process.

Feb. 5. Process has extended but slightly if any. Does not involve abdomen. Pig eating and apparently not very sick.

Feb. 6: Process has remained at a standstill, localized to leg.

Feb. 7. Process remains absolutely localized to leg. Still large indurated swelling.

Feb. 10. Swelling has diminished in size. Pig walks on leg somewhat, eats well and gets about cage in lively manner.

Feb. 14. Now only a moderate sized tumor at site of inoculation, which is not tender, hot or indurated. Pig uses leg to walk on nearly as well as left.

Guinea pig. Angora. 700 gm. Feb. 4, 1909.

One o'clock. Inoculated with 15 minims bacillus aerogenes capsulatus culture in left hind leg just above hock.

Four o'clock. Large indurated process occupying nearly whole of thigh. Forty minims peroxide injected in circle just proximal to process. More peroxide was used in this case owing to its size, nearly resulting in the loss of the pig from air embolus. This dose was followed by some sneezing and coughing, but in a very short time this ceased and the pig was all right. Temperature, 103.3.

Feb. 5. Process has extended but slightly. Does not involve abdomen. Pig eating well. Temperature, 101.2.

Feb. 7. Swelling somewhat less. Walking a little on leg. Process is absolutely localized to leg. Temperature, 101.4.

Feb. 8. Pig has improved in general condition. Walks on leg fully. Swelling has decreased one half. Temperature, 102.

Feb. 9. Swelling has not changed. Temperature, 101.4.

Feb. 10. Temperature, 101.

Feb. 18. Pig has walked about on leg since last note and is now apparently all right. There is a moderate sized tumor at site of inoculation. No apparent process going on.

Guinea pig. Black. 675 gm. control Feb. 4, 1909.

One o'clock. Inoculated with 15 minims bacillus aerogenes capsulatus culture in left hind leg.

Feb. 5. Found dead in cage this morning with typical general gas bacillus process.

Guinea pig. Brown. 600 gm. Feb. 4, 1909.

Ten-thirty. Fifteen minims bacillus aerogenes capsulatus injected in left hind leg just above hock.

Twelve-thirty. Large indurated process involving nearly whole thigh. Twenty minims peroxide injected around leg just proximal to process.

Feb. 5. Pig very sick. Does not eat or stir about cage. Process is very large but remains localized to leg.

Feb. 7. Pig eats a little and moves about cage, but is still very sick. Process localized.

Feb. 9. Condition remains the same. Pig stays huddled in corner of cage evidently very sick.

Feb. 10. Pig found dead in cage. Process localized to leg. Autopsy, same condition as in previous cases. No liquefaction, but paste-like condition of tissues at site of injection.

Guinea pig. Yellow. 575 gm. Feb. 4, 1909.

Ten-thirty. Fifteen minims bacillus aerogenes capsulatus culture injected in left hind leg just above hock.

Twelve-thirty. Large indurated swelling involving nearly whole thigh. Twenty minims peroxide injected around leg just proximal to process.

Feb. 5. Process remains localized, but pig does not eat and is very sick.

Feb. 6. Died at 3.20 P.M. Autopsy shows bacillus aerogenes capsulatus from site of inoculation. Process localized and same condition of tissues as in other cases.

At this point a second fresh culture was kindly furnished by Dr. Smith and the following experiments similar to the previous ones were carried out.

The culture was first tried on a guinea pig and found to be fatal in less than twenty-four hours.

Guinea pig. Yellow. 600 gm. Feb. 10, 1909. Control.

Nine-thirty. Fifteen minims bacillus aerogenes capsulatus culture injected in left hind leg just above hock.

Ten-thirty. Good-sized swelling at site of inoculation. No peroxide injected. Temperature, 103.

Feb. 11. Temperature, 102.8. Swelling less. Pig apparently not sick at all.

Feb. 15. Pig has not been sick at any time. Using leg well and swelling has practically disappeared.

Guinea pig. Yellow and white. 400 gm. Feb. 10, 1909.

Nine-thirty. Fifteen minims bacillus aerogenes capsulatus injected in left hind leg just above hock.

Ten-thirty. Twenty minims peroxide injected around leg and just proximal to process, which involved almost whole of thigh.

Feb. 11. Process large and indurated, hot and tender. Pig sick and does not eat or move about cage. Uses leg but little. Temperature, 102.

Feb. 12. Temperature, 102. Condition as yesterday.

Feb. 15. Found dead in cage this morning. Autopsy shows a well-marked gas bacillus process, but localized to leg. As in previous cases there was no liquefaction, but complete softening almost to paste-like consistency of the tissues.

Guinea pig. Black and white. 500 gm. Feb. 10, 1909

Nine-thirty. Fifteen minims bacillus aerogenes capsulatus injected into right hind leg just above hock.

Ten-thirty. Small process present with only moderate swelling. Twenty minims peroxide injected proximal to process around leg.

Feb. 11. Moderate sized process. Pig moves about cage but little and practically does not use leg at all. Temperature, 102.4.

Feb. 13. Pig has improved very much. Runs about cage, eats well and uses leg somewhat. Process localized to leg.

Feb. 15. Pig died last night, not having been quite as well yesterday as the day before, but apparently doing well. Autopsy showed bacillus aerogenes capsulatus process localized, same paste-like consistency and a small amount of gas in wound.

Guinea pig. Brown and white. 450 gm. Feb. 10, 1909.

Nine-thirty. Fifteen minims bacillus aerogenes capsulatus injected in left hind leg just above hock.

Ten-thirty. Large process at side of injection, indurated, hot and tender. Twenty minims peroxide injected in a circle around process and proximal to it as in other cases. Temperature, 102.6.

Feb. 11. Lively, running about cage. Process localized to leg.

Feb. 13. Pig apparently not sick. Temperature, 101.4. Uses leg.

Feb. 15. Uses leg nearly all the time. Swelling diminishing.

Feb. 18. Pig runs about cage on leg. Swelling not tender.

At this point the experiments were suspended because it seemed that the treatment could never be applicable to humans and that even in animals the process was stopped too often at the cost of the patient's life.

CONCLUSIONS.

It is interesting to find with what ease the bacillus can be recovered from the soil, a small lump of soil having been taken at random and injected in the form of a bouillon suspension.

The bacillus grows at least twenty-four hours aerobically in glucose agar stab, glycerine blood serum, on plain blood serum, but does not grow in bouillon.

The fact that a normal rabbit when killed and incubated showed bacillus aerogenes capsulatus reaction indicates that the test for bacillus aerogenes capsulatus by inoculating, killing and incubating the rabbit is not reliable, since the same result may be obtained in a rabbit not inoculated.

The fact that the tissues in the operated arm at the site of amputation were pale and edematous, but no organism recovered by culture from the wound, makes it seem that there is a change in the tissue before the organism invades it during the process of extension up an extremity.

The smears from the three levels of the wound tend to show that the infection at the middle and lower part of the wound is mixed, with but few bacilli aerogenes capsulati present, while the purest bacillus aerogenes capsulatus infection is at the upper part of the wound in the direction of extension. This we would expect as the bacillus aerogenes capsulatus when once started in development outstrips almost all other organisms in the rapidity of the process.

Following the sudden death of the two guinea pigs after large doses of hydrogen peroxide, Dr. Pfaff was consulted, who kindly gave the following advice concerning injections of hydrogen peroxide:

"The excess of hydrogen peroxide which is not used up in oxidizing the tissues is taken up by the blood, decomposing it so that emboli may be formed." The fact that the pigs could stand injections of 25 minims was probably because this amount was only sufficient to oxidize the tissues.

Dr. Pfaff informs me that its action upon the tissues is a caustic one and so it was probably this action, together with the necrosing action of bacillus aerogenes capsulatus toxin, which caused the paste-like consistency of the tissues at autopsy.

The sudden death of the two guinea pigs who received larger doses of hydrogen peroxide was undoubtedly due to direct injection of hydrogen peroxide into the blood stream.

The summary of the experiments, as far as life and death go, show one control to have died during the night following the injection, as would be expected, and one to have lived in spite of an apparent lesion at the point of inoculation.

In the case of the pigs injected with hydrogen peroxide, we find three to have lived apparently uninjured by the injection, and five to have died within an average of four days from the time of inoculation. From this we can draw no conclusions with the exception that in the cases which died, the length of life after inoculation was longer than would be expected in an unprotected case.

In all of the cases injected with hydrogen peroxide, whether they lived or died eventually, it seems beyond any question that the process is localized to the area below the circle of injected hydrogen peroxide.

As a final conclusion, it is sure that the injection of hydrogen peroxide into a human for the purpose of stopping the extension of a bacillus aerogenes capsulatus lesion would never be justifiable, owing to the danger to life connected with this form of treatment.

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THE GAILLOUX MURDER. A CASE SOLELY OF CIRCUMSTANTIAL EVIDENCE, WITH CONVICTION OF THE MURDERER.*

BY WILLIAM F. WHITNEY, M.D., BOSTON.

The following case presents some unusual points of interest in its medical aspect. Further, a conviction without any direct evidence or any incriminating stains upon the clothes of the defendant shows that circumstances alone, when properly brought together, leave nothing to be asked for in the way of testimony.

At half-past twelve in the morning of March 1, 1908, a police officer on his rounds found the outer door of a small plumber's shop on Hall Street, in Lowell, unlocked. He entered and, upon pushing open the door of a small inner room used as an office, noticed the odor of gas which was escaping from an open burner. He shut it off and then stumbled over the body of a man on the floor, with his head underneath a desk in the space between the two rows of drawers forming the sides. The desk stood in a corner of the room with its back against one wall and with one of its ends against another. In this wall was a window close to the desk. The man lay on his side with his head in a pool of dark blood, estimated from one to two feet in diameter. There were blood spatters on the side of the row of drawers next to his head, but none on the front of them. There were also spatters on the lower part of the adjacent wall of the room, about a foot distant; none, however, higher than twelve or fourteen inches above the floor.

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*Read at a meeting of the Massachusetts Medico-Legal Society, June 15, 1909.

The officer pulled him from beneath the desk, turned him on his back, and, finding that he was dead, summoned aid.

The medical examiner, the late Dr. Irish, was called, who arrived at half past two, about two hours after the body was found. He observed that the body was somewhat warm, that rigor mortis had not set in, and that there were injuries to the head.

At the autopsy, performed about ten o'clock the same morning, it was found that there were two rather irregular linear cuts over the left eye down to the bone, and a deep contused wound with fracture of the skull above the left ear. This was two and one-half inches long by two inches wide by one inch deep, and beneath this the bone was comminuted. The middle meningeal artery was torn and the bleeding had come chiefly from it.

The appearance and shape of the wound rendered it probable that it had been made by a single blow of a heavy rounded or angular instrument. A heavy soldering iron could have made it. No instrument, however, was ever found. It could easily have been thrown into the canal near by.

The face was burned about the lips, chin and inside of the mouth as far back as the tip of the epiglottis with a corrosive substance. The blood on the floor beneath the head was of a peculiar dark tarry appearance and remained semisolid without clotting.

The problems which at once presented themselves were:

1. To determine the time of death, which, as will be seen later, was of the greatest importance.
2. To determine the nature of the corrosive substance, as a possible clue to the assailant.

The man had evidently been recently killed when first seen at twelve-thirty, and two hours later rigor mortis had not set in. It is to be said here that its commencement was never noted. Assuming the average time for its beginning to be from two to four hours after death, it would place the time of death between halt-past ten and half-past twelve, the time when he was discovered. This was as near as it could be fixed. The blood beneath his head had not clotted regularly and thus failed to be of any help in determining the time.

A small whiskey glass containing a few drops of a dark fluid stood on a chair in the room. This glass and some of the blood scooped up from the floor were sent to me for examination.

The blood presented an extremely interesting appearance. It was of a dark-brown color, of soft consistency, and moist. Microscopic examination showed perfectly well-preserved blood corpuscles when a little was pressed out under the cover glass. If, however, a little water was added they quickly dissolved, forming a deep-brown fluid. Some of the blood preserved in a tightly corked bottle presented the same characteristics at the time of trial, ten months later. A little of the blood applied to blue litmus paper, previously moistened, turned it a deep red; in other words, giving a marked acid reaction. A little of the blood was rubbed up with water, filtered, a few drops of a solution of barium nitrate added, and a heavy white precipitate formed at once. The same tests were made with the fluid from the glass, with similar results. The substance in the glass was also still moist at the time of trial.

These physical properties and chemical reactions proved that the substance mixed with the blood and in the glass was identical and was sulphuric acid. The same shade and density of color of the fluid in the glass was reproduced on mixing together commercial sulphuric acid and cheap whiskey. The burns about the face and inside of the mouth were, therefore, due to sulphuric acid. It was further probable, from the marked injection of the superficial vessels of the tongue, seen upon microscopic examination, that the acid was taken into the mouth voluntarily, or poured in while the man was unconscious but still alive.

A police officer picked up from the window sill of the room a partly smoked cigarette of a brand known as "The Sweet Caporal All Tobacco Cigarettes."

On the same day (Sunday) Napoleon J. Rivet was arrested on suspicion as he came from mass. He was the last person known to have been with the deceased, Gailloux, before his death. On the cuff of one sleeve of his coat were two or three minute red stains. These, he explained to the chief of police who questioned him in regard to them, came from a cut on his hand. Of this, however, there was no evidence. These stains were in reality due to acid. But as its character was not satisfactorily determined on account of the small amount, they were not placed in evidence by the prosecution. On searching his coat, there was found a box containing four cigarettes like the one partly smoked found on the window sill.

At the trial it was shown that the deceased had taken out a life insurance policy for one thousand dollars which he had assigned to Rivet. It was claimed by the defense that this assignment was made to cover a loan of five dollars advanced by Rivet to pay the dues on a watch bought on the installment plan by Gailloux. On this policy Rivet had paid the premiums for some time.

Just before the murder the defendant had been employed as a helper in some copper works at Taunton, where he had free access to carboys of sulphuric acid, and also to the vats containing sulphuric acid in which the copper was dipped to clean it. The acid in the vats was of a light-green color from the copper salt left in solution. His landlady saw two bottles, one containing a brown liquid and the other a light-green one, on the shelf of a closet in the room which he occupied in Lowell. These, however, were never found afterward.

Lastly, and most important, was the fixing of Rivet's movements on the previous evening. It was acknowledged that the men had been together about seven o'clock the previous evening, and were to have met again later at a saloon. There was no evidence that they did. One witness testified that she saw Rivet pass her shop, not far distant from the place where the murder was committed, at about twenty minutes past ten going in that direction. His sister showed that he came to her house between twenty and thirty minutes after eleven and passed the night there, and there was nothing in his manner when he came in to arouse suspicion.

Two other circumstances were brought out to which importance was attached by the prosecution.

First, about two weeks before the deceased alleged he had been made very ill after drinking two glasses of whiskey given him by the defendant. His symptoms were severe pain in the stomach and vomiting, lasting for twenty-four hours. This the government claimed was consistent with sulphuric acid having been given with the whiskey.

Second, that the two men had been found by some boys drinking at the scene of the murder on the Saturday night previous. It was suggested that the murder was contemplated then, but the entrance of the boys prevented its accomplishment. In any case, it showed they were accustomed to go there.

The defense was an alibi, and that the circumstantial evidence was not sufficient to implicate the prisoner.

After a short deliberation the jury returned a verdict of murder in the first degree.

It is impossible in briefly presenting a case to give an adequate picture of the force of the evidence as presented to the jury. One must sit through the trial itself to thoroughly appreciate it. The one important fact was that the defendant was the central figure about which everything was grouped. Not a spark of evidence was introduced to show that there was any one else to be benefited by Gailloux's death. Nor was any one but the defendant associated intimately with him.

As to the circumstances, if taken singly, there is not one that points solely to Rivet. A great many people smoke that peculiar brand of cigarettes. Any one can procure sulphuric acid from a druggist without a prescription, and it does not have to be entered in the poison book. Moreover, there are many other liquids besides sulphuric acid and sulphate of copper that have a brown and green color. All this was ably argued by the defense, but in spite of it, when these facts were all linked together, they formed a chain which unerringly drew the defendant to the electric chair.

The part played by the sulphuric acid in the tragedy is only a matter of conjecture, and probably will never surely be known. One theory is that Rivet intended to get Gailloux drunk, and, when stupid, to give him a dose of sulphuric acid in the hopes that it would eventually kill him. But the victim was not far enough gone to swallow it, and then Rivet, finding himself discovered, dealt the fatal blow. Another theory is that he poured the acid into Gailloux's mouth and over his face after he was struck down, in the hopes that the case would be regarded as suicide, and the blow on the head explained by a fall against the desk.

Whatever the circumstances were, my own opinion is that the acid was introduced when the man was lying where he was found, as otherwise it would be difficult to explain its intimate mixture with the blood which had flowed from the wound in his head.

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THE DIAGNOSIS OF ULCER OF THE DUODENUM.

BY E. A. CODMAN, M.D., BOSTON,
Assistant Visiting Surgeon, Massachusetts General Hospital.

(Concluded from No. 24, p. 857.)

Case XXXVII. Mr. C. S. H., age thirty-six. Lawyer. Massachusetts General Hospital. May 25, 1907. Vol. 563, p. 297.

"Two years ago seized with attack of acute pain in region of gall bladder, with vomiting and no jaundice. This pain with remissions and exacerbations went on for nearly a year. He was then free of it until last December, when he had another attack lasting several weeks. For past two weeks has been having frequent attacks of severe pain in the right hypochondrium with some vomiting. Yesterday had an attack which was much worse than any he had had before. Pain has continued. Patient required large doses of morphine to keep him quiet; vomited yesterday. Bowels constipated. No urinary symptoms. No jaundice. Temperature, 100.4; pulse, 108. Abdomen tender and spasmodic, especially in right hypochondrium.

Operation. — Cloudy peritoneal fluid and fibrin. Gall bladder normal except for adhesions. "Small perforation, apparently in duodenum close to ampulla of Vater." Region of perforation apparently well walled off by adhesions from abdominal cavity. Wicked.

(In all probability this localization of the perforation was inaccurate.)

Case XXXVIII. Mr. J. C., age forty-three. Shipping clerk. June 19, 1907. Massachusetts General Hospital. Vol. 580, p. 25.

"For past year has had grumbling pain in appendix region, associated with constipation; gives no history of gastric ulcer or indigestion."

Seven years ago he had a similar sudden abdominal pain. At the time of entrance his symptoms were typical of acute peritonitis from perforation of the duodenum. An incision was made over the appendix first, which was found slightly enlarged but evidently not the cause of the trouble. The incision was enlarged upwards and perforation found in the anterior wall of the duodenum. It was successfully sutured and the patient made a good convalescence.

On July 22, 1908, the patient reported by letter that he was perfectly well except for a slight indigestion, which was easily relieved by eating. On Aug. 13, 1908, he reported that the indigestion had disappeared. On March 21, 1909, he says that he has been perfectly well since, and has had no trouble of any kind, although his occupation calls for considerable physical strength.

Case XXXIX. A baby, S. C., age three months. Massachusetts General Hospital Oct. 8, 1907. Vol. 680, p. 185.

This child had not been well after the sixth week. Had been fed on condensed milk and died with continual vomiting and blood in stools toward the end.

Autopsy No. 2024.

Anatomical diagnosis. — Ulcers of the duodenum with hemorrhage into the intestine; bronchopneumonia; fatty metamorphosis of the liver; ulcer of the cornea (right); anemia.

On section the duodenum beginning at a point just below the pylorus and in the posterior wall shows an irregularly shaped loss of substance. The ulcer measures 1½ cm. in length by 6 mm. in greatest width. The margins are somewhat irregular and the base shows a small adhering, reddish, somewhat granular mass of fibrin and blood-clot-like material. The ulcer extends into the submucosa. Immediately below this ulcer there is another very minute one similar in character to the other.

The first portion of the small intestine contains much blood-clot-like material, and the lower part of the small intestine and the large intestine contains a moderate amount of semi-fluid chocolate-colored material. The intestine otherwise is not remarkable.

Case XL. Mr. J. D., age forty. Rubber worker. Oct. 27, 1907. Massachusetts General Hospital. Vol. 575, p. 277.

Has never had a previous similar attack before. Has had a cough six months. Three days ago while at work had a sudden abdominal pain and vomited. On examination at the hospital there was felt by rectum " a very definite mass high up."

Operation. — Five-inch median incision. Mass in pelvis was an abscess containing foul thick pus, while fluid in rest of abdomen was turbid but not especially foul. No cause was found for the peritonitis. A perforation of the duodenum was evidently not suspected.

Autopsy No. 2038.

Anatomical diagnosis. — Ulcers of the duodenum with perforation of one of them; subdiaphragmatic abscess; general peritonitis; serofibrinous pleuritis (right); hemorrhagic edema of the lungs; operation wound (appendectomy); chronic pleuritis (right).

The duodenum on section shows in its anterior wall just below the pyloric ring and a little to the right of the median line a circular loss of substance extending completely through the wall and measuring 1 cm. in diameter. The inner aspect of the ulcer shows rounded, slightly beveled margins and the wall of the duodenum about the margins of the ulcer shows but little if any thickening. The peritoneal surface of the wall of the duodenum in the region of the ulcer shows a few rather slight, foul, shaggy adhesions. The mucosa of the posterior wall of the duodenum just below the pyloric ring shows two very shallow losses of substance with slightly irregular margins and bases. The larger one of these ulcers measures 3 mm. in greatest dimension. Near these ulcers there is a minute, indefinite, shallow area of depression.

The small intestine elsewhere is not remarkable.

Case XLI. Mr. C. W., age thirty. Feb. 20, 1908. Massachusetts General Hospital. Vol. 602, p. 65.

Health always good. Says seven years ago his friends noticed that he was jaundiced for about two or three days. Never before or since. Has had a few slight digestive disturbances at times. No previous similar attacks. About two weeks ago suddenly seized in early morning with sharp abdominal pain shooting across lower portion of abdomen. Also had pain in right hypochondrium. Patient has been unable to work since and has complained of pain and tenderness in right upper abdomen and to less degree about appendix region. Has vomited eight to ten times since onset. Has noticed nothing in color of stools or urine. Has felt languid and unable to eat any but the lightest food. Pain in hypochondrium has been more or less constant, relieved for a short time by certain positions. To-day says that pain is in region of right costal margin and would feel fairly well if it were not for considerable tenderness there. Signs of localized peritonitis below right costal border. Came in in wheel chair. Temperature, 101; pulse, 80.

Operation Feb. 22. Adhesions. Pyloric end of stomach somewhat edematous and adhesions separated carefully from under edge of liver. Abscess containing about half an ounce of pus was found. Further dissection revealed thickened gall bladder with no stones. No stones felt.

Considered perforated ulcer but not definitely proved. Drainage. Convalescence uneventful.

Case XLII. Mr. W. F. H., age thirty-nine. Feb. 27, 1908. Irish teamster. Massachusetts General Hospital. Vol. 602, p. 177.

Patient was brought in moribund and no history could be obtained except that he had complained yesterday of sudden abdominal pain in the hypochrondrium. He died without operation.

Autopsy No. 2092.

Anatomical diagnosis. — Hypertrophy and dilatation of the heart (physiological); edema and hypostatic congestion of the lungs; peptic ulcer of the duodenum with perforation, with escape of stomach contents into the cavity of the peritoneum; acute general peritonitis.

Upon section subcutaneous fat 1 cm. in thickness; section of the peritoneum is followed by the escape of gas with fecal odor; muscles red and firm; the parietal peritoneum, mottled with bright red lines and points, slightly opaque; the cavity of the peritoneum contains rather abundant thin, slightly opaque, pale brownish fluid having an odor of stomach contents; the coils of the small intestine lightly interadherent by shreds of fibrin; the vascular peritoneum in places injected, smooth and of slightly diminished luster; the front of the great omentum shows numerous areas of ecchymosis; the anterior surface of the duodenum at a point immediately below the pylorus shows an oval opening .2 by .3 cm., through which may be readily expressed fluid similar to that contained in the peritoneal cavity; anterior border of liver 8 cm. below the tip of the ensiform cartilage; vermiform appendix and mesenteric lymph nodes natural.

Gastro-intestinal tract. — Stomach: Upon section contains a little pale brown fluid material; the mucous membrane negative.

Intestines. — Small intestine: The front wall of the duodenum at the point above noted presents the conditions already described; the surrounding peritoneum fairly smooth; on section, this opening corresponds with a pocket irregularly oval, the edge of which is 1 cm. below the inner margin of the pylorus; the edges fairly regular, the sides funnel-shaped; the opening in the mucous membrane is about 1 by .6 cm., the surrounding border is negative; the upper part of the small intestine is somewhat relaxed, partly filled with fluid material; elsewhere practically empty; the peritoneum in places slightly injected, throughout a little cloudy, and here and there overlaid with lightly adherent fibrin; the large intestine partly filled with scybala; the mucous membrane natural.

Case XLIII. Mrs. M. B., age fifty-seven. May 5, 1908. Massachusetts General Hospital. Vol. 160, p. 315.

Was brought to the Accident Room on May 5, 1908. No previous similar attack. No history of gastric trouble. Five days ago acute pain and vomiting; went to Emergency Hospital, where she has been since. Has been in constant pain, vomiting continually, and has had no movement for six days. Abdomen distended and mass in epigastric region.

Operation. — Five-inch incision in right rectus. Two very black shiny coils of small intestine pulled out with difficulty. Constriction found at both ends of black bowel at about middle of small intestine. Forty-two inches of black gut removed. On May 9, four days later, an attempt was made to do an end anastomosis which resulted in a fecal fistula. The patient lost strength and died on May 20.

Autopsy No. 2152.

Anatomical diagnosis. — Fibrino-purulent peritonitis; operation wound (excision of a portion of intestine); chronic interstitial nephritis; ulcers of the duodenum; chronic pleuritis; streptococcus septicemia.

On the anterior wall of the duodenum, about 3 cm. from the pylorus, there is an irregularly shaped loss of substance in the mucosa, 2 cm. in greatest dimension. This loss of substance extends down to the muscular coat. The base is smooth, with some finely shaggy, yellowish material. The edges are ragged, rounded over, but show no induration. On the peritoneal surface opposite this ulcer there is slight puckering with some omental fat adherent. About 3.5 cm. from the pylorus, on the posterior wall, there is a similar loss of substance in the intestine 9 mm. in greatest dimension. A third similar loss of substance is found measuring 3 mm. in greatest dimension, and situated about 3 cm. from the pylorus on the anterior surface. The intestines otherwise are not remarkable.

Case XLIV. Rev. Mr. A. P., age sixty-five. Clergyman. June 12, 1908. Massachusetts General Hospital. Vol. 597, p. 293.

This patient had been in the hospital a year previously and had had a prostatectomy done. He had a hernia and had worn a truss for five years. He was operated on under the diagnosis of malignant stricture of the sigmoid. He stated that ten days before entrance he was exposed to rain and got wet. Next morning began to have pain across his lower abdomen, especially to the right side. Pain was very severe but was not accompanied by vomiting and was spasmodic in character. While in the hospital he passed some clotted blood by rectum.

At operation, on June 12, thin, cloudy, straw-colored fluid was found in the abdomen. There was pus in the right iliac fossa and the appendix was normal. In the pelvis beyond the bladder was a large mass of matted intestines and more pus. This surrounded a small hard mass probably in the sigmoid. This was supposed to be a malignant stricture of the sigmoid which had perforated. An enterostomy was done in the sigmoid above the lesion. The patient died on the nineteenth day.

Autopsy No. 2171.

Anatomical diagnosis. — Operation wounds; colostomy; general fibrino-purulent peritonitis; purulent bronchitis; peritoneal lipomatosis; stenosis of the sigmoid; duodenal ulcer; arteriosclerosis; fibrocalcareous endocarditis of the aortic valve; fibrous endocarditis of the mitral valve (slight); hypertrophy and dilatation of the heart; obsolete tuberculosis of the lungs and a mesenteric lymphatic gland; small enterocystoma; double inguinal hernia; hydrocele; cholelithiasis; arteriosclerotic degeneration of kidneys; slight fatty metamorphosis of the liver; central degeneration of lobules of liver.

About 2 cm. beyond the pylorus on the posterior wall of the duodenum is an oval loss of substance about 2 by 1 cm. and which is about 3 mm. in depth. The edges are smooth, rounded, overhanging, but not indurated. The base is shaggy and contains a few shreds of black material. There is no evidence of leakage through this ulcer in the adjacent tissues. The mucosa of the intestines otherwise is not remarkable. There is generally a great abundance of fatty tissue in the retroperitoneal tissue, in the omentum and in the mesentery. The appendices epiploicae are very large. In the region of the sigmoid, beginning just above the brim of the pelvis, and extending down behind the bladder, there is an irregular lobulated series of masses which are connected with the mesentery. These masses are not adherent to the wall of the pelvis or to the other structures. On section, some of these masses seems to be enlarged appendices epiploicæ, while others are fatty masses with strands of fibrous tissue running into them. These masses are contiguous with the external coat of the intestines and they have no apparent connection with the mucosa. In the situation of these masses the lumen of the large intestine seems to be distinctly smaller, but there is no occlusion. *In situ* there is no kink or twist of the intestines. The whole large colon is rather small. The small intestine is of normal size. The stomach is distinctly distended. There is one fibro-calcareous lymphatic gland in the mesentery, and here and there in the mesentery there are smaller and larger masses which on section are made up of fatty tissue.

Case XLV. Mr. F. J. McH., age twenty-four. Oct. 7, 1908. Massachusetts General Hospital. Vol. 611, p. 183.

Always well, no previous attack. A few weeks ago patient was seized with attack of epigastric pain while at work; this was followed by a hollow feeling in his stomach, having no relation to his food. This feeling has continued with occasional periods of relief.

The evening of the day before entrance he had eaten a hearty supper, smoked a cigarette and fell asleep in his chair. He was awakened from his nap with a violent cramp-like pain, etc.; was brought to the hospital with signs of a general peritonitis. At operation, perforation was found in the first portion of the duodenum and closed. He made a good recovery and was discharged on the eighteenth day.

Case XLVI. Mr. M. C. Nov. 2, 1908. Massachusetts General Hospital. Vol. 626, p. 149.

For the past few years he has had numerous attacks of what he considered indigestion. These attacks consisted of pain, usually in the epigastrium. He had had nausea and sometimes vomiting, but the pain has never been severe enough to prevent him from doing his work. The attacks have come at intervals of three or four months for the past few years. With these exceptions the patient has always enjoyed unusually good health. Has been a hard drinker. Has never been jaundiced.

Two days ago, when returning from work, had a sudden sharp pain in the epigastrium, so severe that he dropped in his tracks and had to be helped home by bystanders. When brought to the hospital, he presented signs of general peritonitis from a high appendix or perforation of an ulcer. The surgeon who saw him thought at the operation that duodenal ulcer was the most probable diagnosis. During the operation the foul-smelling abscess and the location to the outer side of the colon made him favor appendicitis. A portion of the appendix was dug out and removed. Several days afterwards the discharge from the wound rendered duodenal ulcer again the most probable diagnosis.

The patient lived for some weeks and died on Dec. 2.

Autopsy No. 2229.

Anatomical diagnosis. — Ulcer of the duodenum with perforation; subdiaphragmatic abscess with extension into the lower lobe of the right lung; abscess of lower lobe of right lung; empyema (right); obsolete tuberculosis of apex of right lung and of a mesenteric lymphatic gland; chronic pleuritis; arteriosclerosis; chronic perisplenitis; chronic appendicitis; laparotomy wound.

The operation wound in the anterior abdominal wall leads down into the region of the gall bladder and into a mass of adhesions which bind the upper end of the duodenum and the stomach in the region of the pylorus and the omentum and transverse colon to the under surface of the right lobe of the liver anteriorly and to the round ligament of the liver, and in close relation to the parts mentioned the anterior surface and a portion of the upper surface of the right lobe of the liver are bound to the diaphragm by rather firm adhesions at the margins of a roughly circular area about 15 cm. in diameter. Separation of these adhesions permits the escape of a considerable amount of semi-fluid purulent material from between the liver and diaphragm, and the surface of the liver within the area mentioned is coated with soft yellowish, fibrino-purulent material. The diaphragm over that portion of the area on the superior surface of the right lobe shows a complete interruption in its continuity, with ragged, irregular necrotic margins. The diaphragmatic surface of the lower lobe of the right lung is adherent to the diaphragm about the margins of the ragged opening just described, and through this opening the fingers pass directly into purulent infiltrated, necrotic, disintegrated lung tissue. The opening in the diaphragm measures about 4 cm. in greatest dimension. The under surface of the left lobe of the liver is weakly adherent to the anterior surface of the stomach. The stomach is contracted down and tubular in shape. On section, the stomach presents no lesions.

The walls of the first portion of the duodenum are slightly thickened and the anterior wall presents adhesions which are continuous with the adhesions previously mentioned, and at a point in the anterior wall just below the pylorus and laterally to the right there is a complete interruption in the continuity of the wall of the duodenum, through which opening the lumen of the duodenum communicates with the space enclosed by the adhesions previously described as present in this region. On section the pylorus is contracted and the upper portion of the duodenum is also contracted down. The remaining portions of the duodenum are not remarkable. The pylorus and the upper portion of the duodenum do not admit the passage of the little finger, but do admit the passage of the large probe. The mucosa of the duodenum immediately below the pylorus and laterally to the right and extending on to the anterior wall shows a roughly oval-shaped loss of substance with fairly smooth rounded margins which over one half of the ulcer extend down to a fairly smooth base and which over the other half of the ulcer extend down to the margins of the opening previously described as present in the wall of this portion of the duodenum.

The ulcer measures about 2½ cm. in its long diameter, and the opening in the base, which is slightly irregular in shape, measures about 12 mm. in its greatest dimension. The intestines elsewhere on section are not remarkable.

CASE XLVII. Miss H. P. A., age fifty. Trained nurse. Jan. 8, 1909. Massachusetts General Hospital. Vol. 255, p. 22.

Was referred to the Massachusetts General Hospital from the House of the Good Samaritan for an acute attack of endocarditis.

Autopsy, Jan. 8, 1909, duodenal ulcer found. Autopsy No. 2278.

Anatomical diagnosis. — Acute meningitis (pneumococcus); polypus endocarditis of the mitral valve; fibrous endocarditis of the mitral valve; hypertrophy and dilatation of the heart; slight arteriosclerosis; infarct of the kidney; soft spleen; ulcer of the duodenum.

The duodenum shows in its mucosa at a point a little below the pylorus a small elongated oval loss of substance about 1½ cm. in greatest diameter. The margins of the ulcer are rounded and descend abruptly to a smooth thin base which consists practically of the slightly thickened peritoneal coat. The peritoneal side of the base of the ulcer is perfectly smooth and shining. The base of the ulcer breaks upon handling. The small vessels leading to the margins of the ulcer are apparently free. At one point in the margin of the ulcer there is a minute, slightly softened, dark reddish area. The intestine elsewhere is not remarkable.

CASE XLVIII. Mr. D. K., age forty-five. Choreman. Massachusetts General Hospital. Feb. 6, 1909.

For six months to one year has had occasional epigastric distress. About Sept. 1 began to vomit almost every day, sometimes after eating and sometimes on getting up in the morning. Distress generally began about noon and lasted until night. Slept fairly well. Difficult patient to obtain history from. No excess of alcohol. In the last year has lost 30 lb., most of it lately. Has been under careful physician who has brought about considerable improvement by attention to diet, etc. Blood was found in the vomitus.

A week ago woke up feeling well, but at about 8 o'clock in the morning, while shoveling snow, was taken with sudden epigastric pain. Vomited. Had had no breakfast. He stopped work at once and went to bed. Pain has continued and has been mostly in region of gall bladder. The pain is gripeing in character and feels better when he sits up. There is no tenderness and soreness in region of gall bladder. He was kept under observation in the medical ward for three days and then transferred to the surgical side. When operation was done an abscess in the region of the gall bladder was found and evacuated. He was twice later operated on for subphrenic abscess.

His strength gradually failed and he died on the 9th of April.

Autopsy No. 2348.

Anatomical diagnosis. — Ulcer of the duodenum; chronic peritonitis; acute diffuse fibrino-purulent peritonitis; acute pleuritis (left); chronic pleuritis (right); abscess lower lobe of right lung; abscesses of the liver; slight hypertrophy and dilatation of the heart; scars of operation wounds; thrombosis in inferior vena cava; septicemia (pneumococcus).

The transverse colon in the region of the hepatic flexure and the pyloric end of the stomach, the duodenum and the retroperitoneal tissues about the upper pole of the right kidney and the right adrenal and the under surface of the liver are bound together by dense, firm, gray-white homogeneous inflammatory like tissue. In places this inflammatory tissue is about 5 mm. in thickness. The anterior margin of the right lobe of the liver is bound to the parietal peritoneum by firm adhesions. In the region of the spleen and upper pole of the left kidney there are adhesions also. Breaking up these adhesions liberated in the region of the liver and spleen large pockets of slimy pus. Between the anterior surface of the right lobe of the liver and the diaphragm there is a small space which shows only a small amount of this pus.

At a point on the posterior wall of the duodenum laterally and to the right and about 2 cm. below the pylorus the mucosa shows a roughly triangular shaped loss of substance about 2 cm. in greatest dimension. The ulcer has smooth rounded margins which extend rather abruptly to a smooth fibrous looking base. At one point in the base of the ulcer, situated at its extreme right, there is a slight depression. The wall of the duodenum in this situation is buttressed by the adhesions and inflammatory tissue previously mentioned. The mucosa in the region of the right end of the ulcer is thrown into two or three small thickened fold-like masses, and there are one or two small grayish smooth streak-like areas extending off from the margin of the ulcer. From the left extremity of the ulcer a grayish, slightly depressed, narrow, streak-like area extends directly across and around the duodenum as far as the cut edge on the left side. In one or two places in the region of the left end of this streak-like area it broadens out slightly over a very short distance into small, smooth, somewhat fibrous-like areas. This streak-like area extends around parallel to the pylorus and at about a distance of 1½ cm. from it. The triangular ulcer and the cicatricial-like streaks extending from it around the duodenum roughly form an annular, shallower and deeper area of cicatricial-like depression. Just below the pylorus the mucosa of the duodenum shows one or two small irregular areas of depression. Sections from this case published in my previous paper show that the "streak-like area" was the scar of an old ulceration.

Case XLIX. Mr. D. F. McN., age twenty-three. Works in shoe shop. June 2, 1909. Massachusetts General Hospital. Vol. 164, p. 217.

Has always been well except for slight indigestion for past four years, and one attack of abdominal pain a year and a half ago, which lasted a week. Twenty-seven hours before entrance had a severe attack of general abdominal pain which became localized in the right lower quadrant. Abdomen slightly distended, tympanitic throughout, and considerable spasm, especially in right lower quadrant. Diagnosis was supposed to be appendicitis and a right rectus incision was made. The appendix appeared normal and further exploration showed that pus came from the region of the stomach. A median incision was then made above the umbilicus; "on the posterior surface of the upper second portion of duodenum was found a perforation." Perforation was not sutured, but drained through a stab wound in the side.

Convalescence was uneventful.

Case L. The following case is that of a personal friend who was operated on by another surgeon.

He is about thirty-five years old and has been strong and well except for the stomach symptoms which follow.

Eight or nine years ago, when working very hard, he had pain and burning on an empty stomach, that is, two to four hours after eating. This was easily relieved by alkalies and taking food. Since that time he has had occasional similar attacks of distress with an empty stomach and has considered them due to hyperacidity. He has always been subject to looseness of the bowels, that is, three or four loose movements daily without pain. He has always had a rather weak stomach.

Two years ago, after an unusual amount of hard work and worry, he began to have more trouble with his stomach and lost considerable weight. The trouble consisted of epigastric pain and burning two hours or so after eating and very often at night also. There was at the same time a looseness of the bowels amounting to a diarrhea, so that he became quite weak and was unable to do his ordinary work. Resting and milk diet brought about improvement, but on working again he found that he was subject to irregular attacks of trouble with his stomach which lasted from a few days to about a week. In the interval between the attacks he felt pretty well, but did not regain his weight. There was some vomiting during the attacks, nearly always at night. The vomitus consisted of food immediately eaten or, if the food had not been taken for one or two hours, of a thin watery substance. Nausea was slight and he was even able to eat during an attack. As a rule, food, especially milk, would relieve an attack temporarily. Bismuth and bicarbonate of soda sometimes would and sometimes would not relieve an attack. He felt best on a full mixed diet with food between meals. Sometimes, apparently, an attack would be aborted by checking the diarrhea, which usually preceded an attack, and by securing a good night's sleep. The vomitus on several occasions showed large amounts of free hydrochloric acid, but never any blood. Frequent abdominal examinations were made, but were always negative. There was, at times, some slight tenderness in the epigastrium in the median line. He lost weight fairly steadily for about a year. The attacks grew worse in severity and in May, 1908, he went abroad for a month and had no attack while he was gone, although his bowels continued loose. On arriving home he had a very severe attack and went on a vacation and did not work in the summer. He had some indefinite epigastric disorder, but no regular attack. He did not regain his weight.

On returning to work attacks came on with rather more severity than before, the only difference being that there was no diarrhea. At this time he was fairly careful of his diet and was on a mixed diet with fairly low proteids and milk between meals.

About April of this year he had a rather severe attack of a similar type and a point of slight tenderness was made out just to the right of the umbilicus and slightly above it. He has recently been operated on and a duodenal ulcer found. Gastro-enterostomy was done and relief since the operation has been most satisfactory.

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Clinical Department.

A CLINICAL CONTRIBUTION TO THE SUBJECT OF LESIONS OF THE UPPER SEGMENT SPINAL ARTERIES.

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In the December number of the *Journal of Nervous and Mental Diseases* Dr. Spiller set forth the symptom-complex of lesions of the uppermost spinal and adjourning portion of the vertebral arteries.

Just previous to my reading his article, a case had been referred to me from an eastern state in which two well-known neurologists had differed as to the diagnosis and prognosis.

My examination of the case led me to make a diagnosis that was arrived at in part by the process of exclusion. But it was too indefinite to be satisfactory, and there was no opportunity for a post-mortem in my case inasmuch as the patient is living. Dr. Spiller's lucid paper determined me in my diagnosis.

The case is as follows: The patient is a male, fifty years old and married. His occupation is sedentary, but he has always taken plenty of exercise and kept himself in excellent physical condition. His family history is good on both sides. His previous history is that of a very healthy man. About eight years ago he had one attack of specific urethritis with an uneventful course and no sequelæ. About three years ago he says he noticed a raised blotchy eruption irregularly placed upon his body. He went for medical advice to the son of the old family physician who had treated him for the urethritis and was now dead. He was led to believe he had syphilis and was put on antisyphilitic treatment for a period at Hot Springs, etc. This diagnosis has colored his present trouble. In the course of time the skin eruption disappeared and there has been no return.

The closest kind of questioning on my part and a frank desire on his to help get the true facts failed to elicit a single point of evidence that would prove to my mind he had had syphilis; there was absolutely no primary sore or anything resembling one, and the eruption was entirely atypical. He is an exceptionally intelligent man, described the urethritis exactly and cudgeled his memory for the truth as I questioned him time after time concerning possible syphilis.

Present illness. — Three months age he was thrown clear from his horse and it was said he struck his head and right shoulder; he was very much bruised on that side. For the first forty-eight hours he was totally unconscious and reflexes were abolished, including the reaction of the pupils to light. He was insensitive to painful stimuli. Breathing was stertorous. There was no vomiting or history of expulsion of fluid from the ears or nose. At the end of forty-eight hours he seemed to recognize his wife for a moment and then relapsed into coma. During this time his temperature was 102° to 103° and then dropped to 97° to 97½°. He was hard to arouse. It is said that one pupil was dilated and remained so one week. At the end of a week he could recognize painful stimuli. During this week he was mentally clear at intervals; at other times he imagined he was playing polo and would try to get out of bed.

At the end of this first week he could sit up in bed, but there was disorientation and incoordination; he could not feed himself because he could not "find his mouth." At the end of the third week orientation was established. The coordination appeared later.

For the next three weeks his strength came back quickly. His bowels were constipated and have remained so: this was not his usual habit.

Physical examination (three months after the accident). — His face is rather drawn and haggard, but his general physical condition is excellent. Eyes: Pupils equal. They react in accommodation, but *not to light*. There is some cutting of the fields and signs of an old neuritis in the fundus on both sides. Station is slightly swaying. When the eyes are closed there is little or no increase. There is no involvement of any of the cranial nerves except the hypoglossus and possibly the glossopharyngeus.

The tongue can be protruded quite well, moved to either side, but the tip cannot touch the roof of the mouth as promptly or with as much force as normal, nor can the more intricate movements be performed with normal ease. The result of this is a slurring of certain consonants and failure to round out all the syllables of some words when he talks rapidly, causing him to trip over them and to jumble the rest of the syllables that follow. There is no atrophy of the tongue as in bulbar palsy, though it is not quite as full on one side as on the other.

There is no aphasia of any kind nor any scanning of speech. When not hurried he can identify clearly every syllable and letter. Swallowing is performed normally. Heart and lungs are normal. The abdominal organs are normal.

His gait is peculiar and noticeable, the shoulders are held rather stiffly, the left leg is pulled slightly upward preparatory to advancing it, while the right leg is advanced quite freely. The left leg is not as certain as the right. He has to make more effort to make it do its work. He says the hip-joint does not feel as firm on the left as on the right. He can place his feet wherever he tries to place them, and there is no stumbling or staggering. When he is made to turn quickly he has some trouble placing his left foot at times, giving the impression of slight paresis on that side.

There is no disturbance of sensation anywhere in the body except possibly in the tongue, no girdle pains, areas of anesthesia or hyperesthesia, no "felt feet." The finger to nose test is perfectly done, as are the other similar tests.

Reflexes: Knee jerk is sluggish on the left and very sluggish on the right and difficult to elicit even with reinforcement. Ankle jerks are prompt and equal. There is no Babinski on either side.

Pain is not a symptom (no shooting pains or gastric crises). There has been no disturbance of urination or defection, except the constipation referred to. Urine is normal in constituents and amount.

Dr. Spiller's description of the symptom-complex of a lesion of the uppermost portion of the anterior spinal and adjoining portion of the vertebral arteries is as follows: "We should expect to find paralysis of all the limbs, trunk and neck, whereas the reflexes necessary to life would be preserved. The face would not be affected. The tongue might escape, but it might be involved by implication of the vertebrals. As the lemniscus probably conveys fibers of deep sensation, this form of sensation would probably be disturbed. If Henschen's opinion (that the lemniscus contains tactile fibers) be correct, tactile sensation would be affected. Tendon reflexes are not infrequently lost when the cerebellum or fibers connecting with it are involved, and, as in the lesion under consideration, the cerebello-olivary fibers would be implicated, it is possible that the tendon reflexes would be lost instead of exaggerated. The vagus and glossopharyngeus should escape, at least in great part. Ataxia probably would not be observed because of the motor paralysis or the escape of important cerebellar fibers."

In my case, after a fall from a horse the man was at once rendered unconscious and remained so for forty-eight hours. He was paralyzed from the neck down. Reflexes were abolished, including pupillary reflex to light. He was insensitive to pain. During the first forty-eight hours his temperature went to 103° and then fell to 97°. It never went above normal later. The power of articulation was impaired, due to paresis of the hypoglossal. The face escaped. There were cerebellar symptoms of incoordination and (later) uncertainty of gait. There has not been any aphasia or hiccough.

During the second and third week after his accident he improved markedly. At first, pain sense returned; then orientation; later coordination. The vagus escaped, though he has at times complained of excessive yawning. There was present what seemed to be some diminution in the power to taste normally. "Things taste woody."

At the end of three months there remained hypoglossal paresis, Argyll-Robertson pupil, paresis of the left leg, almost an absence of the knee jerk on the right side, sluggish but present jerk on the left or impaired side.

In addition to these he says his head feels thick and his mental condition not as alert when he first gets up in the morning. At times there is a feeling of unreality. This passes off during the morning.

I put this man under the care of an expert physical trainer to tone up his general physical condition. In addition he was made to practice exact articulation of all consonants and syllables. He was instructed how to use his tongue in excess of the ordinary so as to exercise and educate an impaired organ. He was given electricity in the form of static spark to the left leg, Morton wave, etc. Internal medication was strychnia in fairly large doses, with iodides to get rid of any possibly reducible results of the traumatism.

At the end of two months' treatment he has so far returned to the normal that he can converse fluently, when not hurried; at these times he stumbles over or slurs one or more syllables. His gait is very nearly normal and he can use the left leg about as well as the right. The Argyll-Robertson pupils gave place to normal reflex reaction to light (the pupils were examined both times by Dr. W. H. Roberts, of Pasadena). The knee jerk became prompt on the left, but remained very sluggish on the right.

As to the differential diagnosis: Intercurrent tabes was ruled out, even though there were present, as symptoms, Argyll-Robertson pupil, sluggish knee jerk (almost an absence on one side) and a gait that resembled ataxia.

As to the pupillary condition: It no doubt occurs in a large percentage of tabetics, 67% or thereabouts. On the other hand, out of 4,000 cases of disease of the nervous system, 492 cases exhibited Argyll-Robertson pupils as a symptom and only 4.25% of these were tabetics; by far the largest percentage, 85.5%, were cases of progressive paralysis; 1.83% were syphilitics; 0.6% were cases of injury to head (Uthoff, "Posey and Spiller"). My case was one of injury to the head, and the pupils eventually became normal.

As to the knee jerks: While they were both sluggish at the first examination, the left knee jerk eventually returned, the right remaining almost absent (and the right leg was the normal and stronger leg!).

What looked like ataxia of his gait proved, on examination, to be not a true ataxia of tabes. It was unilateral and he did not throw the leg forward incoordinately, but lifted it prior to advancing it much the same way as is the case in a poliomyelitis.

Lesions of the posterior inferior cerebellar artery, as described by Spiller,[1] were ruled out. Cortical lesion, basal fracture of the skull and traumatic meningitis were likewise dismissed for obvious reasons.

In fine, the case seems to be explained best by lesion of the spinal arteries (anterior and possibly posterior) and adjoining portion of the vertebral. It is my belief that the type of case of which this is an example is of very considerable practical importance, and that presumably a closer study of the spinal circulation would lead to much information of value.

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[1] Jour. Nerv. and Ment. Dis., June, 1908.

Medical Progress.

REPORT ON MENTAL DISEASES.

BY HENRY R. STEDMAN, M.D., BROOKLINE, MASS.

A MODERN CONCEPTION OF DEMENTIA PRECOX.

THERE are many signs that the theory so long held that auto-intoxication is the root condition in the genesis of certain psychoses is steadily losing support. Campbell's [1] latest contribution to the subject of dementia precox, an elaboration of Meyer's teachings, places this hypothesis still further in the background and brings to the front a rational psychological development of the psychosis from faulty mental reactions revealed by analysis of the life-history of the individual. He sums up the situation as follows:

The formation of the provisional group of dementia precox marks an important advance beyond a mere symptomatological classification; the underlying principle is that for a useful classification one must take into consideration the whole evolution as well as the symptomatology of mental disorders.

The general symptomatology of dementia precox has received much attention and is now sufficiently familiar.

Many authors, impressed by the bizarre, apparently meaningless, nature of the distorted behavior and utterances of the patients, and by observations on their disordered metabolism, have regarded the symptoms as merely the incoherent expression of the disordered activity of poisoned nerve tissue. That such a hypothesis is based rather upon *a priori* principles than upon any adequate basis of clinical fact is evident from the extreme vagueness of Kraepelin's own hypothesis.

Meyer has formulated a conception of the disorder which takes into consideration many facts which have been neglected by those who have been dominated by auto-intoxication hypotheses. This conception expresses the fact that the psychosis is the culmination of a long-continued period of unhealthy biological adjustments in individuals who constitutionally are apt to meet their difficulties in an inadequate manner. The symptoms cannot be understood unless a thorough analysis is made of the constitutional traits of the individual, of his habits in the widest sense of the term, and of the actual difficulties which have precipitated the onset of the psychosis. Jung has traced in detail some of the steps in the distortion of the patient's behavior and ideas.

This biological conception of dementia precox encourages the physician to take a practical attitude, and, after a thorough analysis of the situation out of which the symptoms have arisen in the individual case, to push his therapeutic activity wherever the circumstances are open to modification, unhampered by any hypothesis which excludes a dynamic psychology. This conception is still more fruitful in the indications it furnishes for prophylaxis along educational and sociological lines. The same principles which have led to the above formulation of the nature of dementia precox should also be applied in the study of the other psychoses.

PSYCHOSES ASSOCIATED WITH GRAVES' DISEASE.

From an instructive analysis of eighty-two cases, Packard [2] concludes that in many cases Graves' disease is rather an exciting than a fundamental cause of the psychosis, and that the psychoses themselves are not essentially different from the ordinary recognized functional psychoses except as modified by the prominence of those symptoms seen to a lesser degree in the sane with Graves' disease.

ARTERIOSCLEROSIS, SENILE ATROPHY AND INSANITY.

Southard and Mitchell [3] have studied clinically and anatomically 23 cases of insanity presumed to arise in the sixth and seventh decades. Two of these were alcoholic in origin. Five were paranoic. Four were cases of delirium. Three were maniacal. Nine were cases of depression. Two of the paranoic cases developed katatoniform symptoms and might be placed in the dementia precox group. Seven cases are possibly classifiable in the manic-depressive group. Two of these had attacks of retardation. One case remained maniacal for thirteen years. One case recovered from a single suicidal depression and died eight years later of intercurrent disease. Neither general nor cerebral arteriosclerosis bears an essential causative relation to the insanities developed in the sixth and seventh decades by the 23 cases clinically and anatomically studied. The insanities arising in these decades are not characteristically due to the premature onset of senile atrophy. Eight out of 11 female brains were atrophic; the average age at death was 69.8; the average duration, 2.7 years. Either the female cases are more liable to brain atrophy and to live longer with atrophied brains, or else the atrophy is merely a function of their greater age at death. The average age at death in all 11 females is 67.2; the average duration, 8.8. The average age at death in all 12 males is 62.3; the average duration, 2.8. The differences in ages at onset — female, 58.4 (atrophics, 59.8); male, average, 59.5 (atrophics, 62.9) — are not great. A comparative study of the distribution and extent in several cortical areas of certain pigmented materials demonstrable by iron-hematoxylin (among other methods) brings out extreme and interesting variations in the cases examined. Perivascular cell pigmentation is almost uniform in different areas of the same case, bar focal-destructive lesions, but varies in degree in different cases. Neuroglia cell pigmentation, when of general distribution, probably varies more or less directly with age. Nerve cell pigmentation (iron-hematoxylin) is not a function of age. It is premature to relate the amounts and distributions of nerve cell pigments with different mental diseases.

In conclusion, they refer to arteriosclerosis and senility, separately or combined, as having been very handy terms in psychiatrical diagnosis. However, they believe that they have proved conclusively by this analysis that neither old age changes nor arterial disease have any necessary connection with the development of insanity in the later years of life, at least in the sixth and seventh decades. It seems probable that arteriosclerosis, senility and various forms of insanity are entities which frequently interpenetrate, but are logically and genetically quite separate. Even the degree to which old age and arterial disease serve as complicating factors in insanity has been much overestimated.

THE CLINICAL SIGNIFICANCE OF PHYSICAL PERSECUTION.

Kraepelin sees in the delusions that the body is being influenced from outside through unseen agencies a ground disturbance of dementia precox.

Hermann [4] examined as to the presence of these physical persecutory delusions a material of 1,000 patients, among them 440 cases of dementia precox. In 130 of the latter physical persecutory delusions were found. In the hebephrenia and catatonia cases such delusions occurred only in ill-developed form; in the paranoid dements, on the contrary, they were a more constant and better developed feature. He gives a résumé of the histories of 18 cases and draws the following conclusions: The delusion of physical persecution was found to play a preponderating rôle in 4% of his cases of dementia precox; to be present in about 30%. In 12 of 16 cases the connection of this symptom with dementia precox is to be assumed from the course and termination; in 4 comparatively recent cases it was not so clear. The symptom was also observed by the author in one presenile case, and in another patient who had some of the symptoms of general paresis. The author's investigations led him to the conclusion that delusion of physical persecution is an expression of the characteristic catatonic (" sejunctive ") disturbance of the will in the psycho-sensory sphere, is closely connected with dementia precox and is pathognomonic of this psychosis as distinguishing it from paranoia. He thinks, hence, that the cases showing this symptom, even when they have long presented the picture of a true paranoia, should be considered as belonging to the paranoid form of dementia presox.

ARE ISOLATING ROOMS SUPERFLUOUS?

That control of violent and excited patients can only be exercised by resort to chemical means, through mechanical appliances, or by the hands of attendants, is thoroughly understood. It hence becomes necessary to choose whichever can be shown to be the least of these evils. Baller [5] urges that the prolonged bath and the bed treatment in wards implies restraint no less than other measures, and points out that the difficulties to be overcome have already made themselves manifest in the invention of the " latticed bed," an arrangement by which a wire cover can be fastened over the top of the bed so that the unruly patient is held like an animal in a cage, and by other appliances for keeping those who resist in the tubs. Even apart from such arrangements, which seem like a return to measures of a century ago, many patients resist the prolonged bath and can only be kept in it by the hands of the attendants, of whom a goodly number must be provided to carry out the treatment systematically. He also finds that the mere presence of other patients increases the unrest of a certain number of the excited. Hence, while a believer in the bed and bath treatment, he maintains that it should be applied with judgment, as it is not suitable to every case. He sees no serious objection, but, on the contrary, frequently an advantage, in keeping patients who remain disturbed in the observation ward, in a single room, not locked in, but under the constant supervision of an attendant.

LATE RECOVERIES FROM THE PSYCHOSES.

Petren,[6] in his monograph study of this subject, finds that the majority of late recoveries, with complete cure, belong to the class of manic-depressive insanity. These cases, as a rule, occur comparatively late in life. Heredity is less frequent than it usually is in this form, whilst, on the contrary, certain exogenous causes are almost always present. Amongst them all the various morbid pictures which belong to this form occur, not merely the manic and depressive, but also the paranoic conditions, which latter deserve special consideration in order to avoid errors in prognosis. In certain of these cases, when, for instance, there is severe nostalgia or a protracted convalescence which does not require nursing, discharge of the patient may have an effect upon the further progress of the convalescence.

Complete recovery may take place in catatonia, which, after the above-mentioned forms, shows the greatest number of late recoveries. These cases also usually occur somewhat late in life. Heredity is here also somewhat less frequent than it usually is in this form, whilst definite exogenous causes were present in the majority of the cases. Amongst them there were not only acute cases, but others in which the disease had developed very slowly. As regards the morbid picture, these cases included both conditions of stupor (of various characters) and conditions of excitement. In none of these cases had there been a previous attack of the disease.

He also brings out the important fact that in certain forms complete recovery may take place after an illness which has lasted for several years, ten or even longer, and warns his readers not to give a verdict of incurability in a manic-depressive psychosis unless there are marked arteriosclerotic or senile complications present, and refers to two of his own cases in which recovery took place after marriage had been made legally impossible on the ground of a certificate of incurability given by a specialist in the profession.

PRISON PSYCHOSES.

Dr. Williams [7] in his monograph on this subject gives his experience of 277 cases of mental disease in prisoners which were observed from April, 1891, to December, 1906. With one or two exceptions, they were prisoners upon trial. To make a proper diagnosis, not only must the symptoms be considered, but also the personality of the patient. In two tables the forms of disease are given (1) as diagnosed at an early stage, (2) as diagnosed at a later period. About four fifths of the cases belong to the classes of dementia precox and degenerative insanity. Senile dementia is not noted and the author has only once observed, in the case of a man of fifty-three years of age, with a family history of insanity and a personal history of alcoholism, signs of senile decay in combination with the symptom-complex of Ganser. Senile degeneration of the brain is, of course, no good ground for prison insanity, although senile dementia makes rapid progress under the unfavorable conditions of prison life. Alcoholism is represented by 1 case of alcoholic epilepsy and 10 cases of delirium tremens. The apparent rarity of manic-depressive insanity in prisoners is pointed out, and the author states that it is rare to find a healthy criminal develop this form of insanity while in prison. In all cases of criminal insanity there is a unanimous opinion that prevention or cure can be effected by removal of the patient from the prison, and that the peculiar characteristics of the disease are due to imprisonment. Although it is probable that imprisonment induces a dementia precox (of which form he reports 38 cases) that in other circumstances might have been avoided, it is the fact that in most cases, especially when the disease is at an advanced stage, neither recovery nor improvement takes place on liberation from prison. Twenty-two cases of epileptic insanity were observed; 11 of these were degenerate forms and 11 genuine epileptics.

The mental and bodily stress which prisoners undergo, especially during their trial, are productive of acute psychoses, shown in homicidal reactions and periods of acute excitement. Such conditions generally arise in patients who are already somewhat weak-minded. In other cases hallucinations are marked, especially of sight and hearing, and Ganser's dazed condition is frequent.

The author points out the difficulty of distinguishing feigned from real insanity; even some of the Ganser symptoms may be simulated. Another mental condition that may occur in prison is autohypnotism. Several cases are described, e. g., that of the habitual criminal who believed himself to be hypnotized while in prison. The author is of opinion that prison life is especially disadvantageous to certain natures: dreamers, hypochondriacs, etc. With respect to paranoia, the most frequent form in prison is litigation mania. In this Kern and Kraepelin agree with the author. Fixed delusional insanity may be distinguished from the prison form in that the latter may be cured by a change of surroundings. Wilmanns is of the opinion that the forms of insanity outside and inside prisons are clinically equivalent, but that the former are developments of a greater degree of degeneration than the latter and are the result of a removable exciting cause.

Risch [8] reports clinical records of six patients who developed a psychosis synchronously with their prison confinement. All of them showed psychopathic stigmata. Some manifested incapacity for maintaining their social positions in life. The relation of the mental disorder to the psychogenetic shock, prison penalty, was striking. The characteristic symptom of the disease picture was thought inhibition. The patients were unable to answer simple questions, do easy calculations or solve plain problems. Quite often intelligent answers were interchanged with stupid ones. While patients were under examination, thought inhibition was more pronounced. Although they could not do simple arithmetical tasks, yet they could play cards and keep scores correctly. Their expression was sad and this bore a direct ratio to the inhibition of thought. They were usually confused, depressed and apprehensive. As a rule, they were easily calmed and induced to associate with their fellow-patients. They would become readily accustomed to their new environment, and orientation would rapidly improve. Delusions and hallucinations were accompaniments. In regard to classifying this interesting symptom complex, the author holds that it should be recognized as a distinct clinical reality *per se*, occurring in constitutional defectives reactionary to psychogenic factors. Hysterical psychosis is excluded inasmuch as the disease picture lacks definite physical stigmata and other symptoms peculiar to such a reaction.

IMMUNITY TO ALCOHOLISM IN THE JEWISH RACE.

Cheinisse [9] discusses the question of whether there is evidence that the Jewish race enjoys any special immunity as regards alcoholism and the effects of alcohol. It is generally admitted that the Jews are distinguished by remarkable temperance. While nervous affections are specially frequent among the Jews, it is of interest to note that the diseases of the nervous system which are directly caused by alcoholism, e. g., delirium tremens, are not common among them. The same obtains in regard to those infectious diseases in the causation of which alcohol is a powerful predisposing factor. In hospitals the inmates of which are mainly Jews who have not as yet conformed to the drinking habits of the surrounding community, the statistics are remarkable. Thus in the Beth Israel Hospital in New York, among 3,000 patients admitted, only 4 (or 0.13%) were cases of alcoholism or of affections directly attributable to alcoholism; whereas in the Boston City Hospital, which derives its patients from a mixed population, out of 7,104 patients admitted, 226 (or 3.18%) were alcoholic. The good influences of the temperate habits of the Jewish race is seen in the relatively low percentage of stillborn children among them. It would appear that the slight development of alcoholism among the Jews, far from being due to some supposed immunity peculiar to their race, is in reality mainly the result of their social conditions, and especially of the intimate cohesion of the members of the race to one another, a cohesion engendered and cemented by centuries of persecution.

Kirby,[10] in a statistical analysis of 1,403 insane patients with reference to race psychopathology, finds that the Jewish race seems practically free from alcoholic insanity. The Hebrew, however, ranks higher by far than any other race in the group of functional psychoses, made of manic-depressive insanity, dementia precox, constitutional disorders and depressions of various form.

AN ITALIAN SOCIETY OF PATRONAGE.[10]

At Imola there has been founded a Society of Patronage to assist the insane poor, which has already some two hundred members. They propose to help the insane before they can be taken to the asylum, and after they have been discharged to keep in touch with their families and to contribute to a diffusion of a proper knowledge of the causes and effects of insanity, and especially to combat the improper use of alcohol. It is to this society that the honor of having first initiated the practice of family care of the insane in Imola belongs. Ferrari presented, at the International Congress on the Care of the Insane, held in Vienna, a report on the relationship between this society and family care. According to Ferrari, family care ought to be undertaken, not by the provincial administrations, but by societies of patronage, encouraged and sustained by them. It would lessen the fear the provincial administrations have of incurring heavy charges without certain good result. Family care has also been commenced at Volterra, and thirty-four insane people are lodged with families in the vicinity of the asylum.

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Reports of Societies.

AMERICAN PUBLIC HEALTH ASSOCIATION.

THIRTY-SEVENTH ANNUAL MEETING, HELD AT RICHMOND, VA., OCT. 19, 20, and 22, 1909.

The PRESIDENT, DR. GARDNER T. SWARTS, Providence, R. I., in the chair.

THE SECOND DECENNIAL REVISION OF INTERNATIONAL CLASSIFICATION OF CAUSES OF DEATH.

DR. CRESSY L. WILBUR, of Washington, D. C., stated that the second decennial revision was the most important event that had occurred affecting vital statistics during the past year, and the possibility of twenty-three nations joining in this revision reflected much credit upon the American Public Health Association, which recommended at its Ottawa meeting, in 1898, the Bertillon classification. While the second revision was not radically different from the first, we were at the beginning of a great undertaking, namely, the preparation of a national nomenclature of diseases and causes of death, conducted by a committee of the American Public Health Association. The international classification was somewhat elastic, so that the titles of the tabular list could be subdivided readily to meet special requirements. The Section on Vital Statistics appeared to be ready to approve certain changes in the present standard certificate of death with reference to obtaining better information as to the cause of the death and the occupation of decedent. He believed that the most important practical measure which could come up for consideration next year would be the preparation of a series of uniform statistical tables relating to births, stillbirths, deaths, sickness, marriages and divorces for use in the federal, state and municipal reports and bulletins. He proposed to the officers of the association and also members of the council of the Section on Vital Statistics that they co-operate by the appointment of special committees, whose work could be aided by the Census Bureau in the preparation of uniform tables to be used in registration reports. Great progress had been made in the last few years in the registration area, yet so far, with the exception of North Carolina, there was no registration state in the South.

DISCUSSION.

Dr. H. W. Hill, Minneapolis, asked Dr. Wilbur how he attempted to phrase that part of the death certificate which asked for the cause of death.

Dr. M. L. Price, of Baltimore, asked what numbers in the international classification of deaths were changed in the last decennial revision, what the present numbers were, and what they were intended to mean in their classifications.

Dr. Wilbur, in closing the discussion, said that there was a joint meeting of the Committee on Form and Council of Vital Statistics section, and a complete agreement was had as to the form of questions for the cause of death. The note printed on the face of the blank was as follows: "State the disease causing death, or, in deaths from violent causes, state, first, the means of injury; second, whether accidental, suicidal, or homicidal."

In answer to Dr. Price's question, he had received a communication stating that Census Bulletin No. 104 had been printed and two copies had been sent to him. This contained the title of the classification, and each title which had not been changed or modified from the former series was noted by an asterisk. Dr. Price could see what changes had been made.

THE MANAGEMENT OF MILK-BORNE OUTBREAKS OF TYPHOID FEVER.

Dr. C. V. Chapin, of Providence, R. I., referred to an outbreak of typhoid fever among the customers of a certain dairy in Providence. The only evidence that the milk supply was the cause of typhoid fever was in the excess of patients among the persons supplied. Out of six hundred dealers in Providence, one hundred and fifty-five had had one or more cases of typhoid fever during the last four years. In a study of sixteen outbreaks the distribution of the cases in point of time suggested that the infection was not continuous, but depended on a single distribution of the milk. As shown by Davies, Craig and others, carriers caused infection only in an irregular and intermittent manner. The occurrence of two or three cases in a route of from one hundred to one thousand families within a week required careful investigation. When the milk supply was found to be defective and the source not determined, it should be shut off or pasteurized; and when typhoid was found among those who handled the milk, the patient should be removed from all contact with it. Precautionary measures should be carried out for three or four months from the beginning of the last case.

THE UTILITY OF THE DOMICILIARY VISIT IN THE STRUGGLE AGAINST YELLOW FEVER.

Dr. Carlos Manuel Garcia, of Mexico, stated that the slight outbreak of yellow fever which suddenly broke out at the end of May last year in the port of Leguana del Carmen furnished an opportunity to say a few words about the utility of the domiciliary visit, that is to say, the isolation of confirmed or even suspected cases, the destruction of the larvæ and the infected mosquitoes. This constituted the most practical application of the immortal discovery of Dr. Finlay. These cases had given rise to the doctrine that in those places in which yellow fever was endemic, it was maintained by the children under ten years of age who were natives of the locality. It was supposed that these children were attacked by very mild forms of the disease and were susceptible of propagating it by means of the mosquito. They had not obtained experimental sanction of this doctrine, but we could understand the absolute necessity of isolating at the earliest possible moment every non-immune, amongst whom he would include children under ten years of age who presented any of the initial symptoms. This practice led to the successful termination of the epidemic in Leguana del Carmen.

THE CAMPAIGN AGAINST YELLOW FEVER ON THE ISTHMUS OF TEHUANTEPEC.

Dr. Francisco Valenzuela, of Mexico City, stated the importance of the international traffic across the isthmus had brought to that territory a great number of non-immunes, which had led to a great increase in the number of victims. The campaign, according to the doctrines of Finlay, was organized under Dr. Garcia at the city of Tehuantepec in May, 1904, and subsequently extended to the whole of the isthmus. The excellent results obtained were a matter of congratulation to all. The passenger traffic was under the charge of sanitary agents on board the cars of the Tehuantepec Railway. When a passenger was found to be sick the agent investigated the case, taking into consideration the sanitary condition of the country from which the sick person came. A report was forwarded to the sick man's destination as well as given to the agent on the train with which the passenger desired to connect. This traveling agent collected all the news possible; thus it enabled the chief of the service to receive daily and timely reports of all cases of an alarming character. Isolation of the sick, destruction of the mosquitoes by fumigation and the covering were the three principal factors in suppressing yellow fever.

Dr. Walter Wyman, of Washington, D. C., said that when we think that only a few years ago Vera Cruz was one of the worst infected ports of the Western continent, that it was a constant menace to the United States, but now it was free from that infection and that, through the scientific and sanitary efforts of the Mexican government, represented by Dr. Liceaga and backed by President Diaz, he thought it was a remarkable tribute to the intelligence and energy of our Southern neighbors. Not only had they eliminated yellow fever from the Mexican Republic, but the forces which they were now using were turned against malaria and they expected to eliminate malaria from the Mexican Republic. It looked very much as though they had conquered in the Western hemisphere the disease called yellow fever.

Dr. Peter H. Bryce, of Ottawa, Ontario, said that we could not only congratulate ourselves in the northern states for the fight which was being waged against typhoid fever, but also because of the magnificent task that Dr. Liceaga and his board had taken in hand and accomplished in stamping out disease. It made no difference whether it was typhoid fever, smallpox, yellow fever or tuberculosis which we were all fighting against to-day. He could not withhold his tribute to the splendid example set by Dr. Liceaga and the Board of Health of Mexico City.

Dr. Frederick Torralbas, of Havana, Cuba, said that Havana was to-day in such a condition that they could control entirely the history of any case of yellow fever which might become developed from its very beginning. For this purpose they had this year sixty district inspectors who were in charge, visiting each house in Havana and making an average of twenty thousand houses every ten days, which will cover the whole town in little less than three times during the month.

SCOPE AND VALUE OF LECTURES.

Dr. Herbert D. Pease, of New York City, said our form of government placed the responsibility of government upon the citizens as a whole. Never in our history had the public been more alive to the details of administration than at present. Everywhere we found this reaching out on the part of the populace for a more direct remedy. Truth generally made for simplicity, ignorance for complexity. In his opinion we might say that the cardinal principles in educational work in hygiene were as follows: A simpler statement of the known, the unknown and the debatable. The manner and method of expression must be secondary and they were, nevertheless, of vital importance for success. The speaker must insist upon getting the audience and then he must hold them or he was inefficient. Without money the task was greater, but was by no means hopeless. In the pioneer work against tuberculosis, those who had the least money made greatest progress because lack of means necessitated more volunteers. To be assured of an audience one must advertise and continue to advertise by special letters, handbills and multiple letters, and even newspaper advertisements. In advertising, the subject of a lecture should at all times receive the greatest emphasis. Then follow with the names of the speakers, allowing the time and place to come after this. Every epidemic should be used as an opening gun in the campaign against that particular disease. The larger advertisements should be put on first and later followed with the cards, multiple letters, etc. First presented in your lecture were the problems already solved, next those not entirely solved, and third, topics about which there was controversy. Pictures or lantern slides should be used in effective lectures on certain subjects. These slides might be interspersed with moving picture slides, which added a certain amount of interest to the program.

TEACHING HYGIENE IN ELEMENTARY SCHOOLS.

Miss Isabelle F. Hyams, Dorchester, Mass., said the state had taken upon itself to educate the children, and it seemed reasonable that as much attention should be given to the child's body as to its mind. Children could rarely change their own environment, but in many ways they could control their lives in an effort at better living, if they were properly prepared. The schoolhouse and schoolroom should be examples of cleanliness and afford every means to help the child to live. It seemed hopeless to teach hygiene when the child had but to look about and see filth. The child was the center of his little world, and was more closely concerned with the home. The facts in the home were care of the home, furniture, food and its preparation, hygienic clothing and personal hygiene. The first lesson in ventilation was that there must be an outlet for the foul air at the top of the room, which could be illustrated and emphasized in a cardboard or block house. Scientific impersonation played a large part in the education of the child. For some children who were physically unfit, only the open-air school was proper. They learned to love the open air, and the benefits of such a school were obvious. Health was fundamental, and in the school the child should be trained in habits of health. In order to accomplish this end, conditions in the schoolroom must be wholesome. The school should be well lighted and the air fresh. There should be time for play out of doors and facilities for bathing.

SCHOOL INSTRUCTION IN HYGIENE AND SANITATION.

Dr. John W. Richie, of Williamsburg, Va., stated he would refer only briefly to hygiene, limiting the scope of his remarks to the public school, between the fifth grade and the high school. The teaching of sanitation had proved a great success because it was made so simple that it could be taught to pupils below the high school age. They forced the pupil to examine everything and state the conclusions to be drawn from the evidence, and when the pupil accepted as facts what his own reason told him was true, that was called the open-mindedness of youth. Much good could be done by teaching the facts as to a few specific diseases. Pupils needed to be taught about the microscope, plants and animals that grew in the body and caused disease. They needed to be taught something of the defense of the body against germs in order that it might not seem a monstrous thing to put matter from a cow into the human body. They must be made to understand that food and fresh air were more important than patent medicine. His whole experience had been that it was a perfectly simple matter to give the theoretical background to children, and he who would shorten the subject by omitting the simple remedy was in danger of breaking the circuit altogether. Everywhere we found intelligent people who believed in sanitation, but even among these people ignorance of the simplest principles of bacteria was really disgusting. They seemed to have no idea of what a real disease germ was, but burdened themselves with useless precautions. For instance, they filtered the water from the roof to free it of typhoid-fever germs, overlooking entirely the closet in the back yard. The subject of sanitation should be allowed sufficient time to give pupils some understanding of the subject, and the pupils should be liberally supplied with printed matter for study. Bulletins should be sent to the teachers as well as the pupils. This teaching had a decided effect in educating the parents as well as the children. The public drinking-cup disappeared quickly where sanitation was taught. The old hygiene was not practicable, but the new hygiene was practicable, and we should see to it that in teaching hygiene the conditions should be hygienic in the schoolroom.

THE WAY TO STUDY HYGIENE IN THE NORMAL SCHOOLS.

Dr. Adrian DeGaray, of Mexico City, stated that the difficulty in this matter had always been as to the manner and form in which such knowledge is promulgated. It was very necessary to give the very best instruction to all the world, but above all in the primary schools. It was in a condition of health that the citizen became of value to the country. There should be two courses of hygiene, one general and the other special hygiene, each taught with thoroughness. In hygiene, as well as in other studies, we should try to make it as practical and as interesting as possible. Practical instruction could be given in three ways: by means of the chemical and bacteriological laboratory, by means of excursions and study in such places as theaters, water-supply houses, public buildings and so on, and by means of hygienic amusements. Hygiene should be one of the principal subjects taught in normal schools; it should be studied during the last part of the term; instruction should be given in an entirely practical and agreeable manner, laboratories established and hygienic trips organized.

INSTRUCTION IN PERSONAL AND PUBLIC HYGIENE IN THE MEDICAL COLLEGE.

Dr. F. F. **Westbrook**, of Minneapolis, stated that those in public-health work were hard on the doctor, although they realized his difficulties, and they recognized that he had perhaps been the leading spirit in all of the advances of hygiene. He was a teacher and not a practitioner, yet he wished to pay his tribute of respect to the medical profession. The medical profession, through the American Medical Association, was doing its best to raise the standard of the profession by seeing that none may enter who were not well prepared. It was the desire to prepare the medical man to regulate matters, in conjunction with other forces with which he would come in contact, very much more than he had done in the past. While they did not expect to make them all medical hygienists, they did expect to prepare them to work with such forces as they had represented there.

RESULTS OF FEDERAL CONTROL OF VIRUSES, SERUMS, TOXINS AND ANALOGOUS PRODUCTS.

Dr. John F. **Anderson**, of Washington, D. C., stated that the results of federal control have been (1) that manufacturers had been required to put their barns, stables and laboratories into sanitary condition. (2) Complete separation of tetanus and tuberculous work from the work of producing diphtheria antitoxin. (3) All establishments were required to be equipped with proper laboratory facilities. (4) Each lot of virus was required to be examined bacteriologically, and a special test made for tetanus bacilli, and detailed records kept of such examination. (5) The sale of the old-style " dry " lymph points was no longer allowed. (6) All animals used for propagation of vaccine virus were required to be autopsied, and if the animal had been suffering from an incurable disease the virus was not allowed to be sold. (7) All sera were required to be examined where standards had been established for toxic contamination, and correctly labeled, and to state the date beyond which they could not be expected to yield their specific effects, and to contain no excessive amount of preservatives. (8) Standards for diphtheria and tetanus antitoxins had been established.

HOW AN ENLARGED AND UNIFORM NATIONAL HEALTH ADMINISTRATION MAY BE SECURED.

Dr. Joseph Y. **Porter**, of Florida, stated that the phantom of offended dignity had often arisen in the past to arouse suspicion of improper interference when the federal government had, through interstate commerce, stopped to interpose authority, even in an advisory manner, in the management of public health matters. It was apparent that this was true to-day, particularly in Massachusetts, Ohio and Illinois, in reference to sanitary matters, and the control of disease-producing conditions within their confines. By advocating an enlargement of the powers of the general government in health control throughout the country, which should be uniform and impartially administered in all sections of the country, excepting none, it was not herein desired that the arguments advanced or the opinions expressed should be understood as recommending or advising that the health police powers of a state should be abridged or superseded by the general government, but rather that some of the difficulties in the present system of administration might be remedied and the awkwardness of many existing conditions corrected.

TUBERCULOSIS FROM A MARITIME PROPHYLACTIC POINT OF VIEW.

Dr. Antonio **Matienzo**, of Mexico City, Mex., stated that it had been demonstrated that tuberculosis was a social danger and that it found at sea excellent conditions for the breeding of the germ which propagated it. He proposed that an office for medical inspection be established in the principal ports under the control of the sanitary authorities, fully authorized to examine every passenger; to require the great steamship companies to establish in all their ships a special department with berths for tuberculous children. The infection of the air having been proven, this is all which should occupy the attention of the hygienist. All people should be prevented from expectorating on the floor and in the berths, and for all tubercular passengers there should be placed some concise precepts in the room relating to the danger of expectoration to to the patient himself as well as to everybody else.

(To be continued.)

Book Review.

Clinical Diagnosis and Treatment of Disorders of the Bladder with Technique of Cystoscopy. By Follen Cabot, M.D., Professor of Genito-Urinary Diseases, Post-Graduate Medical School; Attending Physician, City and Post-Graduate Hospitals, New York. New York: E. B. Treat & Co. 1909.

The title of the work before us is somewhat misleading in that the larger part of the work deals with conditions of other parts of the organism than the bladder, and the consideration of the pathological conditions of the bladder itself is confined to seventy-seven out of the total two hundred and thirteen pages which comprise the volume, the remainder and larger portion of which consists of chapters on: Case Recording; Management of the Genito-Urinary Patient, under which heading the prophylaxis of gonorrhea and syphilis and their prevalence are briefly considered; a chapter on the anatomy of the organs of the genito-urinary tract excepting the testicles and their adnexa. Then come others on urine analysis, in which a brief study of the evidences of renal disease is given the chief place, and which includes examination of the prostatic secretion, while but little prominence is given to the urinary characters associated with vesical diseases. Then comes the technic of cystoscopy, in which catheterization of the ureters is a conspicuous feature. The five chapters, comprising seventy-seven pages, as has been said, which deal with diseases of the bladder are next in order, and the work concludes with a chapter of twenty-four pages upon the subject of hypertrophy of the prostate and its treatment. Of these various subjects, the parts which treat of the cystoscope are much the best and contain some valuable information in a compact and practical form which students will find useful.

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PROFESSOR JONNESCO AND SPINAL ANESTHESIA.

AT the demonstration of his method of spinal anesthesia given by Professor Jonnesco at the Hospital for Ruptured and Crippled, on Dec. 7, four patients were operated on, all in the lower section of the body. Among those present was Dr. William Mayo, of Rochester, Minn. The first two were cases of club-foot and of local paralysis, requiring shortening of the tendo Achillis, and the operations were performed by Dr. Homer Gibney and Dr. Virgil P. Gibney, respectively. The third operation was for the reduction of an old dislocation of the hip in a woman of thirty-eight or forty, and was done by the latter surgeon, while the fourth was for double inguinal hernia and was done by Dr. William B. Coley. Dr. Woods Hutchinson, who was one of the New York physicians present, reports that while the abolition of pain was complete, all the patients showed a good deal of nervousness and uneasiness all through their operations, the evidences of mental disturbance being marked. Moreover, although Dr. Jonnesco claims that nausea occurs in only 2% of cases, three out of the four patients operated on upon this occasion were nauseated. In two of the cases also the pulse became markedly depressed. Dr. Hutchinson states that the general opinion seems to be that the spectacular advantages of the method are greater than its practical ones. He points out that in the 50,000 cases credited up to the present to spinal anesthesia by means of cocaine and its analogues, the death-rate has been six times as large as that from chloroform and thirty-two times as that from ether. The procedure, he says, will unquestionably be perfected and rendered less dangerous by such methods as Jonnesco's, but, except in cases in which ether or chloroform cannot be safely used, it has a very wide gap to close up in point of danger, while in point of efficiency, range and comfort in use it is little, if at all, superior to local anesthesia. In fact, local anesthesia, which has been perfected by the work of Matas, of New Orleans; Halsted, of Johns Hopkins; McArthur, of Chicago, and Bodine, of New York, is now applicable to at least five times as many conditions as spinal anesthesia, and is, moreover, five times as safe. At Professor Jonnesco's second demonstration, given at the New York Post-Graduate Hospital on Dec. 8, four serious operations were performed in connection with Dr. Robert T. Morris's regular Wednesday clinic at the hospital, including the removal of a tumor of the left frontal lobe of the brain and operations for hernia and appendicitis. In the first of these, high injection of the stovaine and strychnine was employed, and all the operations were absolutely painless.

In our renewed interest in spinal anesthesia, brought about by Jonnesco's experiments and success, it should not be forgotten that the method is a relatively old one and that credit is due to Dr. J. L. Corning for the earliest work in this country on the general subject. In spite of the fact that lumbar puncture was by no means so widely used then as it is at the present time, Dr. Corning was able to predict a certain future for this method of anesthesia which later facts have amply justified. It is well in such matters to keep an open mind, but it seems hardly possible that such a method of anesthesia can in any way replace the methods of producing general insensibility, except under certain unusual conditions. Quite apart from the painlessness of an operation, it is evidently desirable to spare the nervous system the shock of such an experience.

This can only be accomplished in fullest measure by rendering the patient unconscious not only of his pain, but also of his surroundings. It is impossible to imagine that the time will ever come when this element of nervous reaction can be entirely obviated in conscious patients, nor is the time likely to come when surgeons can operate with equal calmness and deliberation upon conscious patients as compared with those who are completely insensible to other emotions as well as to pain. Interesting and important, therefore, as the whole subject is, we anticipate for it a somewhat limited place in surgical practice, particularly if it be true that its danger is by no means a negligible matter.

THE PLACE OF DENTISTRY IN A GENERAL HOSPITAL.

It has been increasingly apparent within the last few years that dentistry is becoming more and more important in the complete equipment of a modern hospital. Not a few hospitals have taken the step which all should take in the near future in providing a skilled dental practitioner on the visiting or consulting staff. As our knowledge of the mouth cavity has grown and of the relation of the teeth to the important fifth nerve in neuralgia and allied conditions, as well as of the significance of the mouth as a point of entry of various pathogenic bacteria, it has become evident that to ignore the teeth and their condition leaves a definite gap in the diagnosis of many conditions. There is evidence on every hand of the closer approach of dentistry to medicine in general and of the recognition grudgingly given in certain quarters that dentistry is, properly speaking, a special branch of medicine. Whatever opinions may be held on this point, it is not to be questioned that the complete equipment of our hospitals demands the clear recognition of the dentist as a legitimate and necessary member of the medical staff. The location of dental schools in immediate proximity to hospitals fills this need in great measure, but a separation which entails difficulty in securing the prompt service of dental practitioners should undoubtedly be obviated by the appointment of dentists on the hospital staffs, to the advantage alike of dentists, physicians and patients.

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MEDICAL AND PUBLIC HEALTH LEGISLATION.

As the season approaches for the consideration of various matters before the legislature relating to public health and hygiene, it is not amiss to suggest that members of the profession take an active interest in this work by appearing at the State House and lending weight to various measures under discussion by their presence, if not by their words. In another part of this issue we publish a request from Dr. George W. Gay, secretary of the Committee on State and National Legislation of The Massachusetts Medical Society, urging physicians to feel their responsibility in this matter, to make suggestions and to further reform by personal activity in the general cause. The work of the Committee on State and National Legislation is extremely arduous, at times unappreciated and always time-taking. Naturally the supervision of such work must devolve primarily upon those especially appointed for the purpose, but this does not excuse the profession at large from supporting its committee with enthusiasm through legitimate criticism and suggestion, and particularly through active participation at legislative hearings. Much has been accomplished in the past toward reform in medical matters through the agency of The Massachusetts Medical Society, but much also remains to be done, and it is certainly true that the more carefully planned the campaign, the more effective it is likely to be when the various measures in which the medical profession is interested come up for debate.

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DUKE KARL THEODOR.

In the death of Karl Theodor, Duke in Bavaria and Doctor of Medicine, has passed a man unique both in the history of royalty and of medicine. Brought up simply by his father, the Duke Maximilian, who himself was a man of literary tastes, the young duke early became dissatisfied with the social duties of the court and the military routine, and studied medicine with such enthusiasm that he later became an ophthalmologist of high reputation throughout Europe. For many years he worked in the hospital which he had established and brought forth results which any one less distracted by the demands of his position might well have envied. It is unfortunate that the example set by Duke Karl Theodor should be so rarely followed by those of similar station who have the means and the capacity to pursue with success a professional calling. To be not merely a patron of medicine, but also an active promoter of its interests, is a possibility open to many persons of wealth and royal birth, but so far as we are aware the combination as seen in Duke Karl has not hitherto been attained.

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MEDICAL NOTES.

Prof. Jacques Loeb Honored. — It is announced that the chair of experimental biology at Budapest has been offered to Prof. Jacques Loeb, formerly of Chicago University, and now of the University of California. Professor Loeb has lectured on more than one occasion at the University of Budapest.

Progress of Women Physicians and Students. — The Royal College of Surgeons of England has granted further recognition to women medical students. After deciding to admit women to examinations for college diplomas in January, the council has agreed to recognize the women's medical schools in London and in Edinburgh. Further facilities for study in the museum of the college have also been granted.

A Disastrous Smallpox Epidemic. — News comes from Russia, through St. Petersburg, that an entire Russian village with a population of something over a thousand has been wiped out by smallpox. The sanitation of the village was wholly insufficient, vaccination was not resorted to, no proper medical supervision was provided, and the epidemic, once started, is reported to have exterminated the entire population, with the exception of one person, a man of seventy-two, who has become insane through his experience. The wise decision has been reached to burn the village.

The Nobel Prizes. — The Nobel prizes, each amounting to about $40,000, have this year been distributed as follows: Physics, divided between Guglielmo Marconi and Prof. Ferdinand Droun, of Strasburg; chemistry, Prof. Wilhelm Ostwald, of Leipsig, who, it will be remembered, was in this country as exchange professor at Harvard University last winter; physiology or medicine, Prof. Theodor Kocher, of Berne; literature, Selma Langerhof, the Swedish authoress; peace prize, divided between the French senator, Baron D'Estournelles de Constant, president of the French parliamentary group for arbitration, and M. Beernaert, at one time minister of state at Belgium and a representative at the last Hague Peace Congress.

BOSTON AND NEW ENGLAND.

Acute Infectious Diseases in Boston. — For the week ending at noon, Dec. 14, 1909, there were reported to the Board of Health of Boston the following cases of acute infectious diseases: Diphtheria 89, scarlatina 39, typhoid fever 8, measles 68, smallpox 0, tuberculosis 57.

The death-rate of the reported deaths for the week ending Dec. 14, 1909, was 18.00.

Boston Mortality Statistics. — The total number of deaths reported to the Board of Health for the week ending Saturday, noon, Dec. 11, 1909, was 203, against 208 the corresponding week of last year, showing a decrease of 5 deaths and making the death-rate for the week 16.99. Of this number 102 were males and 101 were females; 201 were white and 2 colored; 124 were born in the United States, 73 in foreign countries and 6 unknown; 44 were of American parentage, 131 of foreign parentage and 28 unknown. The number of cases and deaths from infectious diseases reported this week is as follows: Diphtheria, 67 cases and 8 deaths; scarlatina, 43 cases and 0 deaths; typhoid fever, 14 cases and 0 deaths; measles, 65 cases and 0 deaths; tuberculosis, 51 cases and 21 deaths; smallpox, 0 cases and 0 deaths. The deaths from pneumonia were 19, whooping cough 1, heart disease 38, bronchitis 4 and marasmus 0. There were 16 deaths from violent causes. The number of children who died under one year was 25; the number under five years 41. The number of persons who died over sixty years of age was 62. The deaths in public institutions were 72. Cerebrospinal meningitis, 1 case.

Of the above infectious diseases the following were non-residents: Diphtheria: 1 case. Scarlet fever: 1 case.

Deducting deaths of non-residents, the total is 184 and the death-rate is then 15.40.

Medical Legislation. — Dr. George W. Gay, secretary of the Committee on State and National Legislation of The Massachusetts Medical Society, requests those members of The Massachusetts Medical Society who think that additional legislation relative to medical or public health matters is necessary, kindly to forward their suggestions to him at 665 Boylston Street, Boston.

Inspection of Dairies. — As a result of a recent examination by the Massachusetts State Board of Health of dairies in New Hampshire and Vermont furnishing milk for Massachusetts, approximately 50% passed the inspection tests. In New Hampshire 124 dairies were examined, of which 63 were found to be free from objectionable features. In Vermont 59 were examined, of which 29 were free from objectionable features. Letters have been sent to those dairies which showed unsatisfactory conditions insisting that suggested changes be made if it is desired to continue the sale of milk in this state.

NEW YORK.

Appropriation for a Tuberculosis Hospital. — On Dec. 7 the board of aldermen authorized the appropriation of $1,350,000 for the Sea View Hospital for tuberculosis on Staten Island. The erection of the hospital building was begun some time ago, and this money will insure its early completion.

Bequests. — Mrs. George F. Stone, of New York, daughter of the late Robert Colgate, who died recently in California, left a large amount to charities. Among the bequests in her will is one of $20,000 to the Morristown (N. J.) Memorial Hospital.

Under the will of the late Mitchell Valentine, the last in the direct line of an old family of East Chester, now a part of the borough of the Bronx, New York City, the Presbyterian Hospital, as one of the residuary legatees, is to receive approximately $900,000.

A Cancer Research Fund. — By the will of George Crocker, of New York, who died on Dec. 4, the trustees of Columbia University are to receive about $1,500,000, to be known as the "George Crocker Special Research Fund," the income from which is to be devoted to the prosecution of researches as to the cause, prevention and cure of cancer. Mr. Crocker, who himself died of cancer, became much interested in the disease after the death of his wife from the same cause some five years ago, and during his life had given $50,000 to Columbia for cancer research. The management of this fund was put in the hands of Dr. Samuel W. Lambert, dean of the medical faculty; Dr. Joseph Blake, professor of surgery; Dr. Francis Carter Wood, professor of pathology; Dr. C. N. Calkins, professor of protozoology, and Dr. William J. Cies, professor of biology, and it is expected that the large legacy now available will be under the same direction. At the last meeting of the trustees of Columbia it was announced that the medical department had received a gift of $5,000 for equipment from an anonymous donor.

The New York Academy of Medicine. — At the meeting of the New York Academy of Medicine, on Dec. 2, Dr. L. Emmett Holt was elected third vice-president, and the following officers were re-elected: Dr. John H. Huddleston, recording secretary; Dr. Charles S. Bull, corresponding secretary, and Dr. A. Jacobi, trustee. A very important report was received from the library committee, in which it was stated that in two years from the present time the space for books and pamphlets in the Academy's building would be completely taken up, and that unless some measures for relief were promptly adopted, stagnation must inevitably result. Three plans were discussed: (1) To add to the height of the present building, the estimated cost of which would be $1,000,000, while such alteration would serve only for fifteen or twenty years and would not add to the value of the property in case of its sale; (2) to increase the size of the building by the purchase of an adjoining lot, a procedure which would necessitate an enormous expenditure; (3) the removal of the academy to an entirely new site. The committee recommended the adoption of the last-named plan, among the advantages of which were that the functions of the Academy would not be interrupted while the new building was in process of construction, and that with a new building on an ample site the Academy would be adequately housed for many years to come. Dr. Holt, chairman of the committee, stated his conviction that, on account of the great value of such a library to the community, a successful appeal could be made to the wealthy men of New York, and that the greater part of the money required for a new building could be raised in this way. As a result of the report a committee was appointed thoroughly to canvass the situation and present a report at the next stated meeting of the Academy, this committee consisting of the members of the council, the library committee, the chairmen of the various sections and such ex-presidents of the Academy as are at present residents of New York.

Teachers' College Endowment. — An endowment fund, stated to amount to several hundred thousand dollars, though the exact sum has not been made public, has been presented to Teachers' College, Columbia University, by Mrs. George Walker Jenkins, a daughter of the late Marcellus Hartley, for the founding and support of a post-graduate school for teacher nurses. It will be the first institution of the kind to be established in this coumtry, and its aim is thus described by Dean James E. Russell: "Teachers' College is about to inaugurate, through its new school of household arts, a public service movement of large promise. In brief, the college plans to train a body of teacher-nurses to carry the theory and practice of physical welfare for children and of hygienic living in general into homes, schools and communities. The endowment available through the munificence of Mrs. Jenkins provides for instruction in the science and art of hygienic living, with the special object of training women for public service as visiting nurses in home and school, teachers in farmers' institutes and sanitary experts in the care of children in city and coumtry." For ten years the college has maintained, in co-operation with the American Association of Superintendents of Training Schools for Nurses, a department of hospital economy which prepares teachers and officers for nurses' training schools, and this new movement is to be largely under the direction of Miss Adelaide Nutting, professor of hospital economics, a former superintendent of the Johns Hopkins Training School for Nurses.

Current Literature.

New York Medical Record.

Oct. 30, 1909.

1. Fuller, E. *Relief of Urinary and Genital Conditions through Surgery of the Seminal Vesicles.*
2. Bailey, P. *Clinical Varieties of Periodic Drinking.*
3. McConkey, T. G. *Is Lobar Pneumonia Inflammation of the Lungs?*
4. Downing, B. C. *Defective Speech in Backward and Feeble-Minded Children.*
5. King, R. W. *The Preparation of Romanowsky Stains.*

Nov. 6, 1909.

1. Eccles, R. G. *Parasitism and Natural Selection.*
2. *Tovey, D. W. *The Acetone Treatment of Inoperable Carcinoma.*
3. Houghton, H. A. *The Differential Diagnosis between Certain Forms of Tertian Malaria and Enterogenic Intoxication.*
4. LeConte, J. N. *Spastic Constipation. A Symptom.*
5. Hellman, A. M. *A Case of Mongolian Idiocy.*
6. Fernandez, F. M. *Non-Specific Uses of Anti-Diphtheritic Serum.*

2. Tovey describes the beneficial effects of acetone applied to the uterus in inoperable carcinoma. The hemorrhage, discharge and odor are stopped, and the patient's life freed from these most distressing complications.

[W. B. R.]

Nov. 13, 1909.

1. Stark, H. S. *Diabetic Coma: Is It Due to Acidosis?*
2. *Deeks, W. E., and Shaw, W. F. *The Treatment of Amebic Dysentery.*
3. *Herrick, A. B. *The Surgical Treatment of Very Severe and Late Cases of Amebic Dysentery.*
4. *Gordon, A. *Pathogenesis of Tabetic Arthropathies Based upon an Anatomo-Clinical Study of Two Cases.*
5. *Hall, J. N. *A Clinical Study of Six Hundred Cases of Heart Disease.*
6. Rosenberg, L. *Report of Twenty Cases of Pulmonary Tuberculosis without Bacilli in the Blood.*
7. Felkerbaum, D. *A Wrist Support for Sphygmographic Tracing.*

2. The authors report very favorable results in the treatment of amebic dysentery, administering every three hours a dram or dram and a half of bismuth subnitrate (by measure) stirred in a glass of water. This is continued till there is a general improvement. They accompany this with an absolute milk diet and colonic irrigations with plain water or salt solution two to four times daily.

3. The author discusses the importance of appendicostomy and cecostomy in the treatment of severe cases of dysentery, and reports his success in very severe infections.

4. The author reports two cases of tabetic arthopathy, the history of which pointed definitely to a traumatic origin. Both cases were complicated with a degeneration of all the nerves supplying the joints. The author discusses the literature on the subject and gives his autopsy findings to show that the origin of joint lesions in tabes lies mainly in the peripheral nerves, but a provoking cause, such as trauma (in its broadest sense), is essential.

5. The author reports a series of six hundred cases of valvular disease examined by him giving the principal points on which the diagnosis of the lesions were made.

[W. B. R.]

New York Medical Journal.

Dec. 4, 1909.

1. Griffith, J. P. C. *The Influence of Diet on Infantile Mortality.*
2. Scheppegrell, W. *The Immunizing Treatment of Hay Fever.*
3. Shoemaker, G. E. *A Report of a Case of Resection of Five Feet of Intestine following Thrombosis of the Mesentery. With Remarks upon the Diagnosis.*
4. Isaacs, A. E. *Typhoid Fever from the Surgical Point of View.*
5. Gage, J. G. *A Case of Amebic Enteritis with Uncinaria, Trichocephalus and Trichomonads, Showing Results of Treatment after Four Years.*
6. Karsner, H. T. *Ten Cases of Carcinoma in Early Life.*
7. MacLean, H. S. *Fracture-Dislocation of the Spine.*
8. McLaughlin, A. J. *The Management of a Cholera Campaign in the Philippines.*
9. MacWhinnie, A. M. *A New Artificial Leech.*

The Journal of the American Medical Association.

Dec. 4, 1909.

1. Girdwood, J. *Responsibility of the Physician in the Campaign against Tuberculosis.*
2. *Boldt, H. J. *Treatment of Cancer of the Uterus when Too Far Advanced for Extirpation of the Uterus.*
3. Chase, W. B. *Palliative Treatment of Cancer of the Uterus, Especially with Thermocautery.*
4. *Cohen, S. S. *Analgetic Effect of Local Applications of Solutions of Magnesium Sulphate and Other Salts.* (Preliminary note.)
5. Carter, W. W. *Correction of Deformities of Nose by Mechanical Replacement. Report of Cases Treated by Combined Bridge and Intranasal Splint.*
6. *Sharp, H. C. *Vasectomy as a Means of Preventing Procreation in Defectives.*
7. Hamilton, A. S. *The Effect of Intercurrent Disorders on Pre-Existing Epilepsy.*
8. Hayhurst, E. R. *Blood Smears: Their Staining and Preparation.*

2. Boldt discusses the treatment of advanced uterine cancer; advises cystoscopy for diagnosis of the nature and extent of the disease. His treatment consists in curettage with the electric cautery, followed by packing with iodine or acetone. He objects to strong chloride of zinc or other caustics on the ground that one can never be sure how far beyond the diseased parts they will eat, causing fistulæ, etc. Pyoctanin, at first thought very beneficial, is no longer considered by him to be of any service. He rather favors the application of acetone as recommended by Gellhorn. The results with trypsin have not been as promising as expected. Fulguration has some advantages. There seems to be some promise in the use of different ferments. One of our main efforts should be to instruct women in the danger signals of the disease and thus obtain an early diagnosis, when complete extirpation is possible.

4. Cohen has noticed the analgesic properties of magnesium sulphate applied as a poultice in such conditions as cutaneous inflammation, arthritis, neuralgia, etc., and advises its further trial.

6. Sharp strongly advocates vasectomy to prevent procreation in defectives. He is opposed to castration because it deprives the system of the valuable internal secretion and because of the cosmetic effects. After observing the effects of vasectomy in five hundred males, he is prepared to state that there results a diminution of the muscular and nervous fatigue resulting from muscular exertion, a lessened fatigue sensation and a decided increase in energy and well-being. Splendid results have occurred in neurasthenics. Vasectomy does not arrest sexual development; there is no atrophy or cystic degeneration of the testicle following it. Sharp's technic is as follows: The scrotum is cleansed with soap and water, bathed in alcohol; the cord is grasped between the thumb and index finger of the left hand; the vas detected, held firmly and fixed with bullet forceps, cut down upon, drawn through the scrotal wound by means of a tenaculum hook, stripped of all its surrounding structures, ligated above and severed, cutting away any portion that may have been damaged, so that the end next the testicle may not become closed. It is very important that it remain open in order that the secretion of the testicle may be emptied around the vessels of the pampiniform plexus and absorbed. The dartos closes the skin wound, no stitch, collodium or adhesive plaster is needed. No anesthetic, either general or local, is employed, and the patient suffers but little inconvenience and can immediately return to work. No diminution in sexual power or pleasure results. The operation of division of the oviduct in the female is advised, but, of course, is more difficult.

[E. H. R.]

The Journal of Medical Research.

October, 1909.

1. *Councilman, W. T., and Magrath, G. B. *The Lesions of the Skin and the Tumor Formations in Xeroderma Pigmentosum.*
2. *Porter, C. A. *The Surgical Treatment of X-Ray Carcinoma and Other Severe X-Ray Lesions, Based upon an Analysis of Forty-Seven Cases.*
3. *Wolbach, S. B. *The Pathological Histology of Chronic X-Ray Dermatitis and Early X-Ray Carcinoma.*
4. Ordway, T. *Chronic Pancreatitis with Tumor-like Nodules in the Cat.*
5. Tyzzer, E. E., and Ordway, T. *Tumors in the Common Fowl.*
6. Tyzzer, E. E. *A Series of Spontaneous Tumors in Mice, with Observations on the Influence of Heredity on the Frequency of Their Occurrence.*
7. *Tyzzer, E. E. *A Study of Inheritance in Mice with Reference to Their Susceptibility to Transplantable Tumors.*
8. Burgess, A. M. *The Nature of the Reaction of the Tissues of Susceptible and Non-Susceptible Mice to an Inoculable Tumor.*
9. Rushmore, S. *The Effect of Trypsin on Cancer and on the Germ Cells in Mice.*

1. Councilman and Magrath publish an interesting study of the lesions of the skin in xeroderma pigmentosum. They report two cases. In each there were atrophy and pigmentation of the skin, roughening and scaling of the surface, with warty keratosis. There were, in addition, extensive ulcer formations and large epithelial new growths, which recurred on removal. The most common changes in the skin consisted in atrophy of the corium and its appendages and of the epidermis, combined with an excessive formation of the horny layer, and a local formation of pigment. In places there were horny excrescences and tumor-like masses of the epithelium. The tumor formation did not penetrate below the corium, and there were no metastases, either in lymph nodes or internally. They discuss the etiological agents, putting the sunlight as the most probable direct agent. The pigment formation is probably the effect of light. The atrophy of the skin they believe cannot be due to vascular disease. The tumors conform to the most marked characteristics of epidermoid carcinoma. The evidence points to the probability that these tumors follow upon and are dependent on the atrophy and other changes in the skin. The treatment would seem to depend on early recognition and careful protection of the skin from the action of light. Probably the violet end of the spectrum is the most injurious.

2. Porter classifies the lesions due to the x-rays and outlines a conservative course of treatment, which, if begun early, will prevent metastases in the x-ray carcinomata. The paper contains a full discussion of the history and treatment of the cases and the results to date. The author can well speak from experience, having operated upon 11 cases since his previous report in 1907. Of the 47 cases included in this report, 36 were undoubted epidermoid carcinoma and 2 questionable sarcoma. Of the 36 carcinoma cases, 9 have died.

3. Wolbach presents a very interesting discussion of the histology of chronic x-ray dermatitis. The most important fact brought out is that after sufficient injury has been done, complete repair does not take place. He finds in every case active processes going on, even in some cases which had received the last exposures two to four years before. Not only are degenerative and reparative changes constantly going on in the corium, but the occurrence of progressive vascular lesions is proved by the findings in the media of arteries of young fibroblasts and mitosis of connective tissue. The epidermis is the least susceptible of the tissues of the skin to direct injury by x-rays. There is constantly present the picture of the growing down of the epidermis to fill gaps in the corium. The conclusion is justified that the factors responsible for the acquisition of great power to proliferate and eventually to become malignant are those furnished by the changes in the blood supply and in the connective tissue. The acquisition of malignancy is completed during years of active proliferation accompanied by progressive impairment of nutrition.

7. Tyzzer gives an account of numerous experiments with tumor transplantation in mice in relation to inheritance. He discusses at length the findings and theories of different workers in regard to tumor transplantation. He believes that the successful transplantation of tumor tissue in mice depends upon three main factors: the method of inoculation, the character of the individual tumor employed, and the nature of the soil upon which the tumor is implanted. He shows that racial differences are especially important, and points out that though it is possible that susceptibility to inoculable tumors may be effected at times by external conditions, the occurrence of distinct differences in the susceptibility of lots of mice bred and kept under identical conditions shows that variations in the susceptibility may be a matter of racial peculiarity. He shows that the relative racial insusceptibility may be augmented by the inbreeding of the more insusceptible individuals. He shows that susceptibility to an inoculable tumor is not inherited in accordance with Mendel's law, and the results obtained from cross breeding are not explained by any known principle of inheritance. He finds no correlation between any of the visible racial characters and susceptibility to the inoculable tumors. He points out many other points which may influence tumor growth which have not been investigated.

[W. B. R.]

The Lancet.

Nov. 20, 1909.

1. *Leslie, J. T. W. *An Address on Malaria in India.*
2. Batten, F. E. *Myotonia Atrophica.*
3. Lentaigne, J. *Introductory Address.*
4. Rigby, H. M. *Two Cases of Intestinal Obstruction in Which a Double Resection of Intestine was Performed.*
5. *Mathieson, D. M. *Streptococcal Infection in Diphtheria: Observations in Eighty Consecutive Cases.*
6. Morison, A. *Further Report of a Case of Thoracostomy for Heart Disease.*
7. Donovan, C. *Kala-azar in Madras, Especially with Regard to Its Connection with the Dog and the Bug.*
8. Paterson, P. *Two Rare Surgical Conditions: (1) A Case of Acute Torsion of the Splenic Pedicle; Recovery after Splenectomy; and (2) a Case of Floating Liver Cured by Operation.*
9. Hirsch, C. T. W. *The Motor Exhibition at Olympia.*

1. Leslie describes the efforts which the government has recently made in India toward exterminating the breeding places and the larvæ of the anopheles mosquito, and gives his plan for an ideal campaign against malaria in India.

5. Mathieson reports an investigation on a series of 80 cases of diphtheria, in 9 of which there were signs and symptoms occurring on about the twelfth or thirteenth day, due, according to him, to a streptococcal invasion of the throat, which he considers distinct from the diphtheria itself. He discusses the work of other men on this subject. The "thirteenth day" symptoms were: (1) punctate erythema, albuminuria, sore throat, joint pains, diarrhea and fever.

[J. B. H.]

British Medical Journal.

Nov. 20, 1909.

1. Allbutt, T. C. *The FitzPatrick Lectures on Greek Medicine in Rome.*
2. Colyer, S. *The Relation between the Time of Rupture of the Fetal Membranes and Lacerations of the Cervix Uteri.*
3. Hicks, H. T. *A Short Criticism of the So-called Rational "Puerperium."*
4. Longridge, C. N. *The Blood-Tight Uterus and Its Influence on Involution.*
5. *Mitchell, A. B. *Case of Lymphangioplasty for Solid Edema.*
6. Stewart, R. *Intestinal Obstruction from Traumatic Rupture of Blood Vessel.*
7. Hartley, T. *On the Early Recognition and Treatment of Acute Intestinal Obstruction.*
8. Mamourian, M. *A Method of Intestinal Drainage.*
9. Campbell, A. S. *Severe Eclampsia in Early Pregnancy; Recovery.*

5. Mitchell describes a case of solid edema of the eyelids following erysipelas which did not yield to any form of treatment until artificial lymphatics were made by means of silk threads. These were embedded in each eyelid, carried under the skin to the outer margin of the orbit and then carried along down the cheek under the skin nearly to the angle of the mouth. The result was entirely satisfactory. The edema disappeared and the threads never gave the slightest trouble. [J. B. H.]

The Practitioner.
November, 1909.

1. *Coley, W. B. *The Treatment of Inoperable Sarcoma by Bacterial Toxins.*
2. Cowan, J. *The Current Theories Regarding Arteriosclerosis.*
3. *Carr, J. W. *Notes on Rheumatic Heart Disease in Children.*
4. Bishop, E. S. *Acute Peritonitis.*
5. *Walker, J. W. T. *The Indications for Operation in Tuberculosis of the Kidney.*
6. *Grieg, D. N. *On Intermittent Claudication, with Report of a Case Due to Venous, not Arterial, Affection, followed by Recovery.*
7. *Legg, T. P. *Some Points in the Surgical Treatment of Goiter.*
8. Gordon, A. K. *The Treatment of Scarlatinal Otitis, with Special Reference to the Value of the Radical Mastoid Operation.*
9. Harrison, E. *On Musculo-Spiral Nerve Injury, with a Report of Two Cases.*
10. Hernaman-Johnson, F. *Mucous Colitis Considered as a Nervous Disease.*
11. Musgrave, C. D. *A Rheumatic Toxemia.*
12. Campbell-Thomson, H. *Some Recent Literature on Diseases of the Nervous System.*
13. Shepperd, A. *Modern Assistancy.*

1. Coley describes in detail his method of treating inoperable sarcoma by injection of a vaccine prepared from the toxins of the streptococcus of erysipelas and the bacillus prodigiosus. To American readers this method is already well known.

3. Carr considers rheumatism next in importance to tuberculosis among the diseases of early life. The following are the evidences upon which he chiefly relies in forming an opinion in these cases: (1) The presence of subcutaneous nodules. These, according to him, nearly always indicate the existence of active heart disease, especially recurrent and relapsing cases. (2) Evening fever. This, without previous cause, excites a suspicion of possible fresh heart inflammation. (3) Joint pains, however slight and transient, always indicate the need for most careful observation of the heart. (4) Any sudden development of or increase in anemia is a very suspicious sign of heart trouble. (5) Excessive and persistent rapidity of the pulse. In pericarditis he has never found it necessary to use surgical measures or to tap.

5. Walker, in a useful article, discusses the recent opinions on the following subjects related to tuberculosis of the kidney: (1) Whether or not, in the strictest sense, there is tuberculosis of the kidney; (2) by what paths the bacillus reaches the kidney; (3) the possibility for tuberculosis of the kidney recovering spontaneously; (4) the subject of bilateral kidney tuberculosis and latent tuberculous processes; (5) the various operations for kidney tuberculosis and the indications for each. The article is a valuable summary of the literature on this subject.

6. Grieg discusses intermittent claudication and the various theories explaining this interesting condition. He presents the details of one case in which the disease was in a vein, with the arteries sound and pulsating during the attack. He concludes that as arteriosclerosis is so common, and intermittent claudication so rare, that it is inconceivable that arteriosclerosis can always be the cause of this condition, but that it may be caused by interference with the flow of blood *from* as well as *to* the affected muscles.

7. Legg discusses the question of operating in cases of goiter; the reasons for or against this; the various operations and the indications for each, with a study of twenty-four cases in which operation of one sort or another was done for various forms of thyroid disease. [J. B. H.]

Edinburgh Medical Journal.
November, 1909.

1. Robinson, A. *A Glance at Anatomy from 1705 to 1909.*
2. Thomson, A. *The Inaugural Lecture to the Class of Surgery in the University of Edinburgh.*
3. Grant, L. *The Medical Man as a Social Reformer.*
4. *Graham, J. M. *The Suction Treatment of Mammary Abscess.*

4. Graham gives the details of 32 cases of intramammary abscess occurring in 30 patients, treated by cupping. He gives the technic of this very simple treatment. Certain incisions are needed, large or small as the case may require. This combination of incision with suction treatment seems to have given very satisfactory results. [J. B. H.]

Deutsche Medizinische Wochenschrift. No. 45.
Nov. 11, 1909.

1. *Römer, P. *The Quantitative Relation of Antibodies in the Cornea in Passive Immunization; an Essay on Serum Therapy in Eye Diseases.*
2. Kleine. *Further Observations on Tsetse Fly and Trypanosomes.*
3. Kuhn, E., and Aldenhoven, W. *The Striking Importance of Diminished Oxygen Tension on Tissues of Blood-forming Capacity. Experiments on the Secondary Effect of Medicinal Means (Arsenic and Tuberculin) on Blood Formation.*
4. Meltzer, S. J. *Additions to the Physiology and Pharmacology of Magnesium and Calcium.*
5. Kuhn, F. *The Air Compressor in the Hospital.*
6. Goldbladt, H. *Communication on Cause and Treatment of Intermittent Lameness.*
7. Ziemendorff. *Kidney Decapsulation in Eclampsia.*
8. Natanson, A. *Toxic Blindness after Taking Adulterated Aromatic Spirits. An Essay on the Knowledge of Wood Alcohol Poisoning.*

1. Römer considers that the ulcus serpens of the cornea is due to the pneumococcus and for that reason considers that the anti-pneumococcus serum should be used in these cases and used early. In the etiology of these cases some trauma is usually present, and so after trauma to the cornea the eye should be carefully watched, even for two weeks or more. He urges the use of larger amounts of the serum than have been used heretofore, and also the dusting of the dried serum into the conjunctival sac. He mentions the use of intra-corneal and subconjunctival injections of the serum. By experimental work with diphtheria toxin and antitoxin he has studied the presence of antibodies in the cornea. He injected the toxin intracorneally and the antitoxin intravenously, and judged the amount of antibodies present in the cornea by the resulting injury to the cornea. [C. F., Jr.]

Münchener Medizinische Wochenschrift. No. 46.
Nov. 16, 1909.

1. Hochhaus. *Poliomyelitis Acuta.*
2. v. Herff, A. *Value of the New Methods of Preventing Gonorrheal Conjunctivitis.* (To be concluded.)
3. *Merkel, H. *Practical Forensic Value of the Benzidin Test for Blood.*
4. Koch, W. *The Blood Supply of the Sinus Nodes and Their Relation to the Atrioventricular Nodes.*
5. Holzinger, F. *Effect of Osmotic Currents on the Development and on the Life of Bacteria.*
6. *Burkhardt, L. *Intravenous Anesthesia with Ether and with Chloroform.*
7. Ziegel, M. *Traumatic Perityphlitis.*
8. Hofmann, A. *Rhombus and Automatic Extension-Splints for Fractures of the Upper Arm and Shoulder.*
9. Zancarini, G. *Treatment of Thigh Fractures in the Newborn.*
10. Schaefer, H. *Treatment with Spengler's I K.*
11. Ebstein, E. *Nomenclature and Clinical Significance of the Sternal Angle.*
12. Blumberg, M. *Exact Suture of the Perineum without Assistance.*
13. Guleke, N. *Surgical Impressions of Travel in North America.* (Continued.)

3. The writer finds that reactions which may lead to error are brought about by various substances, among which are potassium permanganate, potassium iodide and formol. Formol is the only one of these which responds in every way that blood does to the reagents used in the test. The other substances will give a blue or greenish color when the mixture for the test is incomplete. Merkel, therefore, recommends that when the test is to be used for legal purposes, controls be performed as follows: Having divided the benzidin solution into four parts, the first part is set aside; to the second part is added 2 gtts. glacial acetic acid; to the third part, ana H_2O_2; to the fourth part, ana H_2O_2 and 2 gtts. glacial acetic, and with this part a watery solution of the suspected blood spots is tested. If the result is positive, the test is repeated with each of the other parts in turn. If blood is present, the third part may give a faint color, but parts one and two will give none (in the absence of formol).

6. Burkhardt discusses the use of ether and of chloroform intravenously for anesthesia and reports the results of their use in a series of thirty-three cases.

He gives the indications for the use of this type of anesthesia as follows: It should be used only when general anesthesia is required and when asepsis can be maintained. It is especially useful when the respiratory or circulatory organs are diseased, and in feeble or emaciated individuals, because the primary irritation of the lungs and the reflex disturbances of the lungs and heart do not occur, the blood pressure is not changed and overdosing is almost impossible. It may be used for the convenience of the operator in operations on the head and neck, or in cases that have a marked idiosyncrasy for or a special dislike for inhaling the narcotic. [G. C. S.]

Berliner Klinische Wochenschrift. No. 46.
Nov. 15, 1909.

1. *Czerny, A. *Prophylaxis in Tuberculosis.*
2. *Rettig, P. *Splenomegaly (Gaucher's Type).*
3. Geronne, A. *Clinical Contribution to the Knowledge of Ambulatory Epidemic Meningitis.*
4. Thomsen, O. *Wassermann Reaction with Milk.*
5. Wollenberg, G. A. *Results in the Reduction of Knuckles in Pott's Disease.*
6. Schmeichler, L. *Chlamydospores in Non-Gonorrheal Infections in the Newborn.*
7. Von Beust, T. *A Pleomorphic Threadlike Organism and a Fusiform Bacillus in Sordes.*
8. Kutscher, K. *The Bacteriological Diagnosis of Gonorrhea by Means of the Microscope.*
9. Tobias, E. *Hydrotherapy.*
10. Portmann, J. *An Improved Blood-Counting Pipette and Sahli Hemometer.*

1. Czerny insists that the greatest factor in the control of tuberculosis is a thorough education of the people in the modes of infection and extension of the disease and in the proper care of those afflicted. He urges that the medical profession, which is in possession of the facts, lead in this general education.

2. Rettig reviews the various types of splenomegaly and describes Gaucher's type as an entity characterized clinically by a firm but symmetrically enlarged spleen, often of tremendous size, followed by a peculiar bluish to brown or bronze pigmentation of the skin. The liver is generally enlarged and there is always general adenopathy, the nodes being small and hard. What makes the clinical picture still more distinct is the long duration of the disease, its hereditary character, especially in the female line, and the constant absence of ascites. There is nothing characteristic about the blood picture. The disease generally begins in early life. The cause of death is generally an intercurrent disease, especially tuberculosis. The pathological changes described consist in the occurrence of groups of epithelial cells in the connective tissue framework of the spleen, partially encroaching upon the parenchyma and destroying the malpighian corpuscles. The liver presents the changes of interstitial hepatitis.

8. Kutscher advises the use of dilute carbol fuchsin as a counter-stain in the Gram method of staining gonococci, in which they take the bright red stain. He reviews the cultural characteristics of the gonococcus, the methods employed and the technic of obtaining material for diagnosis. [H. P. G.]

Revue de Médecine.
November, 1909.

1. Chauffard, A., and Troisier, J. *Cervico-spinal Actinomycosis.*
2 and 4. *Vires, J., and Anglada. *Hodgson's Syndrome: An Historical, Pathological and Clinical Study.*
3 and 5. Mosny and Malloizel. *"Splenopneumonia."*

2 and 4. Under the title of "Hodgson's Syndrome," the authors describe a clinical entity, consisting of a uniform dilatation of the ascending and transverse portions of the aortic arch, which causes a stretching of the aortic ring at the base of the semilunar valves. In this condition the valve curtains are normal, but, because of the relaxation of the line of attachment, a secondary aortic regurgitation results. The whole picture is not new and has been long recognized as a result of arterial degeneration and hypertension. The differential diagnosis from a primary valvular or endocarditic insufficiency is made best by the radiograph or orthodiagraph. The earliest signs are simply those of an endarteritis with high arterial pressure. Gradually the aortic wall yields, and as the second sound loses its accentuated sharpness, a diastolic murmur appears, the area of maximum intensity of which increases as the aortic ring becomes more distended. [L. H. S.]

Obituary.

ALBERT H. BLANCHARD, M.D.

Dr. Albert H. Blanchard died in Sherborn, Mass., Dec. 5, at the age of eighty-one. He was born in Boston, June 25, 1828, and, after preliminary study at the English High School, he was enrolled as a student in the Tremont Medical School and the Harvard Medical School. He later became a house pupil at the Massachusetts General Hospital, received his degree of medicine in the year 1851, and began practice in the town of Sherborn, where he remained throughout his long life, except for a period of absence during the Civil War. He was married, in 1852, to Eunice Alden Hooper, a descendant of John and Priscilla Alden, and in 1902 celebrated his golden wedding. In August, 1862, Dr. Blanchard received appointment as surgeon to the Fifty-First Massachusetts Infantry and served in New Orleans under General Banks. He was honorably discharged Feb. 29, 1864, on account of ill health. During his residence in Sherborn Dr. Blanchard became much interested in the history of the town, and in 1890 published a book entitled the "History of Middlesex County." He was for many years a member of the Sherborn School Committee, of The Massachusetts Medical Society and of various other organizations. His wife died in 1908 and four children are left. In the death of Dr. Blanchard, Massachusetts loses a physician of the old school, of a type too rapidly disappearing.

Miscellany.

A MONOLOGUE.

The Anamnesis of Mrs. Valetudinaria Rich.

(Being the Anamnesis of Mrs. Valetudinaria Rich, literally transcribed until collapse supervened on the part of her physician.)

"Now, Doctor, take that chair and sit down. You are always in such a hurry that I never get a chance to tell you half what I want to, and after you have gone I always think of so many things I meant to ask you about.

"Dr. Soper, whom I used to have before I ever had you, was never in a hurry and always could take time to listen to every thing I had to say, and I don't believe you are a bit busier than he was. He was an awfully sympathetic man, Doctor was, and he understood my feelings better than any one I ever had. Poor man, he died of apoplexy, and it was inherited, I guess, — do you think apoplexy is inherited? — his father had it, and I think, but can't be quite sure, that one of his aunts did. But, come to think of it, it was one of his wife's aunts. Oh, *do* you think I'll ever have it? I don't know as it was ever in my family, 'though pneumonia was. An uncle of mine had it — I don't know but what you took care of him — no, it was that good-for-nothing Dr. Vinum. I think he drank —

"Yes, yes, I'm coming to my own case directly, but I don't see why you need be so impatient, you simply must hear me out this time, and you mustn't interrupt me with questions, or you'll get me all mixed up.

"Well, I hardly know where to begin. I suppose I might as well begin with my throat, though there isn't any more reason in beginning there than anywhere else. Perhaps I'd better begin with my head, though I dare say the bad feeling in my head comes from my stomach.

"You say begin with the stomach? All right, I want to be logical and connected about it. I hate anybody that is rambling. Our new minister, Dr. Howler, — have you heard him? But you doctors are bad churchgoers and I don't believe but what you could go a great deal oftener than you do if you really wanted to. Couldn't you, now? Well, I was going to say, Dr. Howler seems to get off from his point a good deal. You know he came from Philadelphia —

"Yes, yes, I *am* coming back to myself. Where was I? Oh, about the stomach? How does it feel? Well, I can't describe it. Sometimes it feels all sort of — I wonder if it can be due to my teeth. Twelve years ago last Christmas, or next Christmas maybe it was, when I was eating a nut, — you know how hard some of those nuts are, I never remember whether they are filberts or that kind — what do you call them — that comes from Brazil —

"No, I didn't break a tooth, but my dentist, Dr. Grinders, — he is a professor in one of the dental schools, I can't remember which, only I know one of them is very good and the other —

"Do I suffer much with my teeth now? Well, if you won't tell anybody, I had them all out six years ago. I don't think any one would ever know it, do you? Mrs. Tompkins, across the street, her new teeth look like —

"Why, I *am* getting on as fast as I can. Why don't you write down the notes of my case in your book? I think there's nothing like being thorough; that's why I like young doctors so much. They seem to get to the root of things. Dr. Youngboy, who came to see me last summer when I was away, took down the whole history of my case just as I gave it to him. He called it the Rational History of the case and said it was very important to get it down just in the patient's own words.

"Where do I feel worst? How can I tell that, when every part of me feels so bad.

"Begin with my head? Yes, once I *was* dizzy, when I climbed the circular stairs up Bunker Hill monument. I never could bear to go up high places. Do you see how those men can stand it, working upon steeples and building the skyscrapers? Why, I can remember when there wasn't a building in town over four stories high —

"Have I been dizzy since? No, but if I was to put my head flat on the floor, especially with my feet up in a chair, I know I should be dizzy. Don't have to put my head on the floor? Now you are making fun of me and I don't think it is very nice for a doctor to make fun of sickness, and even doctors themselves sometimes get sick. I don't see why doctors don't get sick oftener, if there are as many germs as the magazines say there are. What do you doctors do to keep from catching things? I think you ought to tell the public how you escape getting diphtheria and such things. I don't much believe there are any such things as germs, anyhow.

[This goes on for half an hour.]

"Why, what are you getting up for? That's always the way. You're always in such a hurry that I can't get any satisfaction out of you. Come again tomorrow? Well, that will be very nice. Only come early please, so that we shall have plenty of time to have a good long talk. And I will go right on with my history from just where I left off."

BEQUEST OF HARRIET N. LOWELL.

An interesting bit of medical history is brought to light through the recent transfer of property at 2 Beacon Street, Boston, by which a fund amounting to about $100,000 will ultimately become available presumably for the Harvard Medical School. The story of this bequest is as follows: Miss Lowell was born in Maine of good New England stock and made a competency in the business of millinery. Traveling abroad, she was taken ill in Munich, and came under the care of the late Duke Karl Theodor, of whom we speak in this issue of the JOURNAL. Much influenced by his work, and by the conviction of the self-sacrifice of members of the medical profession in general, her thoughts even then were turned to the disposition of her property. Returning to this country, she consulted her dentist, who referred her to an eminent practitioner of this city with reference to her general condition. It therefore came about, through the seed sown by Duke Karl Theodor, and fructified by influences brought to bear upon her after her return, that her estate was left in trust for the benefit of some educational school of medicine. This fund will become available after certain annuities from it have been satisfied. The incident serves in general to emphasize the influences which may lead to the beneficent disposal of property, and in particular is a tribute to the tact and wisdom of the professional men with whom she came in contact after her return home.

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PROFESSOR ADAM POLITZER'S JUBILEE.

On Dec. 9 Professor Politzer will celebrate the fiftieth anniversary of the attainment of his doctor's degree, and occasion will be taken of this jubilee to do honor to the great otologist. A festival has been arranged by the Austrian otological societies, at which a number of addresses will be presented by kindred societies in other countries. The University of Vienna will renew the professor's diploma and cause it to be presented by some of its leading members. It will be remembered that when Professor Politzer retired from the chair of otology at Vienna two years ago a similar festival was set on foot; this had to be abandoned at his express wish on account of a family bereavement. At that time a gold medal bearing his portrait was struck and presented by otologists from all parts of the world to the great teacher from whom so many had received their inspiration. The present occasion will be welcomed as an opportunity of giving expression to their homage in a more personal manner. — *Lancet.*

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Correspondence.

THE FIRST SUCCESSFUL SURGICAL INTERFERENCE FOR APPENDICITIS.

Boston, Dec. 11, 1909.

The Editor: While reading an article on James Grant in the November, 1909, issue of the *Green Bag* I was not a little surprised to learn that his nephew, Dr. W. W. Grant, of Denver, Colo., was "the first surgeon to perform a successful operation for appendicitis, Jan. 4, 1885."

In order to become enlightened upon this point, I wrote to Dr. R. H. Fitz, asking him who was the first to perform appendectomy, and received the following reply:

Boston, Nov. 15, 1909.

Dr. C. G. Cumston:

Dear Sir, — In the Boston Medical and Surgical Journal of March 23, 1905, I made a slight contribution to the early history of operations for appendicitis. I gave credit to Krönlein for the early removal of an inflamed appendix, and to Dr. R. F. Weir, April 21, 1887, for crossing the normal peritoneal cavity and removing the appendix after a diagnosis of appendicitis had been made. The first successful operation was by Morton, April 25, 1887.

. . . .

Yours sincerely,

R. H. Fitz.

Before proceeding, let it be known that the word "appendectomy" is defined in Gould's Pocket Medical Dictionary as "excision of the vermiform appendix," and in the American Pocket Medical Dictionary, edited by W. A. Newman Dorland, as "removal of the vermiform appendix." I shall assume that these definitions will be accepted as correct.

I also wrote to Dr. W. W. Grant asking for information, and received the following letter, together with a reprint of his paper, entitled "The First Appendectomy," Colorado *Medicine*, 1903.

Nov. 18, 1909.

Chas. G. Cumston, M.D., Boston.

Dear Doctor, — Yours of the fifteenth received. I enclose reprint of my first appendectomy. I had opened abscess due, doubtless, to appendicitis, but that is a different matter.

Since the publication of this reprint I have learned that a German surgeon, whose name is familiar to me, but I do not at this moment recall, operated in 1884, but the patient died and I have never seen a history of the case. My patient is still living and in Minneapolis. The disposition and procedure in such a case, ten years later, would have been comparatively simple, but at the time there was nothing but a general surgical principle to guide one.

With esteem and regards, I am

Yours truly,

W. W. Grant.

I will now quote that portion of Dr. Grant's paper upon which he bases his claim to have been the first to do an appendectomy, the date being Jan. 4, 1885.

" . . . I deliberately opened the abdomen over the cecum rather perpendicular than oblique, or parallel to Poupart's ligament. . . . Two fingers were inserted in search of the appendix. The entire organ was found excluded by firm adhesions from the peritoneal cavity. The examination indicated that it was retrocecal and pointed outward. I did not break up the intraperitoneal adhesions for fear that fecal extravasation would infect the peritoneum at the time, or immediately following the operation, and prove fatal, so I proceeded as follows: "With the finger and handle of the scalpel I worked down on the outer side of the cecum, which was adherent, keeping two fingers of the other hand in the peritoneal cavity at the base of the appendix as a guide. I made for this point and soon found the base of th eappendix. With an aneurism needle I passed a silk ligature around it close to the cecum and severed the appendix. I left the severed organ firmly imbedded in adhesions in the iliac fossa. . . ."

Thus, the appendix was not excised or removed; consequently appendectomy was not done.

Krönlein, of Zurich, was unquestionably the first to perform appendectomy, he having done it in 1884, although the month and date I cannot ascertain. The patient was a seventeen-year-old boy in whom an acute gangrenous appendix and general peritonitis were diagnosed *before* operation. The appendix was brought out through a median abdominal incision, ligated and cut away, the patient surviving three days.

After reading Dr. Grant's reprint I failed to see how he could claim to be the first to do an appendectomy and I wrote him to this effect, the following being his reply:

Nov. 29, 1909.

Dr. Charles G. Cumston, Boston, Mass.

Dear Doctor, — Yours of the 23d instant received.

In the case referred to, I claimed the removal of the appendix, after opening the abdomen and handling and examining the intestines in the vicinity, ligated and cut it off, removing it from intestines and peritoneal cavity. Because the severed or distal end was left for prudential reasons, stated, in adhesions in the iliac fossa outside of the peritoneal cavity, does not alter the fact of its removal. To look at it differently, it seems to me, is technical and does not change the essential fact that the abdomen was opened for the first time in this country, for the first time successful, the appendix found, on a correct diagnosis, and the patient recovered. The fact that the severed organ was left harmless in adhesions does not change these important facts.

. . . .

Very truly yours,

W. W. Grant.

As at some future time the history of our present surgery will be written it is well to be as precise as possible, and in conclusion to the data I have submitted I would say that the *first appendectomy* was done in 1884 by Krönlein, and that the *first successful surgical interference* for appendicitis was accomplished by Dr. W. W. Grant, of Denver, Colo., on Jan. 4, 1885.

Very truly yours,

Charles G. Cumston, M.D.

RECORD OF MORTALITY

For the Week ending Saturday, Dec. 4, 1909.

CITIES.	Reported deaths in each.	Deaths under five years.	CITIES.	Reported deaths in each.	Deaths under five years.
New York	1,370	367	Waltham	7	2
Chicago	570	134	Pittsfield	7	3
Philadelphia	—	—	Brookline	4	2
St. Louis	—	—	Gloucester	—	—
Baltimore	173	41	North Adams	7	1
Cleveland	—	—	Northampton	9	—
Buffalo	—	—	Chicopee	10	2
Pittsburg	—	—	Medford	1	—
Cincinnati	—	—	Beverly	5	1
Milwaukee	—	—	Leominster	4	1
Washington	—	—	Hyde Park	3	—
Providence	—	—	Melrose	2	0
Boston	185	37	Newburyport	7	—
Worcester	31	7	Revere	4	—
Fall River	21	7	Westfield	7	—
Cambridge	28	6	Woburn	5	0
Lowell	35	7	Peabody	—	—
New Bedford	17	4	Marlboro	5	2
Lynn	23	3	Attleboro	3	0
Springfield	25	5	Adams	7	1
Lawrence	—	—	Clinton	1	—
Somerville	16	4	Gardner	5	3
Brockton	12	2	Milford	3	2
Holyoke	13	6	Watertown	3	—
Malden	12	5	Plymouth	—	—
Chelsea	13	3	Southbridge	3	1
Newton	7	1	Weymouth	2	0
Salem	12	3	Framingham	—	—
Haverhill	9	1	Wakefield	—	—
Fitchburg	9	—	Webster	—	—
Everett	11	2	Arlington	2	—
Quincy	4	—	Greenfield	1	—
Taunton	8	1			

CHANGES IN THE MEDICAL CORPS U. S. NAVY FOR THE WEEK ENDING DEC. 11, 1909.

Nash, F. S., medical inspector. Commissioned medical inspector from Nov. 20, 1909. Dec. 6.

Minter, J. M., passed assistant surgeon. Commissioned passed assistant surgeon from Aug. 1, 1909. Dec. 6.

Price, A. F., medical director. Placed on the retired list from Dec. 13, 1909. Dec. 8.

BUREAU OF PUBLIC HEALTH AND MARINE-HOSPITAL SERVICE.

A board of commissioned medical officers will be convened to meet at the Bureau of Public Health and Marine-Hospital Service, 3 B St., S.E., Washington, D. C., Monday, Jan. 24, 1910, at 10 A.M., for the purpose of examining candidates for admission to the grade of assistant surgeon in the Public Health and Marine-Hospital Service. Candidates must be between twenty-two and thirty years of age, graduates of a reputable medical college, and must furnish testimonials from responsible persons as to their professional and moral character. The following is the usual order of the examinations: 1, physical; 2, oral; 3, written; 4, clinical. In addition to the physical examination, candidates are required to certify that they believe themselves free from any ailment which would disqualify them for service in any climate. The tenure of office is permanent. Officers traveling under orders are allowed actual expenses. For further information, or for invitation to appear before the board of examiners, one should address "Surgeon-General, Public Health and Marine-Hospital Service, Washington, D. C."

SOCIETY NOTICES.

The regular meeting of the South Boston Medical Society was held Monday, Dec. 13, at 8.30 P.M., in Hobah Hall. Dr. Ernest B. Young read the paper for the evening. Title, "Fibroids and Pregnancy."

Dr. P. J. Timmins, *President*.
Dr. J. C. Rogers, *Secretary*.

The Norfolk District Medical Society. — A meeting of the society will be held at Masonic Temple, 171 Warren Street, Roxbury, Dec. 28, at 8 o'clock. Communications: "Hepatic Insufficiency," Walter H. Parker, M.D.; "Early Symptoms of Diseases of the Gall Bladder," Charles P. Sylvester, M.D.; "Differential Diagnosis of Gall-Bladder Diseases from a Surgical Standpoint," Fred B. Lund, M.D. Refreshments after the meeting. The subject "Epilepsy," announced for discussion at the March meeting, will be changed to one to be announced later.

Bradford Kent, M.D., *Secretary*,
798 Blue Hill Avenue, Dorchester.

RECENT DEATHS.

Dr. C. J. Boulden, President of King's University, at Windsor, N. S., died Dec. 9. He had occupied his present position since 1906, having come from England to assume it.

Hill, John Bogardus, M.D., M.M.S.S., retired, died in Boston, Dec. 9, aged seventy-eight years. Dr. Hill graduated from the Harvard Medical School in the class of 1853, and for many years had a large medical practice. His death finally occurred at his home in Carver Street, Boston, after a brief illness following a cerebral apoplexy.

BOOKS AND PAMPHLETS RECEIVED.

A Text-Book of Obstetrics. By Barton Cooke Hirst, M.D. Sixth edition, revised and enlarged. Illustrated. Philadelphia and London: W. B. Saunders Co. 1909.

Studies in Immunity. By Prof. Jules Bordet and his collaborators. Collected and translated by Frederick P. Gay, A.B., M.D., including a chapter written expressly for this publication by Professor Bordet. New York: John Wiley & Sons; London: Chapman & Hall, Ltd. 1909.

The Principles of Hygiene. By D. H. Bergey, A.M., M.D. Third edition, thoroughly revised and enlarged. Illustrated. Philadelphia and London: W. B. Saunders Co. 1909.

Thirty-Second Annual Report of the Board of Health of the State of New Jersey, 1908. Paterson. 1909.

Visceral Surgery in Abstract. By Acheson Stewart, M.D. Pittsburg, Pa.: Medical Abstract Publishing Co. 1909.

Arthrosteopedic Surgery (Extremities and Skeleton). By Stewart L. McCurdy, A.M., M.D. Pittsburg, Pa.: Medical Abstract Publishing Co. 1909.

The Medical Record Visiting List or Physicians' Diary for 1910. New revised edition. New York: William Wood & Co.

Dr. Jacobi's Works. Collected Essays, Addresses, Scientific Papers and Miscellaneous Writings of A. Jacobi. Edited by William J. Robinson, M.D. In eight volumes. New York: The Critic and Guide Co. 1909.

Surgical Diagnosis. By Alexander Bryan Johnson, Ph.B., M.D. Vol. III. Illustrated. New York and London: D. Appleton & Co. 1910.

The Medical Complications, Accidents and Sequels of Typhoid Fever and the Other Exanthemata. By Hobart Amory Hare, M.D., B.Sc., and E. J. G. Beardsley, M.D., L.R.C.P. (Lond.) Illustrated. Philadelphia and New York: Lea & Febiger. 1909.

Surgery of the Brain and Spinal Cord. By Prof. Fedor Hrause, M.D. Translated by Prof. Herman A. Haubold, M.D. Vol. I. Illustrated. New York: Rebman Co. 1909.

A Study of the Anatomic Relations of the Optic Nerve to the Accessory Cavities of the Nose. By Hanau W. Loeb, A.M., M.D. Reprint.

Multiple Stricture of the Small Intestine, with Report of a Case. By William Van Valzah Hayes, M.D., and William Seaman Bainbridge, M.D. Reprint.

Three Unique Head Tumors. I. Indurated Mass in Scalp, Simulating Malignancy, caused by Foreign Body. II. Epithelioma of Scalp, involving External Table of Skull and Diploe. III. Intracranial Tumor, Epidural Aberrant Thyroid. By William Seaman Bainbridge, Sc.D., M.D. Reprint.

A Case of Laryngeal Stenosis in the Adult, Successfully Treated by Intubation; Continuous Wearing of Tube for Four Years. By William K. Simpson, M.D. Reprint.

A Case of Laryngeal Diphtheria, Necessitating Intubation, Complicating Cerebrospinal Meningitis in an Adult. By W. K. Simpson, M.D. Reprint.

A Sarcoma of the Naso-Pharynx. By William K. Simpson, M.D. Reprint.

Two Atypical Cases of Sinus Thrombosis. By S. K. Kopetzky, M.D. Reprint.

La Stérilisation des Plantes Médicinales dans Ses Rapports avec Leur Activité Thérapeutique. Par MM. Em. Perrot et A. Goris. Reprint.

Symposium on Diseases of the Trachea Presented before the American Laryngological Association, Niagara Falls, May, 1906. Diseases of the Trachea — Anomalies, Hemorrhage, Inflammations and Infections. By James E. Newcomb, M.D. Tumors of the Trachea. By Clement F. Theisen, M.D. Stenosis of the Trachea. By William Kelly Simpson, M.D. Foreign Bodies in the Trachea and Tracheoscopy. By A. Coolidge, Jr., M.D. Reprint.

Original Articles.

REVERDIN AND OTHER METHODS OF SKIN-GRAFTING.

Part I. Historical.*

BY ALBERT EHRENFRIED, M.D.,
Visiting Surgeon, Mt. Sinai Hospital.

The ancients well understood the art of bridging over skin defects by the use of the plastic flap. The earliest mention of the procedure, employed in rhinoplasty, is found in the Ebert papyrus, dating about 1500 B.C. Galen and Celsus wrote upon plastic surgery, as did also Antyllus and Paul of Aegina.

It was among the natives of India, however, that the operation reached its highest development in ancient times. From the Ayurveda (c. 100 B.C.) we learn that plastic flaps were turned on to the nose from the cheek, and later from the forehead. Some attempts also at plastic work about the ears were made. The operation was probably quite commonly performed, for ears and noses were amputated in those days as a punishment for crime. There seems to have existed among the Brahmins a certain caste, the Koomas, or potters, which considered the repair of mutilated features its especial province. Besides using the pediculated flap, from the cheek or forehead, they would sometimes vary the procedure, as Susruta tells, by slapping the skin of the buttock with a wooden shoe until it was quite congested, and then, with a leaf cut to proper shape as a pattern, cutting out a piece of skin with its subcutaneous fat, transplanting it and sewing it into place, uniting it to the freshened edges of the defect.

In the Middle Ages, as the necessity again arose, rhinoplasty came once again to be commonly employed. Some say it sprang into use independently of the work of the Hindoos; others, that it was brought to Italy by the Arabs. At any rate, in the fifteenth century the family Branca in Sicily rose to fame for its skill in plastic procedures, to be succeeded by the family Bojani, in Italy. The first systematic treatise on the subject dates from 1597, when Gaspar Tagliacozzi, of Bologna, who had won success in the treatment of the ear, lip and nose, expounded the method which was then in general use.

Whereas the Indian method provided that the pediculated flap be taken from close at hand, so that it need only be rotated on its pedicle to cover the defect, the Italian or Tagliacotian allowed for the taking of the flap from any portion of the surface of the body, provided only that it could be brought and fixed in close enough approximation to the area to be covered. For this sort of rhinoplasty the left upper arm was usually chosen, and on its anterior aspect two parallel cuts eight inches long were made down to the fascia, four inches apart. The strip thus formed was separated up from the fascia by blunt dissection, and under it was carried a sheet of oiled paper, to prevent formation of adhesions. After a week or more, when the under surface had granulated in thoroughly, the upper end of the strip was cut across, the arm brought up to the face and fixed by straps, and the flap sewed into place.

Tagliacozzi had a few followers who reported successful cases, but rhinoplasty gradually sank into disuse and in course of time began to be considered impossible or fabulous, and his success was declared apocryphal. Reneaulme de la Garanne (1712) tried to rehabilitate it, proposing to simplify the operation by sewing into the defect a fresh flap immediately after cutting, without waiting for it to granulate. But the "investigators" of the eighteenth century were satisfied with writing Latin dissertations on the improbability of the operation's ever having been performed. Finally, at the end of the eighteenth century, the Paris Academy of Surgery expressed the accepted opinion when it declared that the operation was impossible.

REVERDIN GRAFT.

In the latter half of 1869 M. J.-L. Reverdin, a young Genevan (interne in the Hôpital Necker in Paris under Guyon), noticed, as Billroth had done, the occurrence of islands of epithelium in the midst of the granulations of ulcers. Accepting Billroth's explanation for the occurrence of these islands from proliferation of the epithelium of deep-lying portions of skin glands, or of scattered bits of the basal layer of epithelium, by chance uninjured by the destructive force, he recognized the importance of *aiding* epidermatization of ulcers by the *artificial implantation* of new islands to serve as centers of growth. Accordingly, in a patient who had lost the skin of his thumb, he tried the experiment of planting on the granulations two small bits (of about 1 sq. mm.) of epidermis lifted from the skin of the upper arm by the point of a lancet, without drawing blood, and held in place by a strip of diachylon plaster. These took root, and from them, and from other grafts applied later, the epithelium spread to the margin of the ulcer. He called this "epidermic grafting," and on Dec. 8, 1869, he presented a paper on the case to the Société Impériale de Chirurgie.

Reverdin had demonstrated that detached particles of living epidermis not only retained their vitality for a certain time, but that when laid upon a granulating surface, they were capable of entering into permanent union with it, and of *actively proliferating* toward the formation of new epithelium.

That detached portions of epidermis retained their vitality and would adhere again and become an integral part of the skin, Tigri, of Sienna, had shown by the growth of the skin covering blisters, in 1867. Moreover, Frank Hamilton, of New York, had practiced, as early as 1854, the covering of ulcers of considerable size by marginal growth from a small pediculated flap.

Reverdin had independently arrived at a simple and dependable method of hastening the healing of fresh surface lesions and of completing the cicatrization of long-standing ulcers.

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* Bibliography will appear only in reprints.

Reverdin's paper was discussed at the next meeting (Dec. 15, 1869), but he found only two supporters, MM. Guyon and Marc Sée. No one in France seemed to realize the possibilities of the procedure, although Sée reported one success, with Reverdin's aid, and Guérin another. The seed had not fallen upon barren ground, however, for Mr. Pollock, of St. George's Hospital, London, learning of the work of Reverdin in May, 1870, immediately put it into practice on a patient of eight years, suffering from an extensive ulcer of long standing after burns. His striking success at once aroused the enthusiasm of medical London, and within three months the procedure had been tried successfully by Holmes and Lee at St. George's (six cases); Mason, at Westminster (eight cases); Heath, at University College Hospital (two cases); Lawson and Arnott, at Middlesex (five cases); Bellamy, at Charing Cross, and Durham, at Guy's (four cases). Soon, also, Colles reported from Ireland, and Gillespie and Macleod from Scotland.

From England the method almost immediately spread to America, where it was taken up by Frank Hamilton, of New York; Chisholm, of Baltimore; and Porter and Coolidge, of Boston. In December, 1870, a series of five cases were reported from the Boston City Hospital by Belt, Handy and Bolles. Hodgen, of St. Louis, reported three successful cases a few months later.

From England again it spread to Germany. Czerny, working in Billroth's clinic, reported two successes, and expressed wonder that the German publications were silent on a matter with which the English periodicals were teeming. Almost at once enthusiastic reports followed from Hofmokl, Heiberg and Schulz and Necolitzki, and in Thiersch's clinic histological investigations were begun by Kunitz and Thierfelder. Among the Russians it was taken up by Jacenko and Lindenbaum; in Italy, by Marcani, Perassi, Albanèse, Frederici and Amabile.

By this time France had become to some degree enthusiastic also, and one man, Fort, went to London to see Pollock operate. Finally, in 1872, Reverdin, having completed his histological studies under Ranvier in Claude Bernard's laboratory, wrote what is still the definitive article on epidermic grafts, based on a personal experience of about fifty cases, and on the wider experience of men abroad. From the English he learned that there was a well-defined limit to the proliferative power of the individual graft (Dobson); that, accordingly, multiple grafts were advantageous (Dobson) and would give a firmer and more rapidly forming cicatrix (Steele); that small grafts were better than large (Pollock); that grafting stimulated proliferation from the edges of the ulcer (Steele, Cowper, Dobson, Barlow) and that successive grafts gave successive stimuli (Steele); that grafting on a bleeding surface was usually unsuccessful (Mason), but that with hemostasis grafts took well on fresh surfaces, as after the amputation of a breast (Heath); that grafts might be transplanted successfully on syphilitic ulcers (Clark); that grafts might be taken from another person (Dobson), either white or colored (Pollock, Bryant), or from amputated limbs (Forster, Smith); and that the papillary layer was the essential element (Steele, Page).

His cousin, August Reverdin, had stated the law that epithelium will grow most rapidly in the direction in which it will have the least distance to cover before reaching other growing epithelium, and four years later he was to invent a special concave lancet for taking grafts. Ollier had used a Beer cataract knife; Rouge, a seton needle; Pollock had used forceps and scissors; Heiberg and Schulz, cilia forceps; and Macleod had adapted a French instrument combining forceps and scissors (now called after Bryant, who first used it at Guy's, or after Smith, of Bartholomew's). It was not until 1874 that Agnew, of Philadelphia, originated the method of needle and knife. Pollock had originated, and had given up, the method of planting the grafts into incisions made in the granulations; Hamilton had tried this as well as erasing the granulations where the graft was to lie, and stitching the graft to the granulations, but had given up these procedures also. Czerny had grafted mucous membrane; August Reverdin, the wall of a dermoid cyst; Howard, of New York, bits of muscle cut from the patient's biceps; and Ollier, periosteum, on granulations, with reported success. The importance of immobilization of the part had been established (Ollier, Hamilton); Durham, dissecting up strips of the skin growing from the margins of the defect, had swung them in on to the granulations, leaving one end attached; Thiersch, two years later (1874), was to cut pinpoint grafts from this same pellicle and plant it on the ulcer.

THIERSCH GRAFT.

As experience with the new method broadened it became evident that there were drawbacks which had not been conceived of in the first enthusiastic reception of the procedure. Page, Gillespie's interne in Edinburgh, asserted in 1870 and 1871 that Reverdin grafts simply hastened natural cicatrization. Lindenbaum and Anderson (1871) severally found that the new scar caused contractures about joints like an ordinary cicatrix.

Ollier, of Lyons (with his interne Poncet), recognizing these disadvantages, was the first to attempt to overcome them (1871, 1872). His intention was not to create multiple centers of epidermatization by the dissemination of small bits of epidermis over the surface of a wound, but to substitute for the thin, stiff pellicle covering an ordinary cicatrix a membrane having the essential elements of normal skin, and preserving its characters. He accomplished this purpose by laying on the wound strips of epidermis pared or sawed off with the flat of a sharp knife, thick enough in the center to contain a portion of the dermis. He found that such grafts laid on close together so as to cover the entire wound surface at once completed the healing of the whole ulcer more rapidly, so that there was less cicatrical tissue formation, and, therefore, less scar contraction; that the resulting skin was softer and more supple, contained in some degree hair follicles and sweat glands, and was more resistent to destruction from pressure or friction. He called this the method of "dermo-epidermic grafting," and he used it with good results where contraction was to be feared. Ollier was ignored by his countrymen, just as Reverdin had been.

Thiersch, of Leipzig, who had completed, in 1867, an important work on the healing of granulating surfaces, took up the matter of Reverdin grafts, and in 1874 expressed the dictum that the pinpoint grafts were good for hurrying cicatrization and for completing a process at a standstill, but that they were open to criticism inasmuch as the healing was slow, the new tissue was cicatrical and would contract, and might even fall off or melt away when apparently well healed, and that the resulting scar was cosmetically unsightly. He proposed as a relief of the contraction to remove with a razor all the granulation tissue, and to plant the grafts directly upon the firm substratum of fully formed and already contracted connective tissue. It was not until 1886 that he was able to report that he had perfected the operation of skin grafting by the use of films of epidermis, with a portion of the dermis, shaved off in strips and laid on so as to cover the wound entirely, the granulations (which should be six weeks old) having first been removed.

This report, read at the XV. Kongress der deutschen Gesellschaft für Chirurgie, attained wide publicity, and the procedure was immediately accepted, under the name of Thiersch-grafting, practically without modification and without recognition of Ollier's priority. Series of cases were reported from all sides. Surgeons in all lands adopted it as a routine and the more modest pretensions of the Reverdin graft were forgotten.

WOLFE GRAFT.

In the course of time the drawbacks of this method, too, became evident. It was found that Thiersch grafts covered scar tissue, which contracted in healing (Murray, McBurney, 1893; Lang, 1895; Steinthal, 1904; Kennedy, 1905), and that the new skin, if exposed to gross mechanical insult, such as continuous or overstrong pressure, or demands upon its elasticity, as about joints, would ulcerate through or slough (Henle and Wagner, 1899). Its use was especially discouraging in leg ulcers (Nagel, Jungengel, 1888). In short, the Thiersch method was uncertain and not always successful (Mayo-Robson).

In searching about for a means of furnishing a scar which would remain elastic, and would resist pressure, investigators happened upon the so-called second Indian method of rhinoplasty without a pedicle. This had been brought back from India at the beginning of the nineteenth century. Von Græfe had tried it (1818), and Dzondi, but failed. Bunger had a successful case in 1817. Dieffenbach tried exchanging two grafts on the arm of an anesthetic woman (1824); one graft fell off and the other was accidentally pulled away. Dutrochet had a success, in 1836. These transplantations followed the old Indian method of including subcutaneous fat with skin.

Lawson, in London, made use, in 1871, of a single large thick Reverdin graft — that is, a *fat-free* flap of skin — in a case of ectropion, which healed with a resistent and non-contracting scar. News of this was brought from London to Germany that same year independently by Jacenko and Lindenbaum. Eye surgeons became interested in the procedure, and Le Fort and Wecker (1872), in France, both reported successes by this method in cases of ectropion, as did also Sichel (1875). It was Wolfe, of Glasgow, who, by his writings in 1875 and later, established the procedure firmly in ophthalmic practice. After him Zehender (1877); Berger, Robson and Snell, and Wicherl (1880); Williams, of Boston (1884); and Le Dentu (1888) reported successes.

Von Esmarch became aware of the advantages, cosmetic and other, of this over former methods, recommended highly its application to all plastic purposes about the face, and reported a considerable series of cases (1885, through his pupil Hahn; in 1888, and in an English article in 1889). His results were borne out by Ceci, of Genoa (1892).

For general purposes, use of the free flap had already been made desultorily by Ollier (1871) in separating syndactyly, and Gussenbauer (1875) to cover a heel. To Krause, of Altona, is due the credit for the application of the procedure to general surgery. At the XXII. Kongress der deutschen Gesellschaft für Chirurgie, in 1893, he advised the use of the Wolfe graft for all purposes where the Thiersch had been found lacking, and reported twenty-one cases in which whole-thickness grafts without fat had been applied to defects of considerable size, and covering a wide range of conditions.

At the afternoon session of the same day, Hirschberg claimed priority for the free flap according to the Indian method, — including fat, and taken during hyperemia, — and reported four cases. But Krause had used this method and denied that there was any advantage in the presence of fat or in the condition of hyperemia, and the method advocated by Hirschberg has fallen into disuse.

Krause's paper was well received in Germany and abroad, and his example was widely followed. The clinical researches of Henle and Wagner (1899), of Reuter (1899), of Widman (1902), and of Braun (1903) established the elasticity, the movability, the essentially normal appearance and functioning of the new skin, and its durability even in the most exposed places. The histological investigations of Enderlen (1897), Braun (1899) and Unna bore out the clinical findings.

FLAP GRAFT.

Of the Wolfe graft, Krause himself had stated that without complete asepsis and hemostasis failure commonly occurred; with the best of conditions success was to be expected in something less than the percentage given by the Thiersch graft. These facts, and the necessary restriction of its use on account of the limitation in size of the area which can be grafted, has led recently to the rather extended application in general surgery of the pediculated or flap graft of the plastic surgeons.

Soon after rhinoplasty had been discountenanced by the French, it was brought to England by Lucas, an English surgeon, who had performed it successfully in India, after the native methods. Lynn (1803) and Sutcliffe tried it, both unsuccessfully. Then Carpue, in 1814, reported two successful cases.

Von Græfe, in Germany, became interested in the subject and translated Carpue's book (1817). He preferred, however, the Italian method over the Indian method which Carpue had employed. He modified the procedure of Tagliacozzi by sewing into place the fresh flap, just after cutting, without waiting for it to granulate, thus making of it a single operation, adopting unconsciously the recommendation of Garanne (1721). He reported one success, and his technic came to be called the German method.

Von Græfe had many followers, and from him descended the whole line of plastic surgeons: in Germany, Dieffenbach, Chelius, Rust, von Walther, Langenbeck, Thiersch; in France, Delpech, Dupuytren, Lisfranc, Velpeau, Labat.

Dieffenbach, who extended the province of plastic surgery to include the ear, eye, lips, perineum and urethra, came to prefer the older granulating flap, and strongly advised against the use of the fresh flap of Von Græfe (1845); as a result of his influence this in its turn was dropped for the time being in Germany.

In general surgery the use of the flap graft, Indian and Italian, comprising skin and subcutaneous fat, applied fresh or granulating, developed gradually from this time on for replacing scar tissue in contractures, and in the treatment of deep wounds of the hand, wounds about joints and in localities exposed to pressure or friction, as the heel.

South, in his edition of Chelius' "Surgery," says, in 1847, that the use of the pediculated flap for these purposes was so common in England that cases were not reported. In the rather scanty early literature on the subject are cases by Fabrizi (1843); Hamilton, of New York (1854); Cabot, of Boston (1862); Berend (1863, 1882); Wood, in England (1864); Ollier and Delore (1872); Truehart, of Texas (1875); Gussenbauer for Billroth (1875); Czerny, Berger (1878); Adams (1881); Socin (1883); Lannelongue and Kappeler (1885). Many textbooks gave brief mention to this application of plastic surgery.

The widespread appreciation of the importance of these methods to the general surgeon — the real renaissance of the flap graft — is due to the work of Maas, in 1884, 1885 and 1886, with the fresh flap. His exposition of the indications, application and technic of the fresh flap, Indian or Italian, was so clear and able that he won immediate attention. He was followed by Nicoladoni, Gerster, of New York (1886), Salzer and Israel (1887). On his death, Wagner (1887) took up the subject prominently, and successes by a similar technic were reported by von Hacker (1887, 1888, 1894); Jungst, for Czerny (1887); Keetly (1887, 1902, 1905); Kirmisson, Czerny, Berger (1888); Silbernik, in Russia (1889), and so on.

There have been few modifications of the original methods.

"Wanderlappen," flaps carried to inaccessible places by attaching them first to a slit in the skin somewhere between the original source and their final resting place, have been used successfully by Israel and Hahn (1887), von Hacker (1888, 1904), Steinthal (1904), and Hagen (1905). Keetly (1887, 1902) exchanged flaps between face and arm in treating a mole in an infant. Von Hacker (1888) and Croft (1889) rehabilitated the original Tagliacotian method under the name of "bridge graft." The confinement of a finger, hand or limb in a pocket of skin on the abdomen, thigh or back was practiced by Ollier (1872), North (1886), von Hacker (1886), and Schroeder, after Fenger (1900). Gersuny (1887) turned a flap from the neck into the mouth on a pedicle of subcutaneous tissue. Greenough, of Boston (1903), practiced immediate skin sliding to close the wound left by the flap, and Stone, of Boston (1905), after Greenough's suggestion, dissected out at a secondary operation a pad of fat left under a flap on the palm. Otherwise the teachings of Maas and Wagner are still followed.

OTHER METHODS.

In addition to these four types of skin grafting, the Reverdin, Thiersch, Wolfe and the flap graft, there have from time to time been applied various irregular methods, which, though none have ever come into general favor, merit mention here if for no other than historical reasons.

"Scrapings," "epithelial sowing," "skin dust." — Marc Sée, of Paris, in 1870, reported a favorable result from scattering over an ulcer epidermic scales obtained by scraping the skin with a sharp knife, held vertically, without drawing blood. Fiddes, in the *Lancet* (1870), reported successful results, and he was confirmed by Ash (1870) and Poland (1871) in England; Stein, of New York, and Hodgen, of St. Louis (1871). Coolidge, of Boston (1870), tried scraping of the deeper layers after removing the epidermis by a blister, with partial success. Following the example of Fiddes the method was tried by Goldie, Jacenko, Czerny, Hicks (in 1871); Reverdin, Bryant (1872); Woodman (1873); Agnew, of Philadelphia (1874), and all reported *no* success. Macleod (1871) was unsuccessful, but noticed a stimulation of growth in the margins of the ulcer. Von Mangoldt (1895, 1902) rehabilitated the method, but advised rejection of the outer horny layer, and a scraping of the deeper layers down to the papillæ. The resulting mixture of blood and deep cells was deposited upon the ulcer. Successful results by Mangoldt's method were reported by Mann (1895), Hænel (1896), Kozerski (1897), and by his pupil Nœsske (1906).

In America, Howard (1899) reported good results by the older method, without drawing blood, and Wiggins (1899) successfully modified the technic by removing the outer layers of the sole of the foot, macerating the deeper layer for twenty-four hours, scraping, triturating till dry and then applying.

Warts, corns, callosities. — Hodgen, in 1871 used shavings of corns. Leale, of New York (1878), got good results by removing warts entire and then separating them into rod-like portions and planting these. Kibbler (1894) reported excellent results with thin slices of calloused or indurated epithelial tissue from the palms or soles.

Blister skin. — Tigri, of Sienna (1867), showed that the skin of a blister, entirely separated, would heal into place. This principle was first adapted to skin grafting by Freeman, of Denver (1895, 1896), who planted large pieces of membrane of blisters, occurring after burns, or raised with cantharides. Lusk, of New York (1895, 1896), independently described the same method, and reported good results. He used smaller pieces of the blister skin. He found that after drying and sterilizing between glass plates, this material would keep for some days. He also used dried blister tops, which he softened in boric solution and cut up into bits. Overton, of New York (1896), used the method, but found that it was slower and less sure than the Reverdin. Wentscher tried it in Germany (1898) with no result. Oliver, who had worked with Freeman, tried it (1899) with but little success. Blondel (1905) reported from France a successful case of implantation of blister skin into an artificial vagina.

Blister fluid. — Macleod (1871) reported good results from the use of blister serum. He put up a wall of wax about the ulcer and poured in the fluid. After him, Jacenko (1871) tried it with no success, and stated that it acted only as a dressing.

Exfoliated epithelium. — Hodgen (1871) reported some success with the planting of epithelium which had exfoliated from patients lying in bed. Agnew (1874) reported no success with the same method. Lusk (1896) used sheets of exfoliated epithelium, which he had softened and sterilized, with success.

Hair roots. — Hairs, with their roots, had been transplanted successfully early in the nineteenth century by Dzondi and Dieffenbach. Scheininger (1875) regarded hairs accidentally dropped on a granulating surface, with their roots and some peri-bulbar elements remaining attached, as a probable source of origin of some of the islands of epidermis which are seen in ulcers. Hodgen (1871) tried sprinkling hair roots over ulcers, but did not report on the success of the experiment. Wentscher (1898) reported no success with this method.

Finger nails were experimented with by Hodgen.

HETEROPLASTY. (GRAFTING FROM ANOTHER PERSON.)

From the early days of the Reverdin graft, *amputated limbs* have been used as a source of material. Foster and Smith (1871) seem to have applied this method first. Bryant reported the same year, but made the reservation that many of the grafts so taken failed to grow. Ollier (1872) noted that grafts cut from amputated limbs might be preserved at zero temperature. Martin (1873), after extensive studies with animals and man, found that human grafts would preserve their power of proliferation twenty-four hours, or longer, if kept cold, but only six or seven hours if kept at 82° F. Agnew used amputated limbs in 1874. Fisher reported on their successful use as a source of grafts, after the method of Ollier, in 1880. Mixter, in Boston, tried it the same year, with negative result. Brewer (1882), in a series of seven cases, found that grafts could be applied successfully up to thirty-six hours. Esmarch (1885), Franke (1887), Nagel (1888) and Lucas-Championnière (1888) followed the same technic with indifferent success, the two latter remarking independently that grafts from amputated limbs were likely to melt away and disappear six to eight weeks after they had healed in place. Symonds reported success in 1889; Timmerman, in 1899, with grafts taken from a limb six hours after amputation; Dupraz (1899) with grafts from a limb six hours after amputation; McGuire (1903) and Hartmann and Weirick (1903) with a four-hour-old leg.

The use of *cadavers* as a source of material was first advocated by Colrat (1871). Successes have been reported by Girdner (1881) with grafts taken six hours post-mortem, by Bertens and Werner (1888) twenty minutes post-mortem, and by Ivanovna (1890) with grafts taken two hours after death. Rathey (1886) reported no success with Thiersch grafts taken from fresh corpses.

The question of the length of time a graft would preserve its power of proliferating after being cut from a limb or cadaver has been the source of a serious experimental study by many men. The results of Ollier, Martin and Brewer have already been mentioned. Von Winiwarter (1892) observed that these experiments have no practical value. Wentscher (1894, 1903) got grafts to take, after having been preserved (wrapped in sterile gauze in normal salt solution) for twenty-two days, and advised that Thiersch grafts be cut one day and applied the next. Lusk (1895) reported success with dried blister skin preserved four hundred and eighteen days. Enderlen (1898) sought to test the results of Wentscher. He had two successful results from grafts preserved moist, no success with grafts preserved dry. Marchand (1897, 1901) experimented with the viability of grafts, as did also Giere (1900). Llungren (1899) reported success with grafts kept six months in sterile ascites fluid. Perrolini (1900) got successful "takes" with Krause grafts kept six days in normal salt solution; not so long when kept dry. The best temperature he found to be zero. Burkhardt (1905) set the limit of viability at twenty-four hours in the open air, and at eight days if preserved in a moist chamber. He also advised that the Thiersch operation be done in two stages.

The use of living persons other than the patient as the source of material for grafting originated probably with Reverdin. It was soon found that this procedure entailed a danger which could not be disregarded — the danger of transmission of disease. Völcher (1872) reported a fatal case of smallpox inoculated by grafts. Deubel (1881) reported the inoculation of syphilis from son to father in grafting. Czerny (1886) reported a case of transmission of tuberculosis. Other cases are cited by Becker (1881) and Momberg (1894).

Whether heterogenous grafts are taken from a living or from a dead subject, there is with them some likelihood of failure to form *permanent* skin. This was observed by Beresowski (1893), who came to believe that heterogenous grafts played a merely passive rôle in the healing of an ulcer; by Scholz (1898); by Nœsske (1906), who got poor results as compared with autogenous grafts, even when the material was taken from relatives.

Bryant (1872) has made the statement that heterogenous grafts are dangerous and often fail. Since his day many men have repeated the advice that grafts should always, if possible, be taken from the patient himself, — Franke (1887), Lucas-Championnière (1888), Nagle (1888), Sick (1892), Henle and Wagner (1899), Widmann (1902), Bivings (1902), Mellish (1904), Weischer (1906), Bull (1906).

On the other side, Lauenstein (1904) has stated that the reported relative ill success with grafts taken from other persons is probably to be explained by carelessness in technic.

ANIMAL GRAFTS.

Animal skins have been used for therapeutic purposes since early antiquity. Baron Larrey commends the use of the hide taken from a living animal as a dressing or covering, and cites its effective application in the case of the grievously wounded Marshal Lannes. According to the *Lancet* of that year, a child was wrapped in the fresh bleeding hide of a sheep as late as 1871 by an English practitioner, though this was to combat shock. Small pieces of fresh kitten or puppy skin have been used popularly for ages to encourage the healing of intractable ulcers. The idea survives in this community in the use of eel skin and slices of beefsteak, salt-pork, and in the employment of animal extracts, fluid or powdered, extolled by manufacturers as dressings for ulcers.

Experimental transplantation from and among animals was performed early in the history of medicine. Thus we hear that Demetrius and Darcusius transplanted feathers of fowl. In the eighteenth century there were many investigators along this same line, for John Hunter, who transplanted spurs, teeth and testes among fowl, speaks of his experiments as "common and well known." Teeth were transplanted by Paré, Fanchard (1728), Bourdet (1757), Hunter (1780), and Astley Cooper. Claws and spurs were transplanted by Duhamel (1746) as well as Hunter, and their results were verified by Philipeaux (1853, 1870).

What were probably the first experiments on the transplantation of *skin* among animals were performed by Baronio, of Milan (1804). His work was suggested, as he says, by watching an itinerant vender of medicines shave a piece of skin from his own arm, lay it back on to the wounded surface, dress it with his much-vaunted salve, and exhibit his arm with the skin healed in place a week later. Baronio's successful transplantations in sheep were imitated on other animals with varying success by Wieseman (1823), Dieffenbach (1829), Lentilhac (1848), Bitot (1857), Azam (1860), Paul Bert (1863) and Mantegazza (1866). Bert was the first to definitely suggest the practicability of employing animal skin to replace surface losses in man.

With the popularization of the Reverdin graft, eight years later, Bert's suggestion was eagerly taken up; Reverdin, Hofmokl, Phillipe, Necolitzki, Dubreuil and Houzé de l'Aulnoit, in 1871 and 1872, reported successes with transferences of the skin from the dog, rabbit and cow to man. Czerny and Jacenko (1871), Folet (1872) and Aug. Reverdin (1876) had no success. Raven (1877) used a pig, and Raymondaud (1877) a kid. After Thiersch published his method, grafting from animals to man took a fresh impetus, and from 1886 to the present day many men have used animals as a source of grafts. Hubscher (1888), McGuire and Flegenheimer (1903) have had success with pig skin; Miles (1889), Van Meter (1890) and Sneve (1905), with puppies; Redard (1888) and Bianchi and Fiorani (1900), with skin from the inner side of the wing of chickens, and Aldrick with pigeons; and Allen (1884), Peterson (1885, 1887), Dubousquet-Laborderie (1886, 1887), Baratoux (1887), Nesterovsky (1888), Fowler (1889), Watson Cheyne (1890), and Ranking (1906), with frog skin.

The claim has been made that skin from animals — warm-blooded animals rather than cold-blooded, young animals rather than middle aged or old — forms permanent union with human tissues, loses its pigment and most of its hairy growth, and soon develops all the characteristics of human skin. But failures have been too frequent to make this procedure practicable and reliable for the surgeon, and not a few men who have reported primary successes have announced later that the grafts loosen after an interval and fall off or are absorbed and disappear. Among the critics are Rathey (1886), Franke (1887), Redard, Cadogan-Masterman (1888), Sick (1892), Henle and Wagner (1899), and, above all, Alexander Miles, of Edinburgh, who has been, perhaps, the most consistent employer of animal grafts and whose experience extends over some twenty years. Orcel (1888) states his belief that animal grafts act merely as a sort of protective dressing, and he is substantiated by the experiments of Beresowsky (1892).

EGG-MEMBRANE.

In the late seventies gold beater's skin was in rather common use as a dressing for skin grafts. In the early eighties fresh egg-membrane was substituted as being more aseptic. Berthold and Haug (1889) experimented with egg-membrane as a material for transplantation. They used it with the outer side next the wound, and came to the conclusion that it did not proliferate but acted passively, encouraging growth of epithelium from the margins *by protection.*

Amat (1895) independently established the method of using the thin *internal* layer of the egg-membrane, cutting it away where the two layers are separated by the air chamber at the large end of the egg. He reported nine successes in seventy-four cases from planting tiny squares (4 to 5 sq. mm.) upon granulating surfaces. Schüller (1899), without reference to Amat, reported two successful cases by the use of the *whole thickness* of the membrane, laid inner side down, in larger pieces. His studies disclosed on the inner side of the pellicle a delicate layer of epithelial cells, only loosely adherent to the network of fibrillæ constituting the mass of the membrane. Under conditions of strict asepsis, if handled carefully, this layer would adhere to the granulations and proliferate to form epidermis. He recommended the procedure for tuberculous patients and others too weak to stand more severe handling. Amat (1900), to establish his priority, republished his article, and wrote a new one, giving Schüller credit for his histological investigations, affirming that about one case in eight is a success, and advising the procedure in women, children and cowards who could not stand an operation or who would not allow the Reverdin or Thiersch method to be practiced. J. C. and O. Platon (1900) investigated the subject. They used, after Schüller, the whole thickness, and covered in the wound surface entirely with large pieces. Healthy skin developed in eight days. They concluded that it exercised a merely protective function. Amat wrote again (1905) to popularize the method, and reported two successful cases.

Gaston (1896) was probably the first to use the method in this country. He found it satisfactory. Overton (1898) used it with partial success. Olliver (1899) had no success. Kessler (1900) found it satisfactory, but slower than Thiersch grafts. Fowler (1900) also tried it.

SPONGE GRAFTING.

In 1881 Hamilton, of Aberdeen, originated the method of "sponge grafting," and reported five cases. He used thin slices of animal sponge which had been thoroughly carbolized, laying them so as to cover in the granulating surface. His idea was to furnish a framework of absorbable material through which the granulations could build, which would support them until they were covered in with epidermis. The method was tried extensively in Germany, and less widely in this country, but was found to possess few merits. It has been used in the orbit after enucleation. Following this suggestion, ophthalmic surgeons have experimented with many substances (animal eyeballs, and balls of catgut and bone included) down to the present-day employment of the globe of glass.

REVERDIN AND OTHER METHODS OF SKIN-GRAFTING.

Part II. Technic and Cases.

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REVERDIN GRAFTING.

The method of epidermic transplantation, originated by Reverdin, is the simplest and most widely applicable mode of covering in a raw or granulating surface which we have at our disposal. Like many another procedure of demonstrated value, it has fallen gradually into disuse, so that, with a few exceptions, textbooks and manuals mention it disparagingly, or not at all.

More brilliant and complicated methods for accomplishing a similar purpose have arisen and have occupied the center of the stage until their deficiencies became evident and until they, in turn, were supplanted in general favor. Now, when ingenuity seems at last to have exhausted itself, it is worth while to consider the peculiar advantages of the original and now practically discarded method.

In the first place, *it is essentially a minor operative procedure.* Although in planting grafts over extensive surfaces, where one is desirous of covering in the whole area at one sitting, it may be advantageous to employ a general anesthetic, cocaine ordinarily suffices, and, indeed, in many cases one can get along without any anesthetic, either local or general. The older operators used no anesthetic, or an ether spray (Wood, 1871), or a freezing mixture (Ollier, 1872). A hypodermic barrel of Schleich's solution (.2% cocaine), used to raise successive wheals, should allow for grafts enough to cover sixteen square inches; infiltration of the cutis does not interfere with the viability of the grafts. For this reason, therefore, the "pinpoint" method may be used in persons wasted by old age or exhausting illness, as well as in cases where general anesthesia is contra-indicated for constitutional reasons. Moreover, in the extensive burns, where early covering in of raw and suppurating surfaces is so much to be desired, grafting by the Reverdin method may be started considerably sooner than would be deemed proper with any of the other methods. Immediate decrease in suppuration occurs after grafts are placed. If the area be extensive, at each dressing new application of grafts can be made under cocaine until the entire surface is covered.

The procedure is simple and may be performed by one person upon a patient in his bed at home. It requires only a sharp scalpel, and two or more new bayonet or cambric needles. These had best be sterilized in alcohol. The point of a needle is thrust through the epidermis, which is then elevated, and a small morsel shaved off with the knife. This is transferred at once on the needle point to the granulating surface, where it is implanted, cut surface downward, with the help of another needle, and is pressed lightly into the granulations. Two men may comfortably work together on opposite sides of the patient, if desirable. One, with a supply of needles, cuts the grafts; the other picks up the needle with the impaled morsel and applies it to the surface.

The morsels should be as small as can conveniently be handled, about one-eighth inch in diameter. Larger grafts have no advantage and are more likely to fall off. To insure removing cells from the basal layer, the cut at its deepest should just take off the heads of the papillæ. That is, at the bottom of the tiny crater left after the graft is removed, there should be a slight ooze of blood. A graft that is taken deeper has the disadvantage of leaving a more evident scar, as well as of carrying away a bit of the connective tissue of the cutis, which, not obtaining nourishment so readily as does the epithelium, seems to interfere somewhat with the "taking" of the graft. As the individual grafts have the power of proliferating rapidly for about a quarter of an inch in all directions, grafts should be placed at least a half inch from each other. If the operation is to be done in several sittings, the grafts may be placed around the border of the ulcer, for when so placed they seem to stimulate the growth of epithelium from the margins, or they should be massed so as to allow for the complete covering in of one section of the whole. The more numerous the grafts, the more rapid will be the healing and the more pliant and durable will be the resulting scar.

It entails no involved source of preparation. The grafts will "take" on muscle, fascia and tendon, as well as on granulations, even in the presence of a considerable purulent secretion. Cicatrical tissue is a poor base for any sort of graft. After a fresh burn, one has only to wait until the slough has separated, — and this may be hastened by trimming away and by the use of digestants or other suitable dressings, — and below one will find a thin layer of firm, red granulations.

In an old ulcer, or wherever the granulations are exuberant or edematous or over-pale, by cauterizing or clipping and pressure, with cleansing and the use of stimulating or astringent applications and elevation of the limb, and internal treatment if necessary in the debilitated, the surface should be reduced to as healthy a condition as possible. Complete asepsis of granulating surface is an ideal which cannot readily be attained, at least without danger of spoiling the surface for grafting purposes, and, indeed, need not be attained, as the "pinpoint" morsels, unlike the Thiersch grafts, cannot usually be floated away by purulent secretion, having once glued themselves on to the granulations.

As Wentscher (1898) has shown by experiments, epithelial grafts are peculiarly susceptible to the action of chemical antiseptics. Boric acid solution or weak corrosive sublimate may be poured over the surface to be planted, but it should be washed away with sterile water or normal salt solution. Also in the Reverdin grafts (to a less degree, to be sure, than in the Thiersch method) care should be taken that the surface be dry and any oozing of blood from the granulations should be avoided. The skin surrounding the ulcer should always be cleansed with soap and water and the crusts about its edge must be wiped away.

This method *involves no additional disfigurement of the patient, or sacrifice on the part of the patient's family or friends.* The grafts are taken from the patient himself. Auto-grafts succeed better than hetero-grafts, and with them one need not consider the possibility of transmissal of disease, or of subsequent lawsuits (which have not been infrequent). The front of the thigh is usually selected as the source of grafts, and the thighs will furnish ample material for the most extensive grafting. The preparation consists in shaving, if necessary; scrubbing with soap and water, not roughly, and washing off with weak corrosive solution and much sterile water. After the grafts are taken the skin may be wiped over with alcohol, and a dressing of boric ointment on canton flannel applied. The surface is well healed after a week or ten days (see Fig. 2) without scar except where some of the deeper "bites" have left a small depression or pit similar to a pockmark.

After Thiersch (1874) and McChesney (1903) one may take, if he chooses, morsels from the thin pellicle of epithelium growing in from the margins of a stagnant ulcer.

The dressing is not elaborate. A square of sterile compress cloth which has been fenestrated by having many small holes cut out with scissors is moistened with sterile salt solution, wrung dry, opened out and laid carefully and evenly over the grafted area, a few minutes being allowed for the grafts to dry on to the granulations. If the shape of the ulcer or the conformation of the part make it advantageous, the fenestrated compress may be torn into strips and laid overlapping (shingle wise) across the surface. Over this is placed a rather thick layer of sterile gauze opened up to lie loosely, and if on an extremity, sterile strips may be wound about the limb. Over this comes a layer of sterile sheet-wadding, and then a firm bandage or swathe. If the ulcer or burn is near a joint, the joint must be immobilized with a splint or plaster of Paris dressing, preferably the latter. If there is likelihood of contracture, fix in extension. If the lower leg is involved, it should be elevated on a pillow. Instead of the fenestrated compress one may use next the grafts a coarse-meshed tulle waterproofed in celloidin (Kuhn, 1901), or simply boiled in soda bicarbonate and wrung dry (Valjaschko, 1906). Its edges may be stuck down with collodion.

The after-care is not irksome. The patient is allowed to lie quietly in bed until the eighth day if the area is small, or the tenth day if large, when the dressing is removed layer by layer with some degree of care. The lower layers of gauze and the compress will come off more readily if they are soaked with or immersed (as suggested by Krause) in sterile water or boracic solution. There is at this stage very little danger of tearing away the islets of epithelium with the dressing, for although the outer layers of the epidermis which have been desquamated often adhere to the compress or float off in the discharge, the proliferative base of the graft will usually be found to have taken root. Indeed, the first dressing is proverbially discouraging, and often the operation will seem to have failed unless one notices the minute dots of blue-white filmy pellicle which a week later will stand out as islands of epithelium. There are two indications for a change of dressing before the tenth day, namely, a rise of temperature signifying septic absorption, and a foul-smelling dressing. In either case it will usually suffice to change the dressing down to the compress or tulle, which need not be disturbed until the day set. After the compress is removed the purulent secretion that may be present is gently wiped or washed away. and a similar dressing replaced. A week later the gauze dressing may be removed and discarded. If there now appear occasional gaps which require a graft or two these may be planted and a boric ointment dressing applied. This dressing is a great relief to the patient and can be changed without discomfort. It should be continued until the pellicle of epithelium covers the entire area, when it is to be discarded on account of the maceration which it produces, and the new skin exposed to the air, with some protective dressing at night to prevent its being rubbed off.

With this treatment the new skin rapidly dries and toughens and soon takes up its normal protective function. If, on account of traumatisms or interference with the circulation there appear small effusions of blood which raise up a portion of the young epidermis in the form of a blood blister, these have only to be pricked and dressed and the part held quiet and elevated for a few days. If after the skin is solidly healed the area is massaged daily for some time with an easily absorbable fat, such as cod-liver oil, the new skin will become softer and more pliable.

The likelihood of distressing complications arising is small. The worst that can happen is the loss of a greater or less proportion of the grafts, and as these can be replaced with but little effort and a little cocaine, the disaster is not irremediable. It has been noticed that if from careless technic few or none at all of the grafts adhere permanently, even their temporary presence has excited a renewal of marginal proliferation. Other modes of grafting have many and peculiar pitfalls for the unwary, and the refusal of any portion to adhere usually means the loss of all or the major portion of the graft.

The intent of the Reverdin process is simply the aiding and hastening of the natural reparative process after surface destruction. Epidermatization of a large ulcer comes to a standstill, first, because the proliferative power of the marginal epithelium " peters out," as it is much disposed to do after it has advanced a short distance; second, because the uneven unhealthy surface of redundant or edematous granulations offers an obstacle to the advancing edge. The first drawback the Reverdin method overcomes by providing islets of epithelium to serve as proliferative centers for covering in the entire surface, the second by helping to provide firm, clean, even, well-vascularized granulations.

Just as after normal repair, we expect scar tissue. But the cicatrix after Reverdin implantation differs in this one important respect from the cicatrix which we would have expected if the ulcer were allowed to dermatize with its own time and after its own fashion: there is *less contraction.* By as much the earlier a raw surface is covered with epidermis, by so much the less will be the contraction of the scar, and, as the vitality of the epidermis depends on the vascularity of the tissue on which it lies, and this, in turn, on the density of the substratum of scar tissue, by so much the greater will be the chances of the delicate film of epithelium evolving into permanent and durable skin. But, inasmuch as it is cicatrical tissue, conditions which would cause a scar to break down, such as exposure to friction, undue tension or constant pressure, had best be avoided.

REPORT OF CASES.[1]

Case I. Winifred F., fifty-seven, set fire to her clothes accidentally and in extinguishing the flames suffered third degree burns on the backs of both hands and forearms. She had severe secondary symptoms. By the fourteenth day temperature reached normal, and burned areas were clean and granulating well. Eight days later, Feb. 19, 1907, a Reverdin graft was done by Dr. Cotton, under Schleich infiltration anesthesia, to the right hand, the material being taken from the thigh.

Feb. 26. First dressing. Apparently more than half the grafts have taken.

March 2. Covering in rapidly. Under cocaine the left wrist was grafted (Dr. Storrs).

March 12. Right hand all covered with sound skin, except for area of granulations as large as a dime. All dressings omitted. Left hand and wrist covering in.

March 19. Right hand all dermatized. Left progressing. Up and about ward.

March 26. Left hand entirely covered, except for two small areas of exuberant granulation which offered an obstacle to marginal growth. A few grafts planted on these.

April 20. Both hands and forearms covered with sound skin. Motion practically normal.

Case II. Margaret W., eighty, fell in a faint upon a cook stove, suffering first and second degree burns of her face and third degree burn involving the palmar surface of the right hand, entire flexor aspect of forearm and axillary surface of upper arm as far as deltoid insertion. The face progressed favorably under open-air treatment. The burned area on the arm sloughed down to the tendons, which were exposed. Slough was digested off[2] and cleaned up. A month after the original injury (March 1, 1907) a Reverdin graft was done under cocaine from the right thigh to the upper half of the granulating area. Up in wheel chair.

March 10. Dressed. Considerable purulent secretion. Majority of grafts have taken.

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[1] Unless otherwise stated, the case histories are from the records of the Boston City Hospital. Where the name of the operator is not given, the grafting was performed by or under the supervision of Dr. Ehrenfried. The authors take this opportunity of acknowledging the operative assistance of Dr. Edwin P. Seaver, Jr. For some of the photographs we are indebted to Dr. J. P. Leake.

[2] The use of "enzymol" in digesting away such sloughs is long known but may well be recalled, as it is often forgotten.

March 13. Grafted area practically completely covered.

March 20. Without anesthesia, the remaining half of the granulating area planted with Reverdin grafts. Several were placed directly on sloughing tendon. Skin of previously grafted area is normal in appearance, except that it is slightly dry and scaly.

March 30. Dressed. Grafts have taken well on granulations and on tendon. Entire area nearly covered with fine pellicle.

April 12. Area of second graft now entirely covered with firm skin. Fingers have contracted in spite of passive motion and are useless.

CASE III. Henry S., forty, burned by hot-water bottles while being treated for gas poisoning, which was followed by pneumonia, was referred to the surgical side for skin grafting sixteen days after the accident. Third degree burns of right groin, front of right thigh, behind right knee and behind right calf, in patches from the size of a dollar to the size of the palm. A half dozen smaller patches on left leg and few on right shoulder and upper arm. Four days later (April 28, 1907), under cocaine, Reverdin grafts were taken from the right thigh and planted on the larger areas on the leg.

May 5. Dressed. Considerable purulent secretion. Smaller areas all covered. On larger areas grafts have taken in good proportion.

May 9. Wounds of smaller extent all covered with skin. Larger areas all covered with thin, film-like skin, except for a small area of granulation on wound under knee, and a larger area under the calf, which (apparently on account of sluggishness of circulation) presents a bluish and slightly congested appearance. Patient desires to go home and continue treatment under private physician.

CASE IV. Katherine M., eighty-one, has had a foul extensive ulcer on the right leg for nine years, on the left for two years. Has been bedridden for four years. Is obese, asthmatic, cyanotic; cardiac area is enlarged, has myocarditis and valvular insufficiency. Both lower legs show hypertrophy from chronic lymphatic stasis. Extensive ulceration present, covering posterior aspect of both calves, filled with thick, dirty slough. Twelve days after entrance (May 6, 1907), the ulcers had cleaned up under treatment, and two hundred and one Reverdin grafts were taken under cocaine and planted on both legs.

May 16. Dressed. Practically all grafts have taken. Very slight discharge.

May 20. Ulcer on left leg entirely covered with epithelium. Patient's general condition is poor. Up in chair.

May 27. Large area on right leg dry and covered over with new skin, save for few small areas of clean granulations. General condition worse.

June 2. Patient died from edema of lungs.

CASE V. George S., thirty-two, conductor, had his left elbow crushed between two cars. Compound comminuted fracture of lower $1\frac{1}{2}$ inch of humerus, upper 2 inches of ulna and head of radius; extensive laceration of muscle and fascia; ulnar nerve divided; extensive loss of skin. Operation by Dr. Crandon. Thirty-two days after entrance (May 14, 1907), a Reverdin graft was done under cocaine to cover a granulating surface on the outer aspect of the elbow the size of the palm.

May 21. Dressed. Area already half diminished in size.

May 28. Grafted area nearly closed in. Healing interfered with by a small piece of sloughing fascia at lower end of wound, which is in process of separation.

June 6. Erysipelas, with destruction of most of newly formed skin.

July 2. Reverdin graft repeated.

Aug. 7. Elbow entirely healed.

CASE VI. Charles L., thirty-five, had his arm caught in a gearing in a machine shop. Right elbow shows extensive laceration of skin and fascia down to muscle over an area four inches in diameter. Wound was cleaned, the skin edges were anchored with catgut to prevent retraction in healing, and tabs and shreds of skin were sewn on to raw surface. Fifteen days after entrance (June 2, 1907), Reverdin grafts were planted under cocaine to cover granulating area. Internal angular splint.

June 12. Dressed. Grafts have taken well. Considerable purulent discharge.

June 21. Healing in. Passive motion to fingers and wrist.

June 27. Few Reverdin grafts placed on small granulating areas left unhealed.

July 6. Covered with firm skin. Practically no limitation of motion.

CASE VII. Lena S., eleven, was severely burned from her dress catching fire. Third degree burns of right face and chin, front and left side of neck to ear, entire front of chest, left axilla and scapular region, right wrist and dorsum of hand, dorsum of left fingers, hand and forearm, entire circumference from elbow to shoulder. Secondary symptoms serious and protracted, shock, anuria, epigastric pain and vomiting, septic pulse and temperature. By twenty-three days after entrance (June 12, 1907), the areas on right hand and wrist were healed over. The other areas were mostly clean of slough, granulating and secreting pus freely. The temperature had never reached normal. Under ether, the granulations having been wiped off with sterile normal salt solution, five hundred and forty Reverdin grafts were taken from the anterior surface of the thighs and planted on chest, axilla, arm and back. Fenestrated compress of moist sterile gauze dressing. In order not to prolong the operation, the grafts on the arm were placed rather widely apart.

June 20. Dressed. Considerable purulent secretion in dressing. Majority of grafts have taken. Temperature 99. Comfortable.

June 26. Dressed. Much less pus. Grafts spreading rapidly. (Fig. 1.) Considerable venous bleeding from arm. Temperature, 99.

June 30. Under cocaine, grafts were applied to chin and neck.

July 7. Chest entirely covered with new skin, save for two areas about the size of a quarter, and an area the size of the palm in axilla, going on to the scapula. (Fig. 3.) Considerable exposure of granulations, which are becoming exuberant on the arm, due to insufficient number of grafts placed. Under ether two hundred grafts from thigh (Fig. 2) were planted on arm and in axilla.

July 13. General condition improving progressively. Dressed. Grafts have taken well. Three small hematomata on under side of arm and one on chest were opened. Dressing changed to boric ointment.

July 20. Patient up in wheel chair and out of doors. Grafts spreading rapidly on arm and chin.

Aug. 3. Up and about the ward in clothes. Neck and chin covered in solidly; one contraction band from jaw to clavicle. One small granulating area on chest and several on arm. Open-air treatment, and, except for these small areas, no dressing.

Aug. 18. All areas solid. (Fig. 4.) Gaining strength. Twelve days later Dr. Cotton did a plastic to relieve the contraction band in the neck and to overcome the adhesions in the axilla, which were binding the arm to the chest wall. In both cases the flaps were made in part of the new-formed skin. The flaps took successfully, and the granulating areas from which they were taken healed in with the aid of the Reverdin grafts. The arm was given passive motion and exercises, and developed a considerable range of motion at shoulder and elbow. Patient went home to return later for operation to relieve contracture at wrist.

Case VIII. James M., twenty-six, brakeman, had a coal-tender run over his left foot. All the toes were taken off at the metatarso-phalangeal joint except the great toe, which suffered a compound dislocation at the same joint. The skin was torn off the dorsum for 1½ inches back of the exposed metatarsals. An immediate operation was performed (at the Relief Station); the wound was cleaned, non-viable tissue dissected away and the heads of the metatarsals were amputated to allow the skin on dorsum and sole of foot to be approximated. The dorsal flap proved to be non-viable, and necrosed, showing a line of demarcation two inches back from line of sutures. The necrotic skin was removed, the flaps retracted and the wound began to heal in by granulation, with some sloughing. Twenty-six days after the accident (June 20, 1907) the granulations were in fit condition for grafting, and, under cocaine, a Reverdin graft was done.

June 28. Dressed. All grafts have taken. (Fig. 5, *A*.)

July 1. Epidermatization proceeding rapidly. Dressing changed to boric ointment.

July 8. Nearly covered in. (Fig. 5, *B*.) Allowed to get up in wheel chair.

July 10. Patient has walked some. Wound area congested and purplish. Small hematoma under new skin. Opened aseptically and clot discharged. Back to bed.

July 17. Healed. No congestion.

July 27. Patient has gradually gotten on to his feet since last note. There has been no further interference with circulation in the new skin, which seems to stand wear well. Discharged.

Case IX. Harold T., twelve, was shot in the right calf with a blank cartridge. Wound cleaned and sutured. Sepsis developed and the sutures were removed.

On the fifteenth day (July 2, 1907), a Reverdin graft was done under cocaine, on bare muscle, and the next day patient was allowed up in wheel chair.

July 11. Dressed. Owing to failure to immobilize ankle and knee, the majority of grafts have rubbed off. There is noted, however, a marked increase in marginal epidermatization.

July 19. Healed, save for small spot. Discharged.

Case X. Neil M., thirty-two, suffered an abrasion below the left knee in being thrown from a wagon, and applied carbolic acid. Entered hospital with a deeply sloughing gangrenous ulcer extending from the lower border of patella to just above internal malleolus, from one to three inches across. The slough slowly demarcated and was digested off, leaving an irregular base made up mostly of poorly nourished muscle and small patches of fascia, secreting pus. On the sixteenth day after entrance to hospital (July 13, 1907), under ether, about two hundred Reverdin grafts were taken from thigh and planted on ulcer. (Fig. 6, I.) Fenestrated compress dressing, covered with moist, sterile gauze. Ham splint. Leg elevated.

July 23. Dressed. At least half of grafts have taken and are spreading rapidly.

July 29. Dressed. Very little discharge. Healed in well, except for areas of granulations which are becoming exuberant. (Fig. 6, II.) A secondary graft was advised. Boric ointment dressing. Up in wheel chair.

Aug. 5. Covering in slowly. New skin solid. Up and about ward. On account of personal matters desires to go home. Discharged.

Case XI.[3] Samuel S., twenty-five, bricklayer, tore the skin off his right forefinger and knuckles with a brick, and then burned the sore places with mortar. Has been going alternate days for two weeks to another hospital and sees no improvement. Granulating areas on dorsum of first phalanx of right forefinger and over the four knuckles, deep, surrounded by thick, macerated callus, averaging the size of a dime. Very little effort at marginal proliferation to be made out. The callus was pared down (April 21, 1908) and under cocaine ten pinpoint grafts were taken from the upper arm and planted on granulating areas. Dry sterile dressing. Anterior forearm splint, sling.

April 27. Dressed. Majority of grafts have taken. Two areas entirely covered with skin; others are healing. Punctures on upper arm healed and dressing omitted.

April 29. Ulcers entirely covered. Splint continued till skin more solid. Boric ointment dressing.

May 2. Skin solid, stands rubbing. To go to work Monday (May 4).

Case XII. Hyman R., forty-seven, dressmaker, had an area of eczema on his lower leg, in which were two granulating areas, one size of half dollar, other size of quarter, stationary under treatment for some weeks. Eight grafts were taken without anesthesia (May 4, 1908) from calf nearby, and planted on ulcers. Adhesive plaster over sterile compress.

May 7. All grafts adherent and proliferating. Margins also apparently stimulated. Smaller ulcer nearly covered over.

May 11. Small area healed; large ulcer nearly covered.

May 15. Both areas healed. Protective dressing.

May 20. Both areas solid. No dressing. Cod-liver oil to rub in.

Case XIII. Jacob I., twenty-eight, shoemaker, induced a septic ulcer on his shin four years ago to avoid conscription in Russia. Areas have never been solidly healed since. Now (June 16, 1908), has two granulating areas in the midst of an extensive area of eczema, aggregating two square inches in size. Ten pinpoint grafts taken without anesthesia and planted. Dry sterile dressing. Strapping.

June 20. Dressed. Both areas entirely covered, save for three areas size of a pinhead.

June 23. Entirely healed. Protective dressing.

June 29. Skin solid. Discharged.

THIERSCH GRAFTS.

The transplantation of larger sections of epidermis, first suggested by Ollier, and later worked out by Thiersch, is by far the most commonly practiced of all methods of skin grafting. Its popularity is based partly on the ease, neatness and rapidity of the operation, and on the reasonable assurance of results, and partly on tradition. The Thiersch method, so-called, has often been used indiscriminately where a less showy or more painstaking method might yield better results.

In comparison with the Reverdin method, it is practically always to be considered a major operation. While some operators (especially European) still remove grafts and curette granulations without the use of a general anesthetic, and others have reported good results with the subcutaneous use of cocaine (Fomin, 1890), decinormal saline solution (Foote, 1901), or the use of the ethyl chloride spray (Torrance, 1901), it will usually be found necessary to employ general anesthesia.

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[3] The following three cases show the results of Reverdin graft in ambulatory patients. They are from the Surgical Out-Patient records of the Mt. Sinai Hospital.

The procedure is not complicated, but it will, as a rule, be advantageous to make use of three persons beside the etherizer, — the operator, who cuts the grafts; the assistant, who puts the skin on the stretch; and a nurse, to pour salt solution on the blade of the knife. First, one prepares the wound surface. If it is a fresh operative wound, it needs no preparation other than complete hemostasis. If it is a granulating area, it may or may not be curetted.

Then, the thigh having been cleansed thoroughly, the skin over its anterior surface is put on the stretch. This can be accomplished by the assistant pulling upward with the inner edges of his hands dug into the skin, and the operator pulling downward with his left hand. Or, better, the assistant and operator may each use for this purpose the edge of a thin board, about three by six inches in size, which has been sterilized. Other apparatus have been devised, notably McBurney's hooks, the rough gloves of Dunham, and the retractor of Quin. Applying flatwise a long wide razor (this may be made with one side flat, or a microtome or section knife may be used, or a specially made thin, flexible spatula knife), the operator removes the epidermal layer by drawing it toward him with a sawing motion. The knife should be kept flooded with sterile normal salt solution. The strips should be made as broad and as long as possible, say, four to five inches long by one and one-half to two inches wide. To facilitate the cutting, apparatus has been devised to cut rapidly large sections of a uniform thickness, such as the safety razor (Doolittle, 1898), or Quin's knife.

The grafts are transferred at once, on the knife or on a spatula or spoon, to the prepared surface. In spreading, a probe can be used to draw one end of the graft into position on to the wound surface, and to hold it while slipping the knife away. Each strip should be gently pressed into the wound surface with a spatula to remove air bubbles and the excess of salt solution, and to insure the obliteration of wrinkles. Care should be taken lest the edges of the graft curl under. The grafts should overlap each other and the edges of the ulcer, for the margins are usually made up of horny layer only, without the proliferative basal layer, which accounts for the formation of lines of cicatrical tissue frequently noticed between the grafts.

The original procedure, as advised by Thiersch, involved the curetting away of the granulations, which should be six weeks old, down to a firm basal layer of fully formed cicatrical tissue. He observed that in the process of healing by granulation, the maximum of contraction of the granulation tissue was not attained until the area was covered in with epidermis. If this process is a long-continued one, the contraction having gone on as far as the laxity of the tissues permit, and the capacity for developing new epidermic cells by the margins having been exhausted, the granulation tissue of the newly covered portions and the deep-lying or primitive granulation tissue of the central uncovered area will have undergone its natural progressive change into connective tissue, while the exposed superficial granulations of the unhealed central portion have remained stationary, few, if any, of their component cells having undergone development into connective tissue. Accordingly, in the unhealed portion of a long-standing ulcer two layers may be made out, the more superficial, of recent granulations, possessing vertically disposed capillaries, and the deeper, more or less fully advanced in its stage of conversion into cicatrical connective tissue, containing a horizontal network of vessels, from which the former spring. Thiersch stated that if the upper layer of soft granulations, still capable of contraction and easily excited to exudation, be removed, and the grafts planted directly upon the denser substratum, they would become firmly adherent without the risk of being separated by exudation and undisturbed by further cicatrical contraction. He also advised the trimming away of the margin of the wound, especially if the edges were indurated, or the newly formed epithelium was of unhealthy appearance.

In practice it was found that the hemorrhage excited by curetting was hard to control absolutely, and unless fully controlled would interfere seriously with the adhesion of the grafts. To aid in accomplishing this object it was even advised by Fischer (1880) that an Esmarch bandage and tourniquet be used during and after the operation to prevent the effusion of blood and the formation of clots under the grafts, and this procedure became an established practice for some years.

Also, it was found that the grafts frequently refused to take on the cicatrical base exposed by deep curetting. Watson, of Boston (1892), was one of the first to have the temerity to plant grafts on untreated granulations, and his results were completely successful, where the granulations were in proper condition (" flat, healthy, fresh and red "). After him, Schmitzler and Ewald (1894), Auerbach, Lottkowitz and Schulteis (1895), Kohler (1898), Doolittle (1898), Lauenstein (1904), and Isnardi (1905), had successful results on unscraped granulations.

Attention should be paid rather toward preparing the granulations for receiving the grafts, and any curetting considered necessary as a rule may best be done some days before the operation.

If the loss of surface tissue is of limited extent, and the grafts take with reasonable success, the patient himself may supply all the needed material from the thigh or upper arm. When, as sometimes happens, the grafts persistently refuse to take, or if the area to be covered is too large to allow of the removal of a sufficient number of grafts from the patient, it will be necessary to call upon other persons to supply the material. The difficulties and disadvantages of this procedure are obvious. The danger of transmissal of disease, and the frequency of law suits on the part of

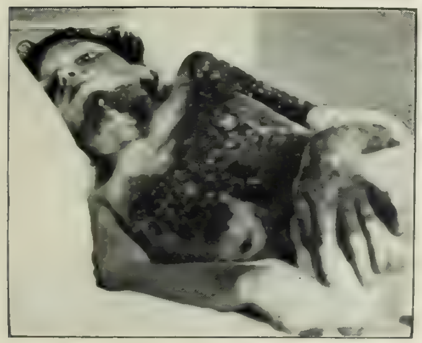

FIG. 1. Extensive burn of neck, chest, arms and axilla in a child. Shows scattered grafts over chest and arm (grafts on hand are of earlier date) fourteen days after their application.

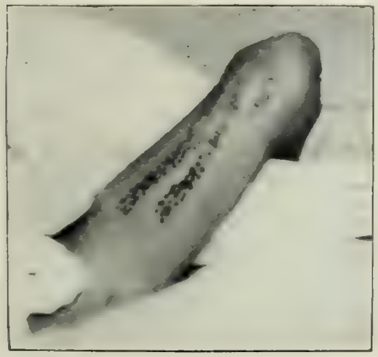

FIG. 2. Right thigh of same case (at the same time), showing the healing of the area from which *all* the grafts covering the chest were taken.

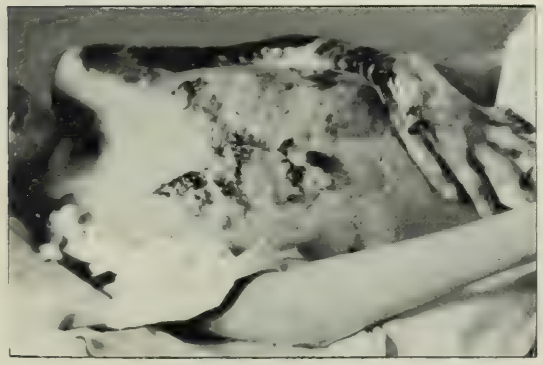

FIG. 3. Same case twelve days after the taking of Fig. 1. The chest is nearly covered in with sound skin from the grafts.

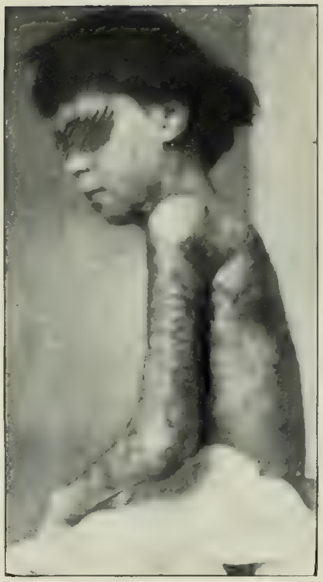

FIG. 4. Same case, entirely healed in. Notice the polka-dot appearance. This persists for a good while and is the only drawback to the Reverdin graft.

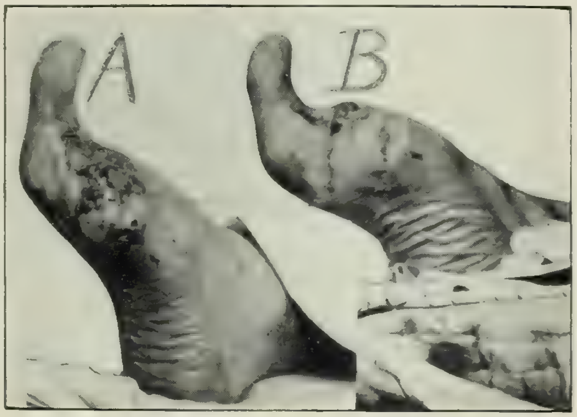

FIG. 5. *A*. Raw surface resulting from a traumatic amputation, showing numerous pinpoint grafts, eight days after operation.
B. Same foot eighteen days after planting the grafts.
(This cut shows the two separate prints reproduced in one cut for contrast.)

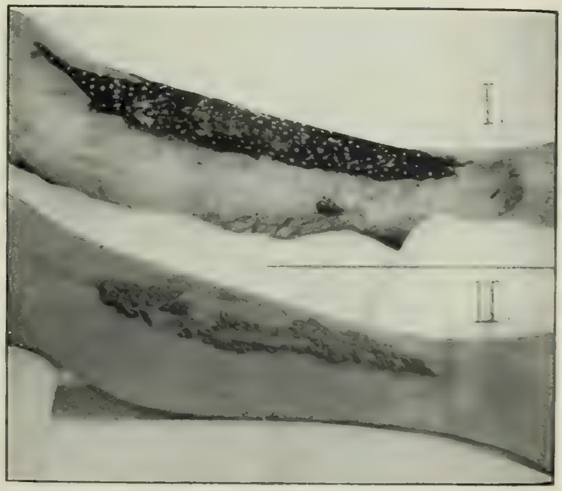

FIG. 6. Raw surface from carbolic acid burn. *I* shows the grafts in place at the end of the planting. *II* was taken sixteen days later.

the grantor, have already been alluded to. The extent to which this is sometimes necessarily carried is shown when Dr. Epley (1896) "reported a case in which he transferred fifty-two square inches of skin in six large pieces from five different persons, and three hundred smaller grafts from four other persons to repair an injury to a man's foot, all of which transfers were successful." Jungengel (1895) cites a case where he planted grafts from seventeen females on a beer-brewer's thigh. Ranking (1906) mentions a case reported in the press where "the arms, legs and backs of the patient's son, husband and mother-in-law, the local coronor, doctor and three nurses" were called upon to furnish the necessary material for grafting. The other disadvantage of the Thiersch method is the danger of cutting so deep in taking the grafts as to leave an area that must fill in with granulation and scar tissue, or be itself grafted. Thiersch himself recommended that the graft shall contain the epidermis, the Malpighian layer, papillary layer and a small bit of the stroma. But as this would always leave a scar, and as thinner grafts have been found to take as well, or better, it is now generally conceded that a graft to be of the proper thickness should include, besides epidermis, only the tips of the papillæ. Such a graft will leave such portions of the basal or proliferative layer as lie in the valleys between the papillæ to act as centers of proliferation for the rapid epidermatization of the raw surface. A thinner graft will probably not contain enough of the basal cells to take root well on the surface to which it is transplanted. Moreover, there is some degree of difficulty in cutting a graft that will be of uniform thickness throughout; the margins practically always are made up of superficial layers only.

Many and varied have been the forms of dressings recommended for Thiersch grafts. Thiersch himself used a sterile dressing moist with sterile salt solution and kept the dressing moist by pouring on salt solution every four hours. Watson recommended a 4% boracic solution instead of sterile salt solution, and applied it every twenty-four to forty-eight hours, as it kept the dressing sweeter, preventing decomposition of the exudate. He also found good results to follow a simple dry sterile dressing. Barker (1898) advised the use of dry sterile gauze and pressure, and found it advantageous as it kept the grafts in close contact with the granulations and kept out moisture. Esmarch advised dusting dry iodoform powder over the grafts and applying a dry sterile dressing. De Caprarius (1899) found in an experience with seven cases that a powder composed of Europhen one part to boric acid four parts caused a more prompt adherence of the grafts and prevented suppuration. Others have advised moist iodoform gauze, gauze smeared with boric ointment, and Bovinine (MackIveen, 1899, and Briggs, 1899).

It was found that if the grafts were covered with an impermeable material it would prevent adhesion of the grafts to the gauze of the dressing, but would necessitate more frequent change, since the secretions would not be absorbed. To overcome in part this disadvantage, the material could be cut into strips and laid shingle-wise or crisscross in a basketwork across the ulcer, leaving linear spaces through which the exudate might be absorbed by the dry or moist sterile gauze above. Thus there have been recommended gold-beaters' skin, oiled silk, dental rubber, guttapercha tissue, silver foil (Halstead), tin-foil (Socin), gold-foil, dry or wet with sterile normal salt solution, or soaked in sterile oil or 2% salicylic oil. In practice it has been found that such occlusive dressings tended toward maceration of the grafts by the moisture which they retained, especially if the edges were sealed and thus interfered with their adhesion. Finally, there have been devised the moist chamber of Meyer, the dry chamber of Delber (1905) and the open-air treatment (Bruning, 1904).

The after-care of the Thiersch moist dressing will be recalled with small joy by hospital graduates. The failure of a graft to take was sometimes laid on the unfortunate surgical dresser. The continuous moist dressing is now being superseded, and the ideal dressing seems to consist of some thin material, not impervious, next the grafts, to hold them in place, and over this a layer of absorbent gauze, to take up the exudate and prevent infection from outside sources — not thick enough to be hot and macerating. The use of oils or antiseptic powders is a matter of taste. With such a dressing the after-care should be about as described for Reverdin grafts, a complete change of dressing not earlier than the sixth day. If, after the dressing is carefully soaked off, and the grafts have a pinkish tinge, it is certain that they are adherent and living. If a bluish color can be seen through them in places, this means that clots of blood are lying beneath and that the grafts are in considerable danger of sloughing away wholly or in part. If the grafted skin presents a dead-white appearance, one can know that the graft as a whole is non-viable and loose, perhaps floated up by pus, or, as frequently happens, that the horny layer has desquamated, perhaps leaving a thin pellicle of basal cells active and attached to the granulations in the form of small islands. Sometimes grafts are perforated in their thinner portions by granulations, and sometimes, after a graft has apparently completely separated, small epidermic islands appear, representing such occasional basal cells as became attached and viable.

Writers seem unanimous in stating that bleeding and suppuration are equally fatal to Thiersch grafts. Bleeding can be avoided by planting the grafts on granulations and not on a curetted surface. If the granulations are curetted, or in fresh operative wounds, bleeding should be controlled by twisting off the vessels, and oozing by pressure with gauze sponges. The use of catgut ties is to be avoided. Pus need not be considered in fresh wounds following aseptic operations. The purulent secretion from granulations cannot be prohibited with surety, the preparation of the granulations can only be made thorough, and the asepsis of operative technic rigid. When it does happen that a Thiersch graft refuses to take, the patient's second state is worse than the original condition, for in addition to his ulcer he has an area of greater or less extent, the source of the grafts, which must heal over, often by granulation.

In comparison with the Reverdin process, the healing of an early successfully grafted area is slightly more rapid, and the subsequent scar contraction slightly less. But the tissue under and between the Thiersch grafts is scar tissue, and under the influence of friction or pressure, or of interference with circulation, the newly formed skin may melt away. Thiersch grafts have been found to take successfully on exposed tendon and on periosteum, and have accordingly been made use of after operations for osteomyelitis and mastoiditis. Thiersch grafts have been planted successfully in the larynx and trachea as well as in the middle ear. The result after Thiersch grafting is rather more sightly than after Reverdin, for instead of the polka-dot effect which persists for some time after the latter method, there are only linear scars marking out the boundaries of the implanted sections, their prominence depending on the size of the grafts and the accuracy of their placement.

"WOLFE" GRAFTS.

After the Reverdin and Thiersch methods, there remain two other well-defined procedures, the Wolfe (sometimes called the Krause) graft, and the flap graft. These may be called the methods of *skin* transplantation, with and without pedicle, insomuch as they aim to take entire skin, or skin without its fat, as distinguished from the *epidermic* transplantation of the other methods.

The Wolfe graft requires a fresh, dry, clean, well-nourished foundation; conditions must be such that the transplanted flap may heal in by first intention, or its purposes will be in great part defeated. If the wound is a fresh one, as after the excision of a cicatrix or of a rodent ulcer, the preliminary operation need only to have been done under strict asepsis and all bleeding stopped by pressure or torsion. If the wound is a granulating one, it must be scrubbed vigorously with an antiseptic, the granulations curetted off down to the basement layer, the field again prepared as for an aseptic operation and the layer of fibrous tissue pared away or dissected out down to fresh tissues beneath. Whole thickness grafts are said to take well on muscle, fascia, connective tissue, periosteum or even denuded bone. Granulations and their cicatrical base are unfavorable.

The best source of grafts is the front of the thigh; next best, the upper arm. The chosen field is prepared with every attention to operative asepsis. The skin and the instruments, as well as the wound surface, should be dry. Some of the earlier operators (Moore, 1898) would cut out a pattern of sterile cloth the size and shape of the surface to be covered, and, laying this on the thigh, would mark out around it with a sharp knife an area of the exact shape, but about one third larger to allow for the shrinking which occurs in the flap as soon as it is separated. It was found, however, that if an area of considerable size were to be covered, a single flap was more liable to localized necrosis than would occur if it were divided into several smaller pieces before being applied. Also, the large wound of irregular shape on the thigh could be closed by sutures only with difficulty if at all. To meet these disadvantages, Krause devised his method, now generally followed, of taking sufficient skin, with allowance for elastic shrinkage after separation, to cover the defect, in one or more large elliptical pieces, up to three by ten inches, cutting this up after removal into smaller pieces adapted to fit the area to be covered. This left on the thigh an oval or spindle-shaped raw surface, the edges of which would be readily approximated by sutures, after some undermining, if necessary, so as to allow of healing by first intention.

The Wolfe graft, properly speaking, should not contain any of the fatty subcutaneous layer of the skin (although Hirschberg has used flaps containing fat with some success). Wolfe and Krause dissected up the marked-out flap carefully, avoiding fat. This took a very long time, if done carefully, and the flap could be readily buttonholed, if done carelessly, and it left at the base of the wound a layer of fat which interfered with the bringing together of the edges for primary suture and necrosed easily if the wound were left to granulate. Any bits of fat adhering to the under surface of the graft were trimmed off with the flat of curved scissors. Wagner (Henle and Wagner, 1899) first advocated the cutting away of skin flap with fat and the subsequent trimming away of the fat with scissors. This method (advocated also by Young, 1905, 1906) has the advantages of ease and rapidity, as well as of leaving a clean wound, the edges of which may readily be approximated, so as to get first intention healing.

The elliptical flap after being cut is divided into smaller pieces, which are arranged snugly, not overlapping each other or the margins, so as to fit the surface closely and cover the whole area if possible. The wound edges may be undermined slightly. If the area is a small one, especially if it involve the face, the skin flap may advantageously be cut to shape and planted entire. Sutures should be avoided, as a firm dressing easily keeps the grafts in position. A few sutures of fine silk will, however, sometimes be necessary. Some operators forcibly stretch the flap, just after it is cut, to prevent it from shrinking or curling. The dressing should be of dry sterile gauze and should be left undisturbed four or five days. The first dressing should be removed carefully, soaking off in boric solution. Where the graft is applied for correction of cicatrical contraction, the limb had best be put up in fixation with plaster of Paris. In this case, so long as there is no odor or other sign of sepsis, the dressing may remain undisturbed for days. (Kennedy, 1899, cites a case where the dressing was left on for five weeks, or until complete healing.) Ordinarily it would be wise to cut a window in the plaster and dress the wound through this.

The accidents of healing include sepsis, death of the flap from poor nourishment, the formation of vesicles and localized necrosis, and slough of the epidermis.

Wolfe grafts have been held in some disfavor on account of the reputed poor prospect of having the grafts take. With proper attention to the details of the operation, if not too large areas are to be covered, one may confidently expect success in most cases, though the occurrence of sepsis frequently causes the graft to be cast off. If sepsis does not appear until the graft is well adherent (fourth or fifth day) the grafts will probably remain in place, but the object of the graft will be partly negatived by the cicatrical contracture which results. The scar, however, will be elastic later. On the appearance of sepsis the dressings should be changed to moist boric, renewed twice daily. One should clean off any sloughs and trim any granulations that push their way through or between the grafts. If the flap dies, aseptically, the foundation on which it is planted is at fault. The formation of vesicles and slight localized necroses are not uncommon, and need only to be attended to aseptically, and they will not prejudice the result of the operation. The outer layers of the epidermis are usually cast off in seven to ten days. Sometimes the entire epidermis sloughs, leaving a raw surface which has to cover in from the edges, with the help of islands of cells left behind, and the epithelium of hair, sweat and sebaceous follicles.

Six to eight weeks are necessary to complete healing. The final result, from a cosmetic viewpoint, is better than is to be obtained from any other method. Accordingly, it is the operation of choice in cases in which we have to deal with wound surfaces of the face which cannot be closed by skin sliding and suture. Practically normal skin is attained, soft, elastic, freely movable and durable,— not scar tissue,— bearing hair, in such follicles as have been transplanted, and fulfilling the secretory functions of skin. The elastic tissue persists in the same proportion as in normal skin. The papillæ remain, and there is the normal physiological desquamation and regeneration of epidermis (Braun, 1899). The transplanted skin differs from that about it only in retaining for some time a paler color. The margin of separation of the grafts from the surrounding skin and from each other is represented by a line of cicatrical tissue. This scar outline will be more pronounced if the grafts are not closely adjusted, or if sepsis intervenes. The other disadvantage to be considered is that of subsequent shrinkage. This is to be obviated by making the flap larger than is necessary to fill the defect. It is of no moment in the region of a joint flexure, for the transplanted skin will be elastic enough to stretch eventually beyond its original extent. After some months, fat develops in the subcutaneous layer and the skin becomes movable.

The three leading indications for the Wolfe graft are wounds in the exposed localities, where an epidermic graft would not give a durable result; about flexures or in correction of cicatrical contractures, where an elastic, non-cicatrizing skin is needed; and on the face, where a good cosmetic result is desirable. The first two of these indications may be met by the flap graft, but this is so disadvantageous on account of the irksome fixation required before the pedicle is severed that the Wolfe graft is sometimes given the preference.

Ollier found (1898) that Wolfe grafts, after being planted successfully, were capable of growing larger, partly by pull from the edges and partly from natural growth of the tissue. Braun (1899) demonstrated that the elastic fibers were preserved integrally as they were in the skin before transplantation. Reuter (1899) reported a case in a child of vicious cicatrix at the knee after burns. He made a transverse incision in the scar, and in this planted a small Wolfe graft. After three and a half years he found that this had stretched to seven times its original size, allowing of as complete mobility of the knee as before the accident. This same procedure has been followed out with success in a series of cases by Dowd (1906) in distortions and permanent deformities resulting from the formation of cicatrical bands about joints after loss of skin. He dissects out the cicatrical tissue, reduces the deformity, sutures the skin edges to cover the wound, so far as possible, and over any raw surface which remains he sews in a Wolfe graft. Braun (1903) investigated the durability of the Wolfe graft, and, in twenty cases on whom Wolfe graft had been done, observed one and a half to nine years after the operation, he found that without exception none of the cases in which healing had originally been good showed any sign of lack of wearing qualities, even in the most exposed places, as on the heel.

Henle and Wagner (1899), in reporting on a series of fifty-seven cases in the clinic of von Mikulicz, gave 59% of complete cures. The highest percentage was 90, after excision of cicatrix; the lowest, 44%, in ulcers of the lower leg. Widman (1902) reported, out of 29 cases, 26 successes, or 82%.

FLAP GRAFTS.

The flap graft, like the Wolfe, gives an elastic, movable, resistent result, which fits it eminently for use in replacing scar tissue in vicious cicatrical contractures, and in covering defects where the flaps will be exposed to much wear and friction, as of the palm and sole. The disadvantages of the irksome fixation, usually in plaster of Paris, before the pedicle is severed, and the frequent necessity for a secondary graft to cover in the site from which the flap is taken, are obvious. A flap graft is usually a matter of some months, of which a few weeks are spent in bed.

The flap graft heals more readily and with more assurance than the Wolfe graft; there is, for instance, no shedding of the epidermis. The resulting skin is more resistent, on account of the cushion of subcutaneous fat which the flap carries with it. It can be used where the Wolfe graft would be impossible on account of the impracticability of complete asepsis, as after crushes and "mangle" injuries. It will heal on to a base which is not richly enough supplied with blood to nourish a Wolfe graft, as in deep loss of tissues of the hand. Also, the fatty layer of the flap graft persists and provides a pad which is a necessity where the deep structures of the hand and foot are exposed, preventing adhesion between skin and tendon.

Flaps should be so planned that they are designed from sound skin; scar tissue cannot be relied upon. Their vascularity should be assured; they should coincide with the long axis of the part from which they are taken; they should be so cut as to inflict the least damage upon the vessels which supply them; their pedicles should be as broad as possible. If there is any question as to the blood supply, the flap should be allowed to granulate before it is planted. They should be cut about one third larger than the defect, as they shrink immediately on being cut, and for some weeks afterward. They should be fashioned with curved outlines to permit of greater stretching and better adaptation, and to obviate sloughing of corners. The edges should be clean cut. They should be as thick as possible, and contain an ample fatty layer. If the fat layer is too thick, as sometimes happens if the flap be taken from the abdomen, the contraction of the line of scar tissue about the flap, in healing, will bunch the fat into an unsightly pad, which may have to be removed at a secondary operation. The pedicle should not be subjected to sharp torsion if this can possibly be avoided. The gap left by the flap should be closed at the time of operation, so far as possible, — mattress sutures are aften advisable and skin sliding may be used advantageously in some cases. A supplementary skin graft to the wound from which skin is taken will often be a necessity later on.

The flap should be taken from whatever site will allow of the most convenient juxtaposition to the wound surface, with due regard to the blood supply of the flap, and the avoidance of tension and torsion. To cover hand or forearm, a flap may be turned up from the abdominal wall, but it may be preferable to fix the hand behind the back, or to put the hand into a pocket made by lifting a flap from the hip. To cover a loss of substance on the sole or heel a flap may be taken from the opposite calf. After excision of a cicatrix at the elbow a flap may be taken from the thorax; in the axilla, from the scapular region. The comfort of the patient should never be forgotten, for sometimes a posture will become unbearable beyond the control of morphine. In cases where the position the patient will have to assume gives promise of being irksome, it is wise to have him accustom himself to it by practice for some days before the operation. Where adhesive plaster can be made to hold firmly, it is to be preferred, but generally it is not so dependable as plaster of Paris. If it is a case of limb to limb, it will be more comfortable, as well as more secure, to put a plaster dressing on each limb, and then to join the two by more plaster. The parts should be adjusted with so little tension on the pedicle that only few sutures will be necessary to hold the flap to its destination, and so that these sutures merely retain and do not pull the parts together. The approximation of the edge of the flap to the edge of the wound, however, should be as accurate as possible. Any tension that arises unavoidably should be eased by supplementary incisions. In cases where it is impossible to bring an adequate flap directly on to the wound, it may be worth while to try the operation in stages, the "Wanderlappen" of Israel and Hahn and von Hacker,[4] being mindful of the marked shrinkage which a traveling flap suffers.

Flap grafts may be placed on clean granulations (which may or may not be scraped) or upon a fresh operative surface, always providing that hemostasis is complete, for the interposition of a clot between a flap and its bed will interfere with the adhesion of the flap. If the loss of substance is due to trauma, we should wait until it can be definitely determined how much of the crushed tissue will survive. Preparation will then consist in the removal of all non-viable tissue, and the amputation of such parts of the member as are undergoing gangrene, and the application of antiseptics, which should, however, be vigorously washed away again. Absolute asepsis is not a necessity, but is always desirable, and should be attained if possible. If accurate adjustment of flap to wound surface is to be attempted, the edges of the wound should be freshened and undermined, to allow of better apposition of edge to edge with sutures.

If the flap is grafted to correct cicatricial contraction, the same considerations hold as for the Wolfe graft. The scar may be simply divided down to healthy fat, fascia or muscle, the deformity corrected until there is no further resistence to extension, and in the gap the flap may be planted. Or, as many now think preferable (Stone, Kennedy, Keetly, 1905), all the scar tissue may be excised so that the skin of the flap may be accurately sutured to normal skin. All bleeding should have ceased before the fixation of the transplant. In contractures of long standing, as of the fingers or wrist, there will frequently be found permanent shortening of tendons. If this exists to such a degree as to interfere with complete extension, some tendon-lengthening procedure should be resorted to before the flap is fixed in place. It will usually be advisable to hold the limb in the corrected position by a splint or other apparatus for one or more months after the flap has healed on. The earlier the operation is performed, the better will be the functional result. To forestall the formation of cicatricial contractures in recent extensive burns or injuries about a joint, a flap graft may be placed in the flexure as early as possible, and at some convenient time later the remaining raw surface may be covered with epidermic grafts

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[4] That is, the flap is swung by its end from *A* to *B*, allowed to heal there; then its pedicle is cut and it is swung on the new base from *B* to *C*.

(Rœrsch, 1899). The elasticity of the whole-thickness flap at the flexure will suffice to prevent cicatrix interfering with mobility of the joint.

A voluminous dressing of dry sterile gauze, with absolute fixation of the parts by adhesive strapping or plaster of Paris, is advisable. Some authors recommend the use of an antiseptic powder, in view of the liability of the intervention of sepsis. Within forty-eight hours after the operation, a window should be cut in the plaster and the nature of the wound secretions noted. If there is no evidence of the presence of pus, the strictest of aseptic precautions are to be observed in the subsequent dressings, which should be infrequent, until the pedicle is severed, so as to avoid motion of the part and danger of infection from without. If sepsis makes itself evident, the window in the plaster should be enlarged, a moist dressing of some mild antiseptic, as boracic acid or weak chlorinated soda, substituted and renewed once every twenty-four hours or oftener. Cases are on record where deep cellulitis and abscess formation have resulted from neglect of such precautions as these.

It is not uncommon for the tip of a flap to necrose, especially if the pedicle is narrow or twisted; likewise corners or angles, if there are any such, are prone to necrose. Nothing can be done but to keep the gangrene aseptic, if possible, and wait for demarcation. The resulting defect will close in by scar tissue. Two methods have been devised to forestall necrosis of the transplant. Thiersch (1876) in the treatment of exstrophy of the bladder, tested the flap before implantating it, by waiting several days, the flap resting meanwhile on oiled silk. This interval gave sufficient time for the determination of vascular equilibrium; any portion that showed signs of sloughing was given time to demarcate and was trimmed off. Others (Croft, 1889) have made use of the original Italian technic, by employing a double-pedicled or "bridge" graft. A strip of skin is raised, left attached at its extremities and kept separated from the subjacent tissues by a piece of oiled silk. After about two weeks, when granulations have been well established on the under side of the flap, the attachment at one end is severed and the flap used as a flap graft.

The pedicle may be severed as soon as it is reasonably certain that the flap has grown to the base on which it rests, that is, as soon as the flap is adherent, and shows the pink color of good circulation. Maas (1884) originally set this period at from the tenth to the fourteenth day, although he has cut the pedicle as early as the sixth day (1886), and Hopkins (1895) has cut it on the fourth day. Others have waited as long as twenty-two days. In doubtful cases, as a means of assurance that circulation has been established between the flap and the base, as well as to favor it by gradually cutting off the mother supply, one may sever the pedicle gradually (Gussenbauer, 1875; Miller, 1899), a little every day for a week, or it may be tied off in sections, day by day.

A fresh flap will sometimes contract so strongly after being sewn into place that it will pull through the stitches. If a flap heals in by first intention, as it often, theoretically, should, contraction will otherwise be slight. But first intention healing of a flap graft is the exception, and there usually results a well-marked formation of cicatricial tissue outlining the flap. This will cause some contraction of the flap. There has also been noted (Burrell, Cushing and Stone, 1904) recontraction of the deeper tissues, under the graft. Unless the contraction from any cause is marked it will not interfere seriously with the functional result desired.

TWO CASES OF "RUSTY NAIL" TETANUS, WITH TETANUS BACILLI IN THE INGUINAL GLANDS.

BY C. A. PORTER, M.D.,
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AND
OSCAR RICHARDSON, M.D.,
Assistant Pathologist to the Massachusetts General Hospital.

In spite of very rare observations to the contrary, tetanus is considered by all authorities as one of the best examples of a pure toxemia, with localization of the infecting organisms at the site of the original wound. Many surgeons who are familiar with the disease believe that such localization is invariable. James M. Anders, for example, in vol. iii, p. 77, of Osler's "System of Medicine," says: "The bacilli can be isolated from the wound in which they develop, but the tetanus bacilli do not enter the circulating blood, and hence are not found in the various organs of the body."

Whether my determination to investigate the glands in my next case of tetanus arose as an original idea, or was unconsciously suggested by an allusion to Schnitzler in Lexer's "Surgery," I do not know. My first opportunity to make this investigation occurred through the kindness of Dr. G. W. W. Brewster, who asked me to see in consultation, on March 13, 1909, a patient with tetanus who entered the Massachusetts General Hospital in Dr. S. J. Mixter's service.

Case I. Stephen B., aged twenty-three, teamster. Entered hospital on March 8, 1909, with the diagnosis of a crushed foot with gangrene of the toes. A tip-cart wheel had passed over the foot a week before, but in spite of antiseptic treatment, infection and gangrene resulted. On physical examination, there was found to be gangrene of three toes, extending to the dorsum of the foot, with an ulcerated area about the size of a dollar. Lymphangitis was present, reaching to the internal malleolus; temperature was 101; pulse, 110; respiration, 23. Sulpho-naphthol poultices were applied every two hours. On March 12 the temperature had fallen, the wound was cleaning up and the line of demarcation was becoming distinct. During the night of March 12 the patient complained of slight pain and stiffness in the back. By seven o'clock on the morning of the 13th he could not open his jaws, and more careful examination showed that well-marked trismus was present, with considerable stiffness of the neck muscles posteriorly. By noon the diagnosis of tetanus was obvious. There was trismus, risus sardonicus, stiffness of the neck and the anterior abdominal muscles, with some rigidity of the legs. The glands in the left groin were slightly tender and considerably enlarged. Operation. Ether anesthesia.

Without uncovering the foot, I first made a four-inch vertical incision in the left groin, through which the inguinal glands were removed *en masse,* and the anterior crural nerve was injected with a hypodermic syringe filled with antitetanic serum. The wound was drained with rubber tissue and loosely sutured with silkworm gut. The left sciatic was next exposed through a posterior incision and filled with serum and closed without drainage. Finally, the bandages were removed from the foot, which was thoroughly disinfected, the gangrenous toes amputated and the whole wound thoroughly curetted, cauterized with pure carbolic acid, and packed with gauze saturated with balsam of Peru. The glands were placed in a sterile towel and given to Dr. Oscar Richardson.

Subsequent history. — Patient recovered well from the operation, but the spasms increasing in severity during the afternoon, frequent etherizations were necessary. On March 14 opisthotonos was extreme; the face was cyanotic; respirations shallow and difficult; temperature, 102; pulse, 130 and of poor quality. It seemed evident that unless something was done the patient would die, so I decided to perform lumbar puncture and to inject magnesium sulphate. This was done at 12.32 noon. Two drams of cerebrospinal fluid were allowed to escape into a sterile tube and 6 ccm. of 25% solution of magnesium sulphate were injected into the spinal canal; 1 ccm. for every 25 lb. of body weight. Twenty minutes after the injection the pulse rose rapidly to 180, but fell in half an hour to 130. At 2.10 P.M. it was first noticed that the posterior muscles of the legs were becoming relaxed. The upper portion of the body was accordingly raised to an angle of 30°. At 3.00 P.M. the back muscles were relaxed, the neck could be readily flexed and the masseteric spasm was so much lessened that he drank water from a tumbler. The pulse had fallen to 110, and he had some sleep. In another hour, however, he became gradually unconscious, and in the early morning respiration began to fail, with a slight return of rigidity. He died at 7.00 A.M., March 15, apparently of respiratory failure.

DR. RICHARDSON'S REPORT.

At Dr. Porter's request I was present at the time of operation on the above case and took the tissues myself from him. The tissues from the foot were kept separate from those of the glands, as we wished to see if it might be that tetanus bacilli were present in the glands as well as in the tissues of the foot. The following examinations were made:

Many coverglasses were made directly from the tissues, and in one from the gland and one from the foot, after much search, one or two morphologically typical tetanus bacilli were found. Cultures were then made after the method of Kitasato from the glands and from the foot. After forty-eight hours in the thermostat the culture from the foot gave off the peculiar disagreeable odor associated with tetanus cultures. Coverglasses from the culture showed numerous morphologically typical tetanus bacilli. The culture from the gland after four days in the thermostat gave off the disagreeable odor and coverglasses showed morphologically typical tetanus bacilli, but not so numerous as in the culture from the foot.

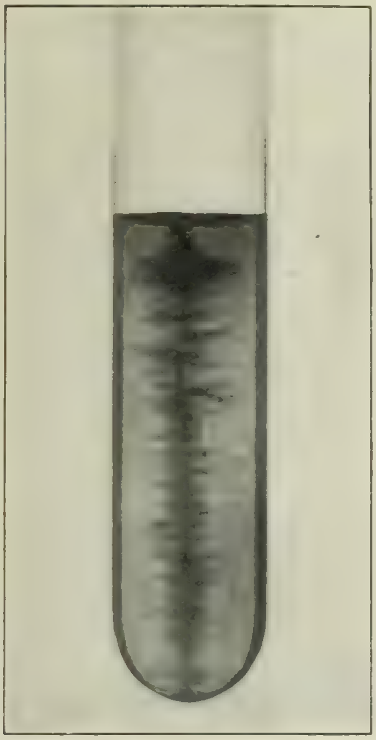
An attempt was then made to obtain pure cultures of the bacillus from the culture from the foot and from the glands. In this work the methods of Kitasato and Liborius were used. The deep glucose agar cultures showed the fine cloudy colonies characteristic of the tetanus bacillus, and from the culture from the foot we obtained in stab glucose agar culture the typical fir-tree growth so characteristic of tetanus. The culture from the glands contained, besides the tetanus bacilli, colonies of other spore-bearing bacilli, and we were unable to isolate from this culture an absolutely pure culture of the tetanus bacillus. This difficulty in separating the tetanus bacillus from other spore-bearing bacilli that are frequently present is not unusual. The stab culture in glucose agar, however, showed in places along the streak the characteristic fir-tree appearance. A white rat inoculated at the base of the tail with a platinum wire which had been plunged in along the line of growth of a glucose agar stab culture died within forty-eight hours. The animal showed the typical seal gait characteristic of tetanus in rats.

On Aug. 28, 1909, another case of tetanus was referred to my service at the Massachusetts General Hospital by Dr. Stickney, of Arlington.

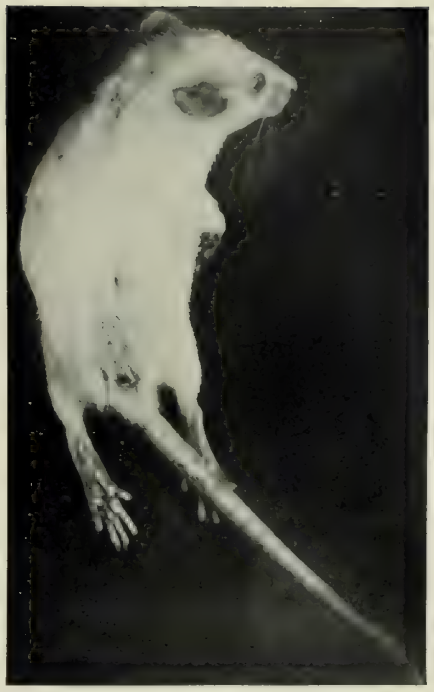
CASE II. Norman W. H., white, aged thirteen. On Aug. 15 a rusty nail passed through his " sneaker " into the sole of his foot between the first and second toes. Dr. Young, of Arlington, attended him within twenty-four hours. The wound was thoroughly opened, curetted and cauterized. Three days later a puffiness appeared on the dorsum of the foot. Upon incision some dark grumous material but no pus escaped; the wound was drained. The boy was up and about and felt perfectly well until the evening of Aug. 27, twelve days after the accident, when he complained of slight stiffness on attempting to open his mouth. This morning, Aug. 28, there was distinct trismus and tenderness of the masseteric muscles, and some stiffness of the back of the neck. Physical examination: A fairly well-developed white boy in no evident distress of mind or body. Whole face is somewhat puffy; mouth can only be opened half normal; some rigidity of posterior muscles of the neck and of the anterior abdominal wall; reflexes slightly increased. A few slightly enlarged glands in both groins; no fever. A small wound of entrance and exit between the first and second toes of the left foot, filled with exuberant granulations and some odorless pus. Within two hours the symptoms had increased sufficiently to warrant a diagnosis of tetanus, and I advised immediate operation under ether.

Again, without removing the dressings from the foot, I opened the left groin and removed all of the inguinal glands *en masse,* placing them in a sterile tube. Three thousand units of antitetanic serum were injected into the internal saphenous vein. The wound was loosely packed with gauze and sutured in part with silkworm gut. Next the infected tissues about the original wound in the foot were thoroughly removed, the wound cauterized with carbolic acid and dressed with balsam of Peru. These tissues were also given to Dr. Richardson.

Intramuscular injections of serum were given every two hours, 1,500 units, and the patient placed under the

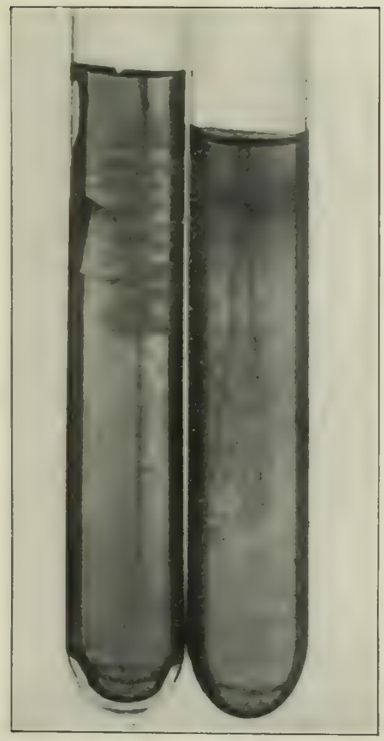


Case I.



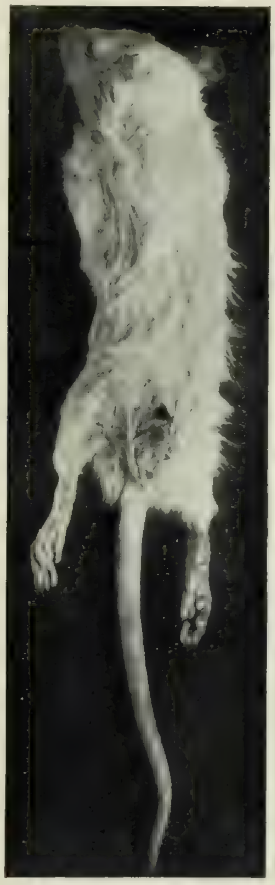
Case I.

Dead white rat showing characteristic extension of hind legs, after inoculation with tetanus bacillus.



Case II.

Pure cultures showing fir-tree-like growth of tetanus bacillus. Upper tube, Case I; lower tubes, Case II.



Case II.

Dead white rat showing characteristic extension of hind legs, after inoculation with tetanus bacillus.

influence of chloral, bromide and morphia, in a dark room with a special nurse. Two days after operation there were several severe convulsions, requiring light etherizations. Gradually improvement took place and, without complications in either wound, the patient made a complete recovery, leaving the hospital at the end of three weeks.

DR. RICHARDSON'S REPORT.

The tissues from the foot and glands of the above case were handed to me by Dr. Porter, and, as before, following the same methods, cultures were made with extraordinary care. The culture from the glands in this case gave off the peculiar disagreeable odor within forty-eight hours, and coverglass examination showed numerous morphologically typical tetanus bacilli. A white rat inoculated at the base of the tail with a platinum loop, which had been dipped into the culture, died within forty-eight hours. The animal showed the typical seal gait. The culture from the foot failed to show tetanus bacilli until after four days had elapsed. Then the odor became apparent and bacilli morphologically like tetanus bacilli were found on the coverglass but not in such great numbers as in the culture from the glands. The micro-organism in this case was recovered in pure culture from the glands and from the foot, using the same methods as mentioned in the record of the other case, the final cultures being the typical fir-tree growth in glucose agar stab. We finally in each case from the rats dead with tetanus recovered the bacillus of tetanus, thus fulfilling Koch's laws.

In 1884 Nicolaier first demonstrated tetanus bacilli in the sheaths of the sciatic nerve and in the spinal cord in human tetanus. On April 20, 1893, Konrad Büdinger, in the *Wiener Klinische Wochenschrift,* reported the finding of tetanus bacilli in the lumbar glands of guinea pigs after subcutaneous inoculation of the hind leg with splinters of wood smeared with garden earth which had been proved to contain virulent bacilli. The lumbar glands were removed and implanted into other pigs. In seven cases the pig developed tetanic symptoms and died; in four, the result was negative; no cultures.

As a result of this paper of Büdinger, Julius Schnitzler examined the inguinal glands in a fatal case of human tetanus and reported his results on May 29, 1893, in the *Centralblatt für Bacteriologie.* The patient developed tetanus after a frost gangrene of both feet which necessitated double amputation. Cultures taken from the anterior tibial artery at operation were sterile. After death, the inguinal glands were removed from both sides; they were not palpably enlarged. No bacilli were found on examination of the glands from the right groin, portions of which were placed under the skin of two pigs and caused no symptoms. A piece inserted into a white mouse caused slight symptoms after seventy hours, but the mouse recovered. Smears from the left inguinal glands, however, showed, in addition to cocci, a few slender bacilli with end enlargements. Cultures failed to show a growth of tetanus bacilli, only ordinary cocci. Inoculations were made with small pieces of the glands into the tail of two pigs and one white mouse. One pig remained well; the other showed symptoms of tetanus, with suppuration at the site of the inoculation, and death on the seventh day. The mouse showed symptoms of tetanus within thirty hours, and died at the end of sixty hours. While the mouse was alive, material from the lesion was injected into another mouse and a guinea pig; both died with tetanic symptoms within forty hours. The evidence from inoculation and death seems good that the bacilli were tetanus bacilli, but all cultures failed. In the *Centralblatt für Bacteriologie,* vol. xxxvii, p. 312, 1904, Dr. Creite refers to these findings of Nicolaier, Büdinger and Schnitzler, and gives several references to the demonstration of tetanus bacilli in the blood and other internal organs of human beings, but chiefly mentions their generalized distribution in animal inoculations. He removed, with aseptic precautions, a piece of spleen from a fatal case of human tetanus; the piece, weighing 2 gm., was inserted under the skin of a guinea pig. The pig died in three days with the hind legs stiff behind. The site of the inoculation became gangrenous. Smears showed bacilli with spore, morphologically like tetanus bacilli. Three culture tubes were inoculated. After forty-eight hours there was the characteristic odor of burnt hoof, and microscopical examination showed "typical tetanus bacilli." Pure culture not obtained; *animal inoculations negative.* The author considers this an unusual finding, for, in three other fatal cases of tetanus, cultures and inoculations from the cerebrospinal fluid, spleen, heart's blood and bone marrow were negative, as was the subsequent investigation of two more cases in which the spleen and heart's blood were examined. While it is probable that the bacilli mentioned were tetanus bacilli, it is possible that the organisms were pseudo-tetanus or similar bacilli and that the animals died from tetanus toxin contained in the transplanted splenic tissue.

We hasten to report these two cases because, so far as we can determine, the second case is the first on record in which Koch's law has been fulfilled by obtaining a pure culture of tetanus bacilli from the glands and by recovering the tetanus bacillus from a rat inoculated from the culture. In spite of the innumerable autopsies upon human cases, we have been able to find only this one case of Schnitzler's, in 1893, in which the inguinal glands have even been examined. Should further investigation confirm our findings and show that tetanus bacilli are frequently present in the adjacent lymph glands, a rediscovery of great importance has been made, for the hitherto accepted view that in human tetanus the bacilli remain localized must be modified. As all surgeons are agreed that the local focus must be eradicated as early as possible, experience may prove that the lymph glands with their lethal bacilli must also be removed. In septic infections, the lymph glands act, not only as filters, but as active germicidal protectors against a generalized septicemia, and their removal is contra-indicated until the region which drains into them has become uninfectious. In tetanus, on the other hand, the local focus can usually be thoroughly disinfected. External lymph drainage is indicated rather than contra-indicated. The removal, with drainage, of superficial lymph glands infected with tetanus bacilli, so far as one can argue with little actual experience, would be of distinct benefit in ridding the organism of a source of toxin production.

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GASTRIC ULCER. SUBACUTE PERFORATION IN A BOY OF EIGHT YEARS. OPERATION. RECOVERY.

BY F. B. LUND, M.D.,

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"The anatomy of gastric ulcer and the principles of its treatment are, in the main, essentially the same in all periods of life. That is why a discussion of gastric ulcer in infancy and childhood may be brief," says Jacobi in an excellent article on "Gastric Ulcer in the Young," published in the New York *Medical Journal* of Oct. 30, 1909. These sentences characterize him as a man who does not make the great interest of his subject an excuse for tediousness.

He quotes an article by Stowell, who has gathered from the literature 34 cases of ulcer of the stomach in children and adds cases of his own amounting to about 22, making about 60 cases in all. Both these writers seem to have overlooked an article by Dr. Elbridge G. Cutler, published in the Boston and Medical Surgical Journal, Oct. 6, 1904, in which Dr. Cutler comments upon the great rarity of gastric ulcer in children under fourteen years of age. He states that many pathologists and practitioners of large experience have never met with it, and that others with equally large opportunities of observation have denied its occurrence. In the records of the three large hospitals in Boston, the Massachusetts General Hospital, the Boston Children's Hospital and the Boston City Hospital, he was able to find but three cases under the age of fourteen years which had been diagnosticated as gastric ulcer, these three cases all occurring in the Massachusetts General Hospital. On a very careful search of the literature he found 24 cases with autopsy and 2 without — 26 in all. To these he added 3 cases from the records of the Massachusetts General Hospital. Of these 29 cases he classifies 18 as acute and 11 as chronic. Of the acute cases, 6 developed immediately after birth, and in 6 of the acute cases the ulcers were an intercurrent affection, occurring after severe burns, croupous pneumonia, typhoid fever, diphtheria, tuberculosis and a gangrenous affection of the mouth. Twenty-two of Dr. Cutler's cases are included in the 34 reviewed by Stowell, and 1 of Dr. Cutler's cases in Jacobi's enumeration, leaving, therefore, 4 cases to be added from Dr. Cutler's, making 64 cases in all. Of these 64 cases I can only find 2 — Bennett's case and Von Eiselsberg's — which were operated upon. Von Eiselsberg's case was a girl twelve years of age upon whom gastro-enterostomy was successfully performed for the cure of a chronic ulcer of the stomach. Bennett's case was apparently a perforating ulcer of the anterior wall of the stomach, successfully operated upon in a girl of sixteen.

The great rarity of ulcer of the stomach in children, and the much greater rarity of such cases coming to operation, are the reasons for reporting the case described in this paper. Dr. W. J. Mayo, whose great experience in gastric surgery is well known, states in a personal communication that the youngest patient they have operated upon for gastric ulcer was fourteen years of age. Dr. Munro, of Boston, states that he has never operated for gastric ulcer in a child.

The fact that the reported operated cases in children are so much rarer in proportion to the reported cases in general would indicate an obscurity or difficulty in diagnosis in children.

As to the causes of gastric ulcer in children, Jacobi gives prenatal disposition, stating that gastric ulcers are observed among the children of consumptives who do not transmit tuberculosis but their textural debility, mainly their small hearts and vascular incompetency.

A second cause is thrombosis of the umbilical vein and its small ramifications, and local embolism in the walls of the stomach, some of which depend upon congenital diseases of the heart and some upon septic emboli following puerperal sepsis. Jacobi speaks of finding hemorrhages or petechiæ in newborn babies who have died of septicemia.

Duodenal ulcer, burns and septicemia, as mentioned by Cutler, are a third cause. Hyperacidity, due to stenosis of the pylorus, Jacobi gives as a fourth cause, and, as a fifth, local injuries, such as are produced by swallowing foreign bodies. Infectious fevers may be a sixth cause.

Symptoms. — Pain, the commonest and most important symptom in gastric ulcer in older children and adults, is quite deceptive in infants and young children. In children, as in adults, the pain is increased by eating, coming on at once if the ulcer is gastric and not for half an hour at least if the ulcer is duodenal. To the causes of pain given by Jacobi, namely, over-secretion, undue peristalsis or pressure, should be added the peritonitis due to perforation, or the condition which obtained in the case reported in this paper — subacute perforation or perforation with adhesions to a neighboring viscus. Pain is located, according to Cutler, usually at a spot in the epigastrium, but sometimes is spoken of as general.

Vomiting, according to Jacobi, is not so frequent in children as in adults, although it occurred in 16 of Dr. Cutler's 29 cases. Hemorrhage is rarer in children than in adults, Jacobi says, although it was observed in 11 of Dr. Cutler's cases. Bleeding from other causes in the nose, throat or mouth must be carefully excluded.

It is not as yet determined whether hyperacidity of the stomach is normally less in children than in adults. The excess of hydrochloric acid is regarded both by Jacobi and Deaver as a result rather than as a cause of gastric ulcer, although it is admitted that excess of hydrochloric acid increases the difficulty of healing the ulcer.

Judging from the review of these cases, most of which were autopsied, the mortality of gastric ulcer in children would seem to be very high, as many of them died from hemorrhage and perforation, but, as Jacobi well says, exclusively hospital physicians gain no knowledge of ulcer of the stomach; theirs is only an experience of severe cases. The general practitioner, who may see for long periods only a few cases which recover under his treatment, does not regard gastric ulcer as a serious disease, and so it goes. A certain proportion of the cases of gastric ulcer in children are taken from autopsies or patients dying from other causes in whom an ulcer has been found, and from these, of course, no opinion can be formed as to the mortality of gastric ulcer in children. It would seem reasonable to suppose that it would be no greater than in adults and that, owing to the simple diet of children, a medical cure ought to be more frequently obtained than in adults. The proportion of surgical cases in children according to this reasoning would be small, as it undoubtedly is, as far as an examination of the literature can decide.

In regard to the medical treatment for ulcer, a careful perusal of the literature discloses no great difference in the treatment of children and adults, and the indications for surgery are practically the same. Perforation, of course, is an absolute and immediate indication; hemorrhage, a doubtful one. Rebelliousness of the ulcer to skilled and thorough medical treatment, stenosis of the pylorus, hour-glass stomach, and perforation with deforming adhesions are all surgical indications as in the adult.

In regard to the anatomical differences in the mucous membrane in the stomach in the child and the adult, Werber, quoted by Cutler, says that the mucous glands in the newborn are present in greater numbers and differ somewhat in structure and distribution from those in the adult. Klein states that the cylindrical epithelium in the newborn, even in the fundus, extends more than halfway into the follicle. Cutler thinks it quite probable that these structural differences have a bearing on the infrequency of peptic ulcer in the child. On the whole, it would seem to the writer that very little light is thrown upon the question by these so-called anatomical differences. Cutler also quotes Leo to the effect that the sole difference between the gastric juice in the child and the adult is the less amount of hydrochloric acid in the child, which statement, according to Jacobi, has not been proved.

It would seem that the comparative simplicity of the diet in early childhood might also be an important factor in preventing the occurrence of gastric ulcer in children, and in addition also the absence of trauma from coarse and indigestible foods. Bottle-fed children ought to be more liable to gastric ulcer than those which are breast fed, other things being equal. The child whose case is reported, it will be noted, was brought up on the bottle.

The case which came under my observation is, as far as I know, the only reported case in which an operation has been performed for a gastric ulcer in so young a child. The patient in question was admitted to the surgical ward at the Boston City Hospital on Dec. 29, 1908. According to the history, he was brought up on a bottle, had the diseases of childhood in a mild form and always suffered since about a year old with occasional sick spells accompanied with vomiting. These spells were rare, however, and he never vomited any blood. About a year ago he was ill for a few days with paroxysmal pain in the epigastrium, accompanied by slight fever. The pain was not related to his meals. He vomited a few times, and on one occasion the vomitus was blood-streaked. A few months later a similar but more severe attack occurred, during which, at one time, he vomited about a teaspoonful of bright blood, and for two days the stools were black.

On admission, he was evidently in his third attack. He had been ill two weeks with pain, severe and paroxysmal, referred upward and to the left from the epigastrium, with frequent vomiting. On one occasion he vomited about 2 oz. of bright blood. The pain was particularly severe late in the evening or at night. The stools were sometimes dark, sometimes normal. Some fever had accompanied the attack. On admission, his temperature was 101.5°; pulse, 108; with slight epigastric tenderness. There was blood in the stools as shown by chemical and microscopic tests. Under supervision his symptoms rapidly subsided, the tenderness soon disappeared and it was thought that he would recover under medical treatment. He was discharged from the hospital on Jan. 9, to return to the Medical Out-Patient Department.

On Feb. 20, he was re-admitted to the surgical ward, having been attacked two days previously with epigastric distress and vomiting. There were small amounts of bright blood in the vomitus. The attacks of pain occurred in sharp paroxysms. His temperature was 102°, with marked tenderness in the epigastrium, and distinct muscular spasm. These symptoms subsided somewhat during the three days following entrance, but it was felt that a fair trial had been given to medical treatment and that in all probability there had been a subacute perforation of the ulcer, as evidenced by the acute spasm and very marked tenderness.

On Feb. 24, I made a median incision above the umbilicus and found a large indurated ulcer just to the left of the pylorus on the lesser curvature firmly adherent to the liver. The adhesions which tied it to the liver were not disturbed. A posterior gastro-enterostomy was performed with a short loop. Recovery was uneventful save for a slight bronchitis. The patient returned to his home about three weeks after the operation, where he gained rapidly in weight. He is now (November, 1909) in excellent condition and has been able to eat well ever since the operation.

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Surgeon-General Torney, U. S. A., in his annual report, criticises the endurance tests of army officers instituted by President Roosevelt. He advocates in the place of one annual test the systematic physical exercise of all officers. To make this possible, every staff and line officer doing office work should be supplied with a good riding horse and one orderly, as is done in Europe. He also advises that the test ride be modified for officers serving in the tropics and for those over sixty-two years of age. In several cases the single violent test for elderly officers not in condition has caused physical injury.—*Medical Record.*

Clinical Department.

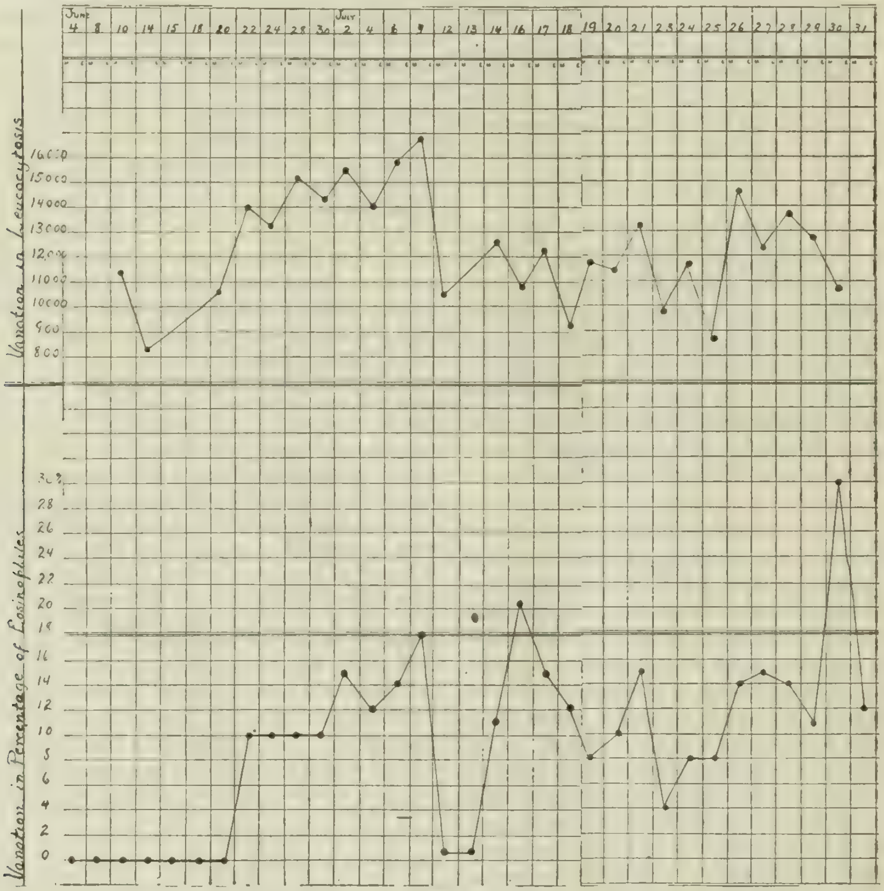
ACUTE TRICHINIASIS WITHOUT INITIAL EOSINOPHILIA. A CASE FROM THE HOSPITAL SERVICE OF DR. F. C. SHATTUCK.

BY DONALD GREGG, M.D., BOSTON,

Former House Pupil, Massachusetts General Hospital; Charles Follen Folsom Teaching Fellow in Hygiene, Harvard Medical School.

In 1897 T. R. Brown,[1] of Johns Hopkins Hospital, first noted the occurrence of an abnormally large number of eosinophile cells in a case of trichiniasis. Since that time eosinophilia in cases of trichiniasis has been noted repeatedly by so many observers that this condition has become one of the most important diagnostic signs of the disease.

Although hundreds of cases of trichiniasis with eosinophilia have been reported, there have also been reported a few cases of trichiniasis in which no increase of the eosinophile cells was noted. Seven such cases reported by four observers have been discovered in a review of the literature. Howard,[2] in 1899, reported a case which died at the end of five weeks. The necropsy showed trichinæ in muscle areas infiltrated with eosinophile cells. No differential count of the blood cells was made during life. A smear showed upon inspection no apparent increase in the number of eosinophiles. DaCosta,[3] in 1901, reported a case of trichiniasis, without fever or history of infection, which came under his observation because of a swollen and painful leg. The condition was unilateral and occurred subsequent to trauma. Trichinæ were found in the inflamed muscle. The blood showed a leucocytosis, but no eosinophilia. Drake,[4] in 1902, reported four cases which showed no increase in the number of eosinophiles. But in reference to these cases, Gould,[5] writing upon the value of eosinophilia in the diagnosis of trichiniasis, says, "The lapse of months in four of these cases between the beginning of symptoms and the first blood examination, and the finding of encapsulated trichinas in one and partly calcified in another, prompt the thought that a blood examination earlier in the disease might have revealed an eosinophilia which had disappeared."



Bartlett,[6] in January, 1909, reported an acute case of the disease, verified by necropsy, in which one blood examination made before death showed 1% of eosinophiles. After the necropsy, a second smear which had been taken previously was examined, and among 500 cells, 0.4% of eosinophiles was noted. With the exception of the cases cited above, every case of trichiniasis noted in the literature on the subject has shown a varying degree of eosinophilia.

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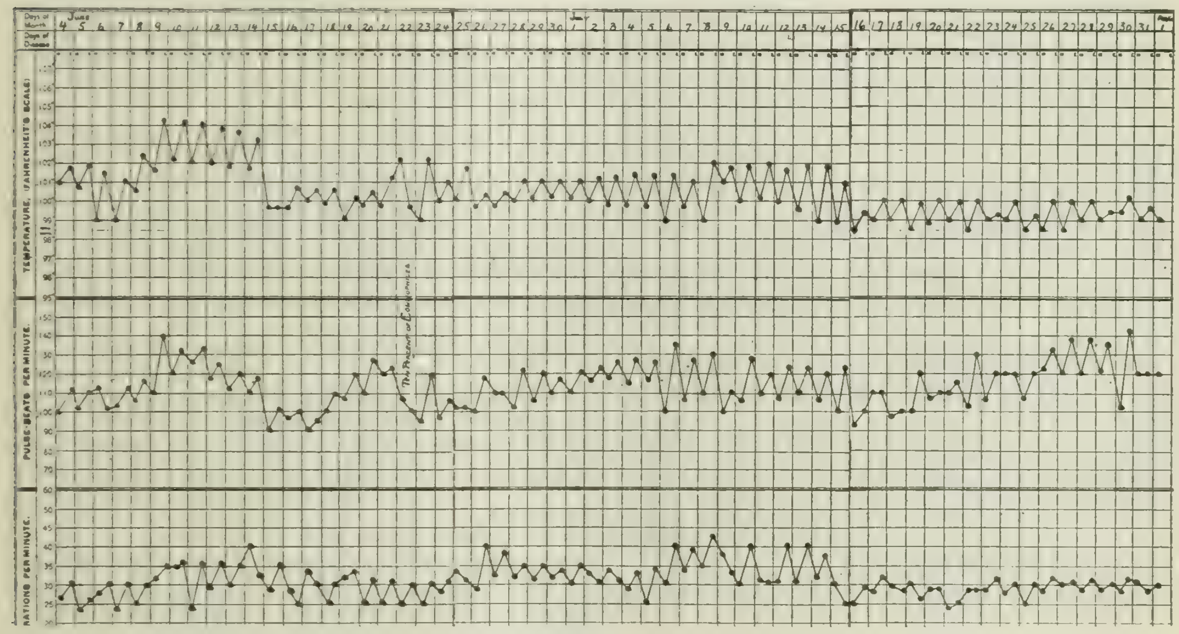
[1] Brown: Johns Hopkins Hosp. Bull., vol. viii, p. 79.
[2] Howard: Phila. Med. Jour., 1899, vol. iv, p. 1085.
[3] Da Costa: Am. Jour. Med. Sc., 1901, vol. cxlix, p. 725.
[4] Drake: Jour. Med. Research, 1902, p. 255.
[5] Gould: Am. Med., Phila., 1903, vol. vi, p. 515.
[6] Bartlett: Yale Med. Rec., January, 1909.

Opie,[7] after experimenting with guinea pigs, states, "There is no constant alteration of these cells (eosinophiles) until the end of the second week after infection, when their relative and absolute number rapidly increases and reaches a maximum at the end of the third week. . . . Infection with a very large number of trichinæ causes a rapid diminution of the eosinophile leucocytes, and is quickly fatal." Whether or not eosinophilia occurs in man under similar conditions as regards time and severity of infection does not as yet seem to have been shown. The following carefully studied case of acute trichiniasis without initial eosinophilia seems to throw some light upon the matter, and in all the literature found upon the subject is without parallel.

Harold K., eleven years of age, white, a school-boy, born in Massachusetts, and living in Cambridge, was admitted to the wards of the Massachusetts General Hospital, Friday, June 4, 1909. He was seen in the Accident Room, where a provisional diagnosis of typhoid fever was made.



At the time of admission the following information was obtained.

Family history. — Father, mother, two brothers and four sisters living and well. One sister at the Cambridge Hospital, who was taken sick about the same time as the patient with similar symptoms. She is thought to have typhoid fever.

Past history. — Has had measles. Habits not inquired into.

Present illness. — For a week has not been feeling well. Has had a headache and pain in the abdomen. Both of these symptoms have disappeared. Appetite has been good, bowels loose. No vomiting, no nose-bleed. Has had some cough without sputum. Has not felt hot, but has felt a little chilly at times. Feels better now than he did a few days ago.

Subsequently it was learned that upon two successive Saturday nights, six and thirteen days before entering the hospital, the patient and the sister, who was also taken sick, raided the ice-chest and partook of raw Frankfurt sausages. The rest of the family ate the sausages cooked.

At entrance, the temperature was 101, the pulse 100, and the respirations 20.

Physical examination. — Well developed and nourished. Skin and mucous membranes of good color. Pupils normal. Tongue moist, slightly coated. Teeth fair. Throat normal. Glands palpable in neck and axillæ. Heart's apex impulse seen and felt in the sixth space, 1 cm. inside the nipple line. No enlargement to the right. Apex and basal sounds normal. No murmurs. Pulses normal. Lungs normal except for slight dullness, without râles, at the right apex. Abdomen rounded, soft and tympanitic. No masses or tenderness. Liver dullness from the sixth rib to the costal margin. Edge not felt. Splenic edge not felt. Genitalia normal. Knee-jerks and plantar reflexes normal. No edema. A few questionable rose-spots on abdomen. None on back.

SUBSEQUENT NOTES.

June 4. *Blood examination.* — Smear normal. No leucocytosis. No eosinophilia. Widal negative. Blood culture in bile for typhoid negative.

Diagnosis. — Typhoid fever (?).

June 6. Boy bright and active for typhoid. Temperature coming down, but up again to-night with slight signs of toxemia.

June 8. Widal again negative.

June 10. Temperature has been higher most of the time since last note, but pulse has risen also. Patient still seems active and alert for typhoid. Skin tuberculin reaction negative. Slight stiffness of the neck and a double Kernig's sign. Lumbar muscles are somewhat rigid. The muscular tenderness, the eyes, which have lately become puffy, and the fever suggest trichiniasis, but there is no eosinophilia. White count, 11,600. No eosinophilia. Blood culture from the arm negative.

June 11. Spinal puncture done this morning. About 10 ccm. of clear fluid under slight tension withdrawn. Fluid shows no meningococci, no lymphocytes or leucocytes. To-night the heart's dullness is in the nipple line 1 cm. beyond the entrance measurement.

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[7] Opie: Am. Jour. Med. Sc., Phila., 1904, n. s., vol. cxxvii, p. 477.

A soft systolic murmur can be heard at the apex. Acute endocarditis now seems a possible diagnosis.

June 14. Blood culture in bile again negative. Widal reactions with the paratyphoids have been negative. Systolic murmur becoming more marked daily. This afternoon a double Kernig's sign was apparently present, but the boy voluntarily kicked upward at a hand held above him. He has been seen by the orthopedic consultant, who thinks that there is no trouble with the spine or hip-joints. Temperature coming down. Sensorium clear. Growing slightly deaf, perhaps from the quinine medication.

Blood examination. — Whites, 8,200. No eosinophilia.

June 15. Cambridge Hospital reports that no diagnosis has yet been made upon the case of the patient's sister, who has been in that hospital since June 2. She shows no definite signs or reactions, except an increasing double Kernig's sign.

June 16. Consultants report the fundi and the middle ears normal. Temperature has dropped subsequent to the quinine medication, but has risen again to-night.

June 17. A bit of muscle was to-day excised from the gastrocnemius. Trichinæ abundantly present in the muscle. No marked eosinophilic infiltration about the parasites.

June 18. Temperature again coming down gradually. Blood examination shows no eosinophilia.

June 20. White count, 10,400. No eosinophilia.

June 22. To-day 10% of eosinophiles was noted in the blood examination. This is the first time in six examinations that eosinophiles have been seen. The Cambridge Hospital reports no eosinophilia in the blood of the patient's sister.

June 30. Leg incision healed. Still considerable muscular tenderness. Eosinophiles now 15%.

July 4. Has developed moderate general edema of legs, back and belly wall. No fluid in the belly. No kidney signs or symptoms. Heart murmur has not increased. Lymphatic stasis seems possible.

July 8. Eosinophilia continues. No decrease in edema. Patient continues fairly bright. Takes nourishment well.

July 12. Edema less. Eosinophilia now but 1%. White count, 10,000. Temperature continues.

July 20. Up in a chair.

July 30. Eosinophilia continues. Patient up and about the ward. Edema gone. No muscular tenderness.

July 31. Discharged relieved.

In the accompanying charts the blood findings in this case are shown graphically.

I am indebted to Dr. F. C. Shattuck for the privilege of reporting this case that occurred on his service at the hospital, to Dr. J. H. Wright for a report on the muscle examination, and to Drs. Newburgh, Lawrence, Hall and Greely, fellow house pupils, for assistance in following the case.

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Reports of Societies.

AMERICAN PUBLIC HEALTH ASSOCIATION.

Thirty-seventh Annual Meeting, held at Richmond, Va., Oct. 19, 20, and 22, 1909.

(Concluded from No. 25, p. 899.)

WHAT MAY BE DONE TO IMPROVE THE HYGIENE OF THE CITY DWELLER.

Dr. S. A. Knopf, of New York City, stated that it was by thorough training of ourselves as physicists and sanitarians, the awakening of statesmen and philanthropists to their duties regarding public health and public welfare, the education of employer and employees, of the men and women of all classes of society, in general and personal education of the child at school and the practical application of the combined knowledge and experience gained in modern society, pedagogy and medicine that we might hope to make of the child of to-day the citizen of to-morrow, the ideal man or woman, strong, healthy and vigorous, noble and even beautiful to behold. The general hygiene, which concerned all classes alike, is that part for which federal, state or municipal health authorities, through their agents or officers, must be held responsible. There should be a more thorough method of cleansing glasses and spoons at soda fountains, and the placing of cuspidors where they could be used. The leather straps in the street cars should be replaced by celluloid straps. The average child should not be sent to school before eight or nine years of age, and every city should have an abundance of outdoor playgrounds. Thousands of acres of roofs should be utilized for this purpose. Botanical excursions should be indulged in and respiratory exercises carried on. There was a great race suicide among the poor of New York City, inasmuch as many of the children either died young or filled the schools in an undeveloped and unfit physical condition.

PROPHYLAXIS IN EXANTHEMATIC TYPHUS.

Dr. Genaro Escalona, of Mexico, stated that in the central tableland of the Mexican republic this disease assumed an endemic form. The mortality reached a very high figure. The physicians of Mexico agreed that Mexican typhus presented certain characteristics that were different from the European type. The disease did not have a sudden development. There was a period of ascension and descension through irregular manifestations. Three important points might be considered: (*a*) The sanitation of the town; (*b*) the disinfection of the premises occupied by the patient; (*c*) the disposal of articles coming in contact with the patient. The patient should be isolated and his bed-clothing disinfected by means of boiling or destroyed by fire. All the toilet utensils should be well disinfected, and the excreta should be carried off through the drain by an abundant amount of water. The skin should be bathed and the hair cut, as well as the mucous membrane disinfected.

SOME CONSIDERATION RELATIVE TO THE TRANSMISSION OF SYPHILIS BY VACCINE.

Dr. Francisco De Bernaldez, of Mexico City, stated that the Jenner or arm to arm vaccination against smallpox had been discredited by almost all nations because of the possibility of syphilitic inoculation. They were now well aware that in order that this might take place it was necessary to have well studied conditions, but much care must be used in collecting the lymph. From observations already made it was stated that the lymph must be taken from persons over three years of age, that being the age at which hereditary syphilis made itself apparent. The vaccine pustules must be of seven days' growth, because the contagious infiltrations had a longer period of incubation. The transmission of syphilis through the agency of humanized vaccine could easily be avoided if we knew the conditions under which such transmission was possible. The Jennerian vaccine was recommended, because it conferred a greater degree of, and a more lasting, immunity.

REPORT ON YELLOW FEVER IN THE MEXICAN REPUBLIC FROM AUG. 25, 1908, TO DATE.

Dr. Eduardo Liceaga, of Mexico City, stated that this was his sixteenth annual report as to the general conditions of Mexico regarding the presence of yellow fever. The paper was accompanied by diagrams, and he referred to the number of isolated cases in different parts of the country, mentioning a current supposition in Cuba to the effect that native children contracted yellow fever in a mild form and infected mosquitoes, which thereby gave rise to isolated cases of yellow fever. The covering with oil of standing water, filling up holes, fumigation of dwelling-houses and surveillance of railway passengers constituted some of the means at present employed in fighting this disease. In the ports of Coatzacoalcos, on the Gulf coast, and Salina Cruz, on the Pacific, it was nearly four years since a single case of yellow fever had been observed.

THE NECESSITY OF ISOLATING SYPHILITIC PROSTITUTES TO PREVENT THE PROPAGATION OF THE DISEASE.

Dr. Joaquin Huici, of Mexico City, stated that the prophylaxis of syphilis was a most serious and interesting question, and had given rise to a division among scientific men. The disease had caused more ravages in the human race than any other transmissible disease, not only rendering the individual useless for work, but endangering those with whom he came in contact. A uniform set of regulations to control prostitutes should be adopted. Governments were under obligations to enact provisions tending to prevent the transmission of disease, and syphilis and gonorrhea, being continually transmitted, should be included in that obligation, as public women are the principal sources of those diseases, and they were the ones to whom such provisions should be applied.

SOME EFFICIENT MEANS OF CHECKING SYPHILITIC AND GONORRHEAL CONTAMINATION.

Dr. Juan Brena, of Zacatecas, Mex., stated that the efforts of an association like this would be fruitless without the co-operation of the social classes. In the effort for the extermination of leprosy and tuberculosis, the people joined spontaneously, but the same was not true with reference to venereal disease. Fortunately, the conviction had grown as to the practical utility resulting from giving universal publicity to clear rules establishing the conditions which rendered immune communications between the healthy and venereal subjects. Pupils in school were taught the evils resulting from the use of tobacco and alcohol, and it would be a meritorious work to instruct the older pupils as to the deadly action of impure pleasures. Literature should be distributed explaining the gravity of these diseases and means of prevention. Municipal doctors and others appointed for the purpose should attend these patients free of charge, and lectures on the subject should be provided for. Inexperience was the cause of great harm to the young, and let us not fear to help them over the thorny road.

THE SCOPE OF PUBLIC HYGIENE IN THE BETTERMENT OF THE HOME LIFE IN TOWNS AND CITIES.

Mr. Robert W. Bruere, of New York City, stated that every one seemed to take it for granted not only that disease was curable, but that it was the business of the medical profession to cure it or prevent it. It had been many years since the medical profession was regarded as a dispenser of medicine, and not as a preventer of disease, more particularly social disease. Last year there were 10,147 deaths from tuberculosis in New York, and about the same number the year before. The death-rate from other diseases had greatly decreased during the past seven years in New York, but this had not been the case with tuberculosis. Last year our association had charge of 4,000 infants, and everything was done that was possible by simple education and the teaching of hygiene to reduce mortality. The great difficulty we encountered was that the mothers were not able to purchase the food that those children required. Ten per cent of them were forced to earn wages away from home, and over 73% of the mothers belonged to families where the income was less than $15.00 a week, some three and four hundred dollars less than the Committee on Standard of Living maintained was necessary for the average family. The medical profession had done much to teach the world that disease could be successfully prevented only when it was attacked by an organized community, but he believed that we could not cut the death-rate below 10% until we attacked the problem of the poverty of the worker.

THE SCOPE OF PUBLIC HEALTH WORK IN THE PREVENTION OF DEPENDENCY.

Mr. Homer Folks, of New York City, stated that the public health work included both the education of the individual and the community, and if the work could be carried on comprehensively, efficiently and adequately, the number of dependents would be greatly reduced. Ill-health was a very prolific cause of poverty, whether due to individual or social causes. The first strong movement in New York for the prevention of tuberculosis was organized by a society concerned with the relief of the poor. Much remained to be done in the prevention of typhoid fever, while diphtheria, whooping-cough and scarlet fever were gradually being brought under control. We shall not make prominent headway against alcoholism until we have the support of public health authorities. The movement for the prevention of venereal diseases, from which the public health authorities could not much longer hold aloof, must ultimately result in a great lessening of the demand upon our hospitals, institutions for children, institutions for the blind and insane asylums.

THE SANITARY REQUIREMENTS OF VENTILATION.

Dr. W. A. Evans, of Chicago, stated that good air was the most important problem before the Health Department. Ten thousand deaths a year from bad meat, bad water or bad milk would produce a world-wide scandal, yet we accepted ten thousand deaths from bad air with complacency.

The following were the basic principles of ventilation: 1. Attention must be concentrated on the habitual zones of a room, meaning a space from four feet above the floor to six and a half feet above. 2. Dead zones and corner eddies must be encouraged as settling-places for bacteria. Such spaces must be cleaned daily with moist methods. 3. The breathing zone must be occupied by an even-up current of air, moving at the rate of at least sixty feet a minute from multiple floor inlets to multiple floor outlets. The temperature of the air reaching the breathing zone should never be higher than 80° F., and was better if it was under 70°. 4. The ventilating air should never enter the room at more than forty degrees below body temperature. 5. Air ducts must be short. 6. No particular attention should be paid to humidity. 7. The volume of air per quiet person per hour should be five hundred feet. 8. Under no circumstances should the windows be fixed, but a gale of wind should be allowed to blow through each twenty-four hours.

THE VENTILATION OF INDUSTRIAL ESTABLISHMENTS.

Dr. C. T. Graham Rogers, of New York City, stated the Department of Labor of the state of New York had done much towards the betterment of public health in that state, besides which the Commissioner of Labor had sent a representative of the department to participate in this meeting. Some four hundred and thirty separate air tests were made during six months of the fiscal year 1908, and a complete tabulation of the results might be found in the eighth annual report of the Commissioner of Labor. Great strides had been made in improving the ventilation of schools and dwellings, but comparatively little progress had been made with the factories. It was to be hoped that some means would be secured to impress the laity with the importance of the subject. Inspections had been made of the New York bakeries, potteries, polishing- and buffing-rooms, tailor shops, cigar factories, clothing shops, jewelry stores, department stores and others. The cry in the past had been for more light, but now it was for more air. We needed both, increasing the resistance of the body to disease, and making the nation stronger physically, mentally and morally.

CO-OPERATIVE EFFORTS IN SUPERVISION AND CONTROL OF MILK SUPPLY.

Dr. F. D. Bell, of New York City, stated that the Board of Health of New York City required a permit from every milk dealer in the city, and if the dealer did not conduct his business in accordance with the requirements, he was brought into court. The average milk dealer knew little about chemistry or bacteriology of milk, and an absolutely sterile milk was almost impossible to obtain because the public was not sufficiently educated to exact this quality of milk. The public was unwilling to pay for such a grade of milk, and the dealer and the average producer were not of a type capable of producing this quality. The average dairy farm was too small to produce milk economically, and the dealers were unable to afford any systematic laboratory supervision or proper building and apparatus which they had come to believe were necessary for the production of milk. Regulations had been promulgated with the health authorities, which, if rigidly enforced, would mean that the towns would be without any milk supply at all. The dealer and health officer should consider themselves friends, and such a feeling could be brought about only by the gradual process of developing mutual confidence.

AN INVESTIGATION OF THE EXTENT OF THE BACTERIAL POLLUTION OF THE ATMOSPHERE BY MOUTH SPRAY.

Mr. C.-E. A. Winslow, of Brookline, Mass., stated that with the progress of exact knowledge sanitariums had been led to place less and less emphasis upon the part played by the atmosphere in the spread of zymotic disease. It had been shown that quietly inspired air was germ free and most of the particles in the mouth spray were rather coarse and settled rapidly. It was not intended to minimize the real danger from mouth spray, as large numbers of bacilli were discharged in coughing by some consumptive patients. Ziesche found in one case twenty thousand tubercle bacilli on a glass plate of fifty square inches in area when exposed for half an hour to sixteen to thirty-two inches in front of the mouth of a tubercular patient. In work-rooms, offices and such places the space between the heads of the workers should be at least three feet. This furnishes no basis for a belief that tuberculosis or any other disease was contracted to an appreciable extent through the inspired air, as the spray quickly settled and the conviction was not generally gaining ground that aërial infection of any sort was a minor factor in the spread of zymotic disease.

THE SEX PROBLEMS IN INDUSTRIAL HYGIENE.

Mrs. Florence Kelley, of New York City, stated that it was more than one hundred years since the working people of England first began, in the name of public health, to get a shorter day for women. In 1847 a bill was passed in England limiting woman's labor to ten hours, but in 1895, in the enlightened state of Illinois, the Supreme Court held that it was unconstitutional to grant to women the same degree of protection. In the majority of our states it was lawful to require women to work in a factory or laundry or store any number of hours that a rush order might require. Our legal procedure was very curious. The Supreme Court was presumed to know only those items of common knowledge specifically laid before it, and it was necessary to collect some one hundred and sixty-two pages of common knowledge. For some time there was a law in New York that girls should not work in the stores after ten o'clock, but it was not enforced because of the claim that there were more important matters to look after. Failure to enforce this law proved in some cases just as fatal as those of strychnia. About twelve years age the miners of Utah secured an eight-hour day because they worked underground, but the bankers of New York, who also worked underground, failed in their efforts.

THE RELATION OF LIFE INSURANCE TO PUBLIC HYGIENE.

Dr. Lee Frankal, of the Metropolitan Life Insurance Company, stated that in no other country in the world would it be necessary to explain the relation of insurance to industrial and social hygiene. In Europe insurance was compulsory and in the larger European cities the great mass of citizens were insured along the line of prevention. Their company distributed four million pamphlets, entitled, "The War on Consumption," calling attention to the fact that there were places where the individual might obtain treatment. They desired to co-operate with any agency in the community towards the prevention of tuberculosis and other preventable diseases. In Chicago they were asked to distribute copies of the ballot which enabled them to secure a municipal sanatorium. They were now making experiments of sending a nurse to every sick policy holder, which had been successful so far. Their policy holders were being visited weekly and, if desired, this association might make use of their organization in the promotion of public health.

SCOPE AND VALUE OF THE DAILY PRESS AND PRESS BUREAUS.

Dr. John A. Kingsbury, of New York City, stated that the scope of publicity in public health was as broad as the scope of publicity in politics, and in order to be effective it must be made as striking as it was possible to make it. It was our problem in public health to arouse slumbering humanity to a full realization of the meaning of the frightful fact that disease germs caused the death of over 70% of the human race and that, in addition to this suffering and poverty, which could hardly be imagined, they must convince the public that this great sacrifice was almost wholly needless. It was only within the last few years that there had been any considerable demand for the knowledge given the world almost a quarter of a century ago by Koch. They must learn from the patent medicine man his secrets of publicity. The trouble thus far was that all the money that had been given in this field of work had been put into the manufactory department, and the advertising end of the business had been almost entirely neglected. They must get their goods into circulation. Moreover, there was a lack of proper co-operation between the producing and developing departments of their work. The American Public Health Association had long been in the business of producing knowledge of inestimable value. If advertisements could create new wants and new desires, the satisfaction of which built up business for others, surely practical publicity could create a demand for such knowledge, and the nature and scope of such work would be limited only by its ability to get results.

THE PHYSIOLOGICAL ASPECTS OF VENTILATION.

Dr. Theodore Hough, of the University of Virginia, stated that there was no argument against the hygienic importance of ventilation. The history of the subject showed that it was not so simple as often supposed. The poisonous material in the air of the room did not come from the lungs, but from the skin, clothing, decaying food particles in the mouth or catarrhal exudates from the air passage. It was important to distinguish between the acute effects which were produced by prolonged exposure. The toxic material, so far as it was a factor, did harm chiefly when it acted over a comparatively long period, and they must seek elsewhere the explanation of the acute effect. While the introduction of fresh air was of great importance in removing the unfavorable physiological factors, it was even of more importance to maintain an even temperature of 68° to 70°, since at that temperature the humidity was almost negligible, while the other ill-effects, especially on the nervous system, seemed to be less noticeable and less important.

AGE PROBLEMS IN INDUSTRIAL HYGIENE.

Dr. Owen R. Lovejoy, of New York City,, stated that in many states they were embarrassed by the attempt to secure the enactment, and after that the administration of laws regulating the ages at which children should be employed, because of the fact that it was impossible to tell when the ages began. The relation of age to industrial employment needed no discussion, yet they constantly met ignorant people who thought that a child was a small man, and that burdens which were proper for the man were proper for the child, if measured according to the child's age. There was a period between ten and sixteen that was so revolutionary in its nature as scarcely to be exceeded by the needs of the infant. It might be safely predicted that the awakening to the dangers of typhoid and other diseases would in another decade make the health department one of the most important, if not the most important, department in any of our city governments. It had been assumed that the best employment for the child was agricultural, but it had been shown recently that on many truck farms conditions prevailed that were seriously detrimental to the child. Health officers should carefully study the relation of the industrial education of the community to the development of the physical life of the child.

The following resolutions were introduced and adopted:

Resolved, That the American Public Health Association appoint a conference committee of five members to meet with the conference committee of the American Medical Association and with the conference committee from the Conference of State and Provincial Boards of Health with a view to considering the matter of co-operative work in public health, with instructions to report at the next meeting of the American Public Health Association.

Resolved, That a committee of seven be authorized to arrange, if feasible, for the maintenance by the Association at the Fifteenth International Congress of Hygiene and Demography, to be held in Washington in 1910, of headquarters, an exhibit, participation in meeting, official recognition and such other matters as the committee deems proper.

The following officers were elected:

Dr. Charles O. Probst, Columbus, Ohio, President. Vice-Presidents, Dr. Charles A. Hodgetts, Toronto, Ont.; Dr. Ernst C. Levy, Richmond, Va.; Frederico Torralbas, Havana, Cuba. Secretary, Dr. William C. Woodward, Washington, D. C. Treasurer, Dr. Frank W. Wright, New Haven, Conn. Executive Committee, Drs. Eugene Buehler, Indianapolis; Marshall L. Price and Cressy L. Wilbur, Washington, D. C.

It was decided to hold the next annual meeting in Milwaukee.

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Book Reviews.

Minor and Operative Surgery, Including Bandaging. By Henry R. Wharton, M.D., Surgeon to the Presbyterian Hospital and the Children's Hospital; Consulting Surgeon to St. Christopher's Hospital, the Bryn Mawr Hospital and Girard College; Fellow of the American Surgical Association. Seventh edition, enlarged and thoroughly revised, with 555 illustrations. Philadelphia and New York: Lea & Febiger. 1909.

Wharton's little book continues to be popular, it would seem, for it has reached a seventh edition. While in some parts admirable, in other parts it presents a curious mixture of subjects, and the title is not altogether properly descriptive of its scope. It is a book on surgical *treatment* pure and simple and should not be called minor surgery. Nevertheless, it contains a great amount of interesting information and may well appeal to the house surgeon and surgical dresser.

Surgical Diseases and Wounds of the Nasal Cavities and Accessory Sinuses. By Harris Peyton Mosher, M.D. Boston.

This monograph constitutes a section in the recently published "American Practice of Surgery," where it occupies about one hundred and seventy pages. It deserves notice as an original and valuable contribution to the literature of the anatomy and surgery of this part of the body. In addition to compiling for the general reader a description of the more common diseases and deformities of the nasal cavities and their treatment, it also contains much that is important, original and instructive for the special worker in this field. It is well written and remarkably well illustrated, the drawings, diagrams and photographs are almost all by the author, and serve most admirably to explain the text. Especial attention might be called to the anatomy and surgery of the accessory sinuses. As the author says, there is scarcely another part of the body where a knowledge of anatomy is so essential to the surgeon as here, and it is often a difficult matter to get access to this knowledge.

In order to overcome this difficulty, this monograph should not be buried in a large collection. There should, and probably will be, a sufficient desire for it to demand its independent appearance.

A Hand Book of Diseases of the Nose and Throat. By Eugene S. Yonge, M.D. (Edin.), Physician to the Manchester Hospital for Consumption and Diseases of the Throat. Edinburgh and London: William Green & Sons. 1909.

This is a book of about four hundred pages, convenient in size, well written and serving its purpose satisfactorily. It is adapted to the beginner rather than to the advanced student, to the general practitioner rather than to the specialist. This is saying nothing against it; a book of this size cannot go much beyond simple description and maintain a proper balance. The description of the subjects with which it deals is generally clear and well condensed. As examples may be mentioned nasal polypus, a disease in the study of which the author has done valuable original work, nasal operations, diseases of the accessory sinuses, retropharyngeal abscess, lupus and syphilis. In the discussion of most diseases and operations the author has discarded the theories and methods which have passed their time, and is in line with recent practice. The principal exception is found in the chapter on the faucial tonsils. Different theories of pathology and recently introduced methods of treatment and operation of this organ may be said now to occupy the center of the stage of American laryngology. Whatever the merits of these questions may be, there is no doubt that for an American audience the discussion on the faucial tonsils, and especially their removal, is inadequate.

The illustrations throughout are good and to the point, and the appearance of the book is attractive.

The Eye, Ear, Nose and Throat. Being Volume III of the Practical Medicine Series for 1909, edited by C. A. Wood, M.D.; A. H. Andrews, M.D., and G. P. Head, M.D. Chicago: The Year Book Publishers. 1909.

This small volume contains one hundred and fifty pages; one half is devoted to the eye, the other half to the ear, nose and throat. It consists of abstracts from selected papers published during the past year, with editorial arrangement and often comment. It resembles in this way many of the reports on Progress which have for several years appeared in this Journal. The selection and arrangement of subjects is good and reference is easy. A compilation of this kind is useful for several reasons. It enables the reader to review briefly much of the literature of the year, and it puts in a convenient and available form a collection of abstracts of important papers. This is its fourth annual appearance.

Frühdiagnose und Tuberkulose-Immunität unter Berucksichtigung der neuesten Forschungen Konjunktival- und Kutan-Reaktion, Opsonine, etc., speziell der Therapie und Prognose der Tuberkulose. By A. Wolff-Eisner, Berlin. With introduction by Senator and Wassermann. Second edition. Würsburg: Curt Kabitzsch. 1909.

In this monograph Wolff-Eisner devotes only a few pages to the ordinary diagnostic signs of tuberculosis excepting percussion, especially the light percussion of Krœnig, and centers his attention upon the various tuberculin reactions — the eye, the skin and the subcutaneous test. These he considers more from the standpoint of his original theory of immunity, which is most elaborately propounded and defended. The consideration of a sputum lymphocytosis, and the determination of the agglutinins, hemolysins and opsonins for diagnostic purposes are new features of the work. He has accumulated a large mass of data on all the recognized forms of tuberculin reactions, with conclusions as to their relative value. Among these he is especially enthusiastic over the ophthalmic reaction, which he considers never positive in sound people. His protective theory he upholds by the tuberculin tests, showing how active, passive and natural immunity are established. Tuberculin is always of therapeutic value, and even that slight amount introduced by the cutaneous test is of certain use. Prognostically there is a corresponding light touch laid upon loss of weight, temperature and sweats, with most attention directed to the reactions of the varying tests. The more ill-defined and delayed the reaction, the poorer the prognosis. Lastly, he considers the disposal of patients, — the early active cases to sanatoria and the inactive forms to day camps.

His category of cases is well worth special attention. He divides them into four groups as follows:

(1) Those suffering from active tuberculosis, who still show tubercle bacilli.

(2) Those with slight, but active tuberculosis, without bacilli in the sputum.

(3) Those with inactive closed tuberculosis, without conjunctival reaction, but with positive cutaneous test.

(4) Those active cases with bad prognosis who show bacilli, but either no conjunctival or cutaneous reaction.

The book is lengthy and highly theoretical, but composed of most ingeniously devised and well-defended hypotheses and an enormous amount of data upon the subject of tuberculin reactions; it seems worthy of the close consideration of all who are especially interested in the theory and the early diagnosis of tuberculosis.

A Practical Treatise on Diseases of the Skin, for the Use of Students and Practitioners. By JAMES NEVINS HYDE, A.M., M.D. Eighth and revised edition, illustrated with 223 engravings and 58 plates in colors and monochrome. Philadelphia and New York: Lea & Febiger. 1909.

The death of Dr. F. H. Montgomery, who had assisted Dr. Hyde in the production of the three preceding editions of this book, has delayed somewhat the appearance of the eighth edition. Now that it has appeared, it shows its author as usual well up to the times, in that he has added two hundred and fifty pages dealing with the newer problems of cutaneous medicine. A separate chapter is given to diseases of warm countries and the tropics. The book will be found fully up to the high standard set by the previous editions and by all the work of its author.

Visceral Surgery in Abstract. By ACHESON STEWART, M.D., Junior Surgeon Mercy Hospital, Pittsburg, Pa. Pittsburg: Medical Abstract Publishing Company.

This is a so-called " vest pocket " manual. The writer informs us in his preface that it " contains only the important points of the subject."

Table of contents: Abdominal surgery; operative gynecology; thoracic surgery; brain surgery; surgery of blood vessels; surgery of breast; proctology; hernia.

The Baby. A Book for Mothers and Nurses. By DANIEL ROLLINS BROWN, A.B., M.D. Boston: Whitcomb & Barrows. 1908.

This little book of two hundred coarsely printed pages, intended primarily for mothers, is a very difficult one to review. It is a strange combination of good sense and nonsense, and of up-to-date and antediluvian ideas. In parts it is written almost too simply, and in others it would be difficult for a mother to understand. We entirely disagree with the author's statements that " a wet nurse should be employed only after all other methods of feeding have failed," and that " cases are not wanting to prove that deformity of the child may be caused by violent emotions in the mother during pregnancy."

Arthrosteopedic Surgery (Extremities and Skeleton). By STEWART L. MCCURDY, A.M., M.D., Author of " Orthopedic Surgery," " Oral Surgery," etc.; Orthopedic Surgeon to Columbia and Presbyterian Hospitals; Professor of Anatomy and Oral Surgery, Pittsburg Dental College (University of Pittsburg). Pittsburg: Medical Abstract Publishing Company.

There is no authority for the barbarous leading word in the title of this book, and if there were authority, the word would not imply surgery of the extremities and skeleton, as the author states.

The contents are as follows: Surgery of bones, joints, tendons, muscles, nerves, skin, spine, congenital deformities, acquired deformities, fractures, dislocations, amputations, excisions, orthopedic surgery; and the little book should be a convenient pocket manual for persons who do not expect to master the subject with which it deals.

The Malarial Fevers, Hemoglobinuric Fever and the Blood Protozoa of Man. By CHARLES F. CRAIG, M.D., Captain Medical Corps, United States Army. Illustrated. New York: William Wood & Co. 1909.

This admirable work, based largely on the author's personal experience in military hospitals in the United States, Cuba and the Philippines, presents in full the status of our knowledge of the malarial fevers, in both their clinical and their laboratory aspects. To this is added a chapter on hemoglobinuric fever and a section on the blood protozoa, including the Leishman-Donovan bodies, trypanosoma, the spirochetes and histoplasma capsulatum. These chapters are intended to be of assistance in questions of obscure differential diagnosis. The illustrations are clear and well chosen, and the descriptions of laboratory procedures simple and concise. Of especial value to students are the chronologic bibliographies appended to every chapter. The volume should be of the greatest use as a textbook and as a book of reference for practitioners who have to deal with malarial and allied infections.

Causes of Disability as Applied under Accident and Health Insurance Policies. By CHARLES HAMILTON HARBAUGH, M.D. Illustrated. Philadelphia: The Overbrook Publishing Company. 1909.

As indicated on its title page, this volume is a compendium " designed for the use of insurance and fraternal examiners, general practitioners and students of medicine, attorneys and corporations, with special chapters on policy forms, advantages of examining for accident insurance companies, necessary qualifications for successful examiners, method of making examinations, adjusting claims and manner of securing appointments as examiners for insurance companies." The text seems complete and medically reliable, and the illustrations are in the main good. The book should prove useful to physicians doing this form of insurance work.

THE BOSTON

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CHANGES IN THE JOURNAL.

With the advent of the New Year the publishing department of the Journal will undergo some changes. The firm of D. C. Heath & Co. will cease to act as publishers, and the present business manager, Mr. W. M. Leonard, will assume the duties and responsibilities of publisher as well as those of business manager. The offices of the publisher and manager and of the editors will be brought together, to the greater convenience, it is believed, of the subscribers, the contributors and the advertisers.

The main features of the Journal will remain the same, and the editorial department will be conducted as heretofore, except that Dr. Robert M. Green, who is in charge of the abstract department, will be more intimately associated with the editorial columns.

There is every reason to suppose that these arrangements will prove to be for the advantage of the Journal and of all those interested in its welfare, whether as collaborators or as readers. The number of both, we are glad to say, is steadily increasing. The medical board of management and the general policy of the Journal as an independent medical organ conducted for the benefit of the profession will remain the same.

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MEETING OF THE AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE.

The next meeting of the American Association for the Advancement of Science, so-called convocation week meetings, will be held in this city beginning Dec. 27 under the presidency of President David Starr Jordan, of Stanford University. This association was fifty years old in 1898, and at that time a meeting was also held in Boston, larger than any hitherto held in this country. The association is cosmopolitan in its interests, liberal in its policy, with a large membership of men and women interested in the most diverse fields of science. The sections as at present organized are: Mathematics and astronomy, physics, chemistry, mechanical science and engineering, geology and geography, zoölogy, botany, anthropology and psychology, social and economic science, physiology and experimental medicine, and education. From this list it will be seen that medicine is one of the new sciences to be accepted by the association, but for many years previous to its separate recognition many topics of vital interest to medical men were discussed in the sections longer established. At present the association has upwards of eight thousand members, which naturally includes practically all of the leading scientists of the country, both those who are professionally engaged in scientific work and many also who are using the results of scientific investigation in various fields. In addition to this large group of men, the association likewise admits to its membership others who are in sympathy with its aims and desirous of promoting them. Within the past year more than two thousand new members have been elected to membership. Meetings have hitherto been held in various cities of the West and South as well as of the East, and it is now proposed to visit the Hawaiian Islands in the summer of 1910, with the usual winter meeting later in Minneapolis and St. Paul.

Perhaps as important as the meetings of the association itself are those of various special scientific societies associated with it. This plan has been developed within the past few years to the manifest advantage of all concerned. Among these associated societies of special interest to the medical profession are the Association of American Anatomists, the American Society of Bacteriologists, the American Microscopical Society, the American Physiological Society, the American Psychological Association and the American Society of Biological Chemists.

The advantage to men working in more or less isolated and highly specialized fields to meet once yearly and compare results can hardly be overestimated. One of the most striking and significant features of recent specialization is the revelation of the close affiliation of many sciences previously regarded as essentially distinct. The relation also of various laboratory branches to the practical affairs of life and hygiene in its broader aspects is a matter of profound importance and one which this great association can do much to foster and develop. It is not to be doubted that the forthcoming meeting in Boston will be largely attended and will result in the promulgation of varied and valuable information on the greatest diversity of scientific subjects. The fact that these meetings are held in the Christmas vacation is naturally of great advantage to teachers, who constitute a significant part of the membership not only of the Association for the Advancement of Science, but also of the affiliated societies. Boston has certain definite advantages as a meeting place for so large a body of men, particularly on account of the adequate amphitheaters and lecture rooms provided by the Harvard Medical School, where some, at least, of the meetings are to be held.

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MEDICAL SCHOOL INSPECTIONS.

It is interesting to trace the development of child hygiene in our public schools. When, a generation ago, it was sought to make school attendance compulsory, there were many who opposed legal enactment to this end as tending to paternalism in government and as being an outrageous infringement upon personal liberty and the rights of parents; to-day, probably no one would be found to oppose compulsory school attendance. A further and, as it proves, equally an epochal step in government activities regarding schools was taken some fifteen years ago in the metropolis, we believe, when physicians were engaged by the department of health to visit schools in the early morning. Their duty then was only to inspect such children as were sent to them by the teachers, in order that cases of infectious disease might be returned to their homes until the danger to other children had passed. Following upon this, physicians, called medical school inspectors, were engaged to devote practically all their time to such work; they were to give, as they do now, their whole forenoon to the physical examination of school children, after having, as before, excluded the cases of infection. Not only are they to detect possible cases of infection or contagion of any sort, but they now also undertake to discover defects of all kinds, quite apart from any consideration of infection. They seek untoward conditions of nutrition, the presence of enlarged cervical glands, chorea, cardiac lesions, pulmonary disease, deformities of the spine, chest or extremities, skin eruptions, defective vision or hearing, obstructed nasal breathing, defective teeth, deformed palate, adenoids, hypertrophied tonsils and defective mentality. A card index is kept, and the parents are notified and are advised to have their own physicians correct or at least treat the children for the lesions noted; and if this cannot be afforded, that the children be sent to hospitals or dispensaries. Next after medical school inspectors, nurses have been engaged to supplement their work. Children sent by the inspector are treated by them; they attend only to those whose parents cannot, by reason either of poverty or ignorance, employ physicians or provide home treatment and nursing; thus are relieved cases of pediculosis, ringworm, favus, molluscum and conjunctivitis.

The system thus outlined has become amazingly widespread. In Boston a corps of medical school inspectors was appointed in 1906; a year after a law was enacted for the enlistment of trained nurses, who were to look after pupils — not only in school, but to learn also if the homes of these children were healthful. Chicago's Board of Education has a special division of child study for examining defects; both Chicago and Philadelphia have a private pathological clinic for children, "which takes up nervous difficulties and backwardness that may be due to either hereditary troubles or deep-seated defects." In Louisiana the board of health sends lecturers, who discuss school hygiene, tuberculosis, etc., before summer schools and in state institutions. In Poughkeepsie the spread of hygienic knowledge is helped by lectures illustrated by lantern slides.

The Bureau of Municipal Research in New York City has gathered an enormous collection of facts (which are at the disposal of all interested people) concerning the medical inspection of school children, not only in the United States, but also in our island possessions. Only space forbids the setting forth of most interesting data from Hawaii and the Philippines, for example. One may in these reports learn how given cities and towns stand regarding medical inspection for transmissible diseases; such lesions as we have enumerated, either mental or physical; the care of children inclined to tuberculosis; what co-operation there has been with dispensaries, hospitals, relief societies, the press, etc.; house-to-house instruction in prophylaxis; "follow-up" work by nurses, and distribution of cards of instruction. It would seem to be agreed throughout the country that whilst observers consider the ideal methods of disease prevention and child hygiene to be by the family physician through the parents, failing this means the city must provide through the school or health board.

In 56 cities nurses take children to dispensaries or instruct parents at the schoolhouse; in 43, nurses are sent from house to house to instruct parents or to persuade them to have the necessary attention given; 98 cities send out cards of instruction concerning tuberculosis, dental hygiene and diet; in 147 cities co-operation has been arranged with dispensaries, hospitals and relief societies whereby children receive shoes, clothing and medical aid; in some communities out-of-door schools, on roof, hospital or ferry boat, are provided. In 117 cities an effort is being made to inventory dental need of the school; in 170 cities adenoids, hypertrophied tonsils and breathing defects are acknowledged a more serious menace to the child welfare and school progress than the more easily detected contagious diseases.

In Massachusetts, Minnesota, Iowa, New York, Texas and Ohio, it is stated, country children are found to be even worse off than city children, because the former have the defects and the communicable diseases without the examinations, the dispensaries and the clinics and relief agencies so available to city children. Open mouths and closed minds, finds Dr. Wm. H. Allen, clog the "little red schoolhouse." There "headaches do not suggest eye strain; there deafness and running ears are frankly attributed to scarlet fever which everybody must have with all the other catching diseases, the earlier the better; there colds begin in December and run until March, to the serious injury of attendance and promotion records; there bone tuberculosis is called 'knee trouble' or 'spine trouble in the family'; there boys count the bottles of cod liver oil they take to cure adenoids that could be removed in two minutes and fear 'I won't be strong in spite of all the patent medicine I have taken.'"

It is to be emphasized that in many communities the work here dwelt upon is not done entirely by the constituted authorities; many non-governmental associations volunteer their co-operation.

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MEDICAL NOTES.

A Bust of Pasteur for the Rockefeller Institute for Medical Research. — The Pasteur Institute of Paris has presented to the Rockefeller Institute for Medical Research of New York a replica of the bronze bust of Louis Pasteur by Paul Dubois, in recognition of assistance rendered during the recent epidemic of cerebrospinal meningitis which prevailed in France.

The Annals of Surgery Completes Its Fiftieth Volume. — The December number of the *Annals of Surgery* (Philadelphia) completes the fiftieth volume of that journal. The cosmopolitan character of the journal is seen from the list of contributors.

Twenty-two articles form a number of more than four hundred pages, and the illustrations, some of which are colored, are profuse, making a volume which merits the term of a jubilee number.

BOSTON AND NEW ENGLAND.

Acute Infectious Diseases in Boston. — For the week ending at noon, Dec. 21, 1909, there were reported to the Board of Health of Boston the following cases of acute infectious diseases: Diphtheria 122, scarlatina 46, typhoid fever 10, measles 80, smallpox 0, tuberculosis 73.

The death-rate of the reported deaths for the week ending Dec. 21, 1909, was 19.25.

Boston Mortality Statistics. — The total number of deaths reported to the Board of Health for the week ending Saturday, noon, Dec. 18, 1909, was 215, against 247 the corresponding week of last year, showing a decrease of 32 deaths and making the death-rate for the week 18.00. Of this number 126 were males and 89 were females; 209 were white and 6 colored; 135 were born in the United States, 73 in foreign countries and 7 unknown; 54 were of American parentage, 127 of foreign parentage and 34 unknown. The number of cases and deaths from infectious diseases reported this week is as follows: Diphtheria, 65 cases and 4 deaths; scarlatina, 38 cases and 0 deaths; typhoid fever, 6 cases and 3 deaths; measles, 90 cases and 1 death; tuberculosis, 79 cases and 19 deaths; smallpox, 0 cases and 0 deaths. The deaths from pneumonia were 23, whooping cough 2, heart disease 27, bronchitis 4 and marasmus 0. There were 16 deaths from violent causes. The number of children who died under one year was 45; the number under five years 63. The number of persons who died over sixty years of age was 55. The deaths in public institutions were 81. Cerebrospinal meningitis, 1 death.

Of the above infectious diseases the following were non-residents: Consumption: 7 cases and 4 deaths. Diphtheria: 1 case. Scarlet fever: 1 case.

Deducting deaths of non-residents, the total is 179 and the death-rate is then 14.98.

Gift to the Lowell, Mass., General Hospital. — Frederick F. Ayer, formerly a resident of Lowell, and now of New York, has recently given

$50,000 for the maintenance of the Lowell General Hospital. Including this gift, Mr. Ayer has in all given upwards of $200,000 for the benefit of this hospital.

A Psychotherapeutic Institute. — Mrs. Martha S. Jones, of Boston, Mass., has given her extensive estate and parks near Portsmouth, N. H., as a gift to Dr. Boris Sidis, of Brookline, Mass., for the purpose of establishing a private hospital to be named "The Maplewood Farms, Sidis Psychotherapeutic Institute," in which modern methods of psychopathology and psychotherapeutics will be employed in the treatment of functional nervous diseases. The hospital will open shortly.

Death of Dr. Henry Orne Stone. — In the death of Dr. Henry Orne Stone, in Framingham, Mass., at the age of ninety-one, Harvard College loses one of its three oldest alumni, and the Harvard Medical School probably its senior alumnus. Dr. Stone graduated in the class of 1838 at Harvard College, and three years later received the degree of doctor of medicine at the Medical School. He had not practiced of late years, but earlier in life not only practiced medicine, but also took an active part in the affairs of the town.

NEW YORK.

Memorial to Dr. Andrew J. McCosh. — Since the death of Dr. Andrew J. McCosh, a year ago, more than $116,000 has been contributed for the purpose of erecting, in connection with the new Presbyterian Hospital, a building for surgical purposes as a memorial to him.

Stovaine Anesthesia. — Prof. Thomas Jonnesco, of Bucarest, arrived in New York on Nov. 30, and on Dec. 7 and 8 gave demonstrations of his method of producing spinal anesthesia by means of stovaine and strychnine at the Hospital for Ruptured and Crippled and the New York Post-Graduate Hospital respectively.

Papers on Pellagra. — At the New York Academy of Medicine, on Dec. 16, papers on pellagra were read by Drs. J. W. Babcock and J. J. Watson, of Columbia, S. C., two of the leading authorities on the disease in this country. Later, a pellagra patient, a Georgia mountaineer fifty-one years old, was presented by Dr. Howard Fox, who now has the man under treatment at the New York Skin and Cancer Hospital. The patient has wasted to almost 100 lb. in weight and shows the characteristic features of the disease in a marked manner.

Early, the Alleged Leper.— At the meeting of the Society of Medical Jurisprudence, held on Dec. 13, Dr. L. Duncan Bulkley read a paper on the case of John R. Early, the alleged leper, and Early himself was present for the examination of the members. Dr. Bulkley gave a full history of the case, including the tests which had been made, showing a complete absence of leprosy bacilli in the sections of skin examined, and declared that Early should get reparation and that the Washington health authorities should be held culpable because they knew he was not a leper; because efforts were made to secure from him a promise, before he was released, that he would not sue to recover damages for the hardships to which he had had to submit, and because he was finally shipped to New York in a sealed freight car, for which he was compelled to pay $84 out of his scant pension as a Spanish War veteran. In conclusion, Dr. Bulkley pointed out that even now he was not a free man, since the Washington authorities would arrest him if he returned there, and on Dr. Bulkley's suggestion a committee was appointed to make a report on the case at the next meeting. This committee consists of Judge Alfred E. Ommen, president of the society; Drs. E. W. Dittrich, Carl Beck and R. W. Wilcox, and Messrs. Theodore Sutro and A. E. Kneeland.

School of Sanitary Science at Cornell University. — The second course of lectures on sanitary science and public hygiene, offered to the students of Cornell through the co-operation of the university authorities and the State Department of Health, has thus far been markedly successful, the attendance being even larger than last year and taxing the available accommodations. The course is open to the entire university, and university credit of two hours for each lecture, as well as a special certificate from the Health Department, will be given to those students who register for the course and comply with the requirements. The lecturers are all men of eminence, and among the topics and those discussing them are the following: "Prolongation of Life," and other topics, by Prof. W. F. Wilcox; "Social Problems in their Relation to Public Health," by Prof. J. W. Jenks; "Philanthropy and Public Health," by Prof. F. A. Felter; "The Influence of the Mind upon Private and Public Health," by Prof. E. B. Tichener; "Micro-organisms and their Relation to Disease"; "Diseases of Animals Transmissable to Man," by Dean V. A. Moore; "Transmission and Prevention of Some Infectious Diseases"; "Immunity," by Dr. V. E. Sorapure; "Cancer and Its Relation to Public Health," by Dr. James Ewing; "The Occupation Diseases of Modern Life," by Dr. W. Gilman Thompson; Tuberculosis, Its Nature and Causes, Its Prevention and Cure," by Dr. J. B. Huber; "Food Adulteration and Its Effects," by Dr. H. W. Wiley; "School Hygiene," by Dr. L. H. Gulick; "Principles of Water Purification," by G. C. Whipple, sanitary engineer.

Current Literature.

The Journal of the American Medical Association.

Dec. 11, 1909.

1. Brumby, W. M. *Popular Education as a Stimulus in Public Health Work.*
2. *Potter, N. B., and Harrington, J. T. *Medical Supervision of Athletics among Boys at Boarding School.*
3. *Stockton, C. G. *Uses and Limitations of Examinations of the Stomach Contents.*
4. Crane, A. W. *X-Ray Evidence in Gastric Ulcer.*
5. Farr, C. B. *Determination of Trypsin in the Stomach Contents after Oil-Test Meals.*
6. *Friedrich, P. L. *Thoracic Surgery.*
7. Janeway, H. H., and Green, N. W. *Experimental Intrathoracic Esophageal Surgery.*
8. *Meyer, W. *Pneumectomy with Aid of Differential Pressure. An Experimental Study of the New Type of Apparatus Used.*
9. Patrick, H. T. *Seventy-five Cases of Trifacial Neuralgia Treated by Deep Injections of Alcohol.*
10. Phelps, R. M. *Certain Hitherto Unpublished Data Concerning the Insane.*
11. Rucker, W. C. *Plague Eradication Measures, Squirrel Campaign in Contra Costa County, California.*
12. Wilson, R. N. *Four Generations of American Gout.*

2. Potter and Harrington show by the examination of the cardiac dullness sounds, blood pressure and general condition of thirty-eight school boys after a mile run how often cardiac dilatation, lowered blood pressure, cyanosis, exhaustion and albuminuria are present, and how urgent is the need of medical supervision of sports in school boys.

3. Stockton's article on the examination of the stomach contents is composed of about forty-five short paragraphs describing, briefly, the methods, findings and means of diagnosis.

4. Crane writes a most thorough and scientific article on the x-ray in diagnosing gastric cancer. Either air or bismuth is used. Diagnosis is largely made by studying the stomach outline. This is secured by rotating the patient in various directions after the administration of the bismuth in a thin watery solution in order that it may be spread over the whole stomach mucosa.

6. Friedrich's most excellent article on thoracic surgery should be read. In it he speaks of the value of the differential pressure apparati, the dangers of pneumothorax and the desirability of removing it before the thorax is closed. He believes that infection represents the most serious danger of intrathoracic operations, and whatever serves to prevent its occurrence becomes a part of the indispensable outfit of the operator. The article is well illustrated by drawings of various special instruments. Friedrich believes that pleural empyema in its recent stage should be treated by aspiration with a thick trochar, or very small thoracocentesis incision, followed by immediate drainage according to Thiersch, which he describes. This is the procedure to be used rather than primary resection of a rib. Many empyemas (practically all the metapneumonic cases) are completely healed by means of this apparatus without further surgical assistance. Brilliant results have been obtained by improving the mobility of a rigid thorax in emphysema by dividing widely several ribs in their cartilaginous areas. The cases should be carefully selected. Exposure of the root of the large vessels as well as entrance into the anterior and posterior mediastinum are enormously facilitated by transverse sternothoracotomy between the second and third ribs.

8. Meyer describes accurately his American-built chamber for positive or negative interchangeable differential pressure. [E. H. R.]

The Archives of Internal Medicine.

November, 1909.

1. *Billings, F. *Chronic Infectious Endocarditis.*
2. *Peabody, F. W. *A Note on the Venous Pulse in Paroxysmal Tachycardia.*
3. *Marine, D., and Lenhart, C. H. *Relation of Iodin to the Structure of Human Thyroids, etc.*
4. *Swift, H. F. *The Use of Active and Inactive Serum in the Complement Deviation Test for Syphilis.*
5. Sellards, A. W. *Ulceration of the Stomach and Necrosis of Salivary Glands Resulting from the Experimental Injection of Bile Salts.*
6. Frothingham, C., Jr. *The Effect of Hexamethylenamin on Guinea Pigs.*

1. Billings reports 14 cases of chronic infectious endocarditis. In his cases the blood cultures showed the infecting organism to be the pneumococcus in 11 and the streptococcus in 3. He believes that many of the cases classed as streptococcemia may be in reality due to the pneumococcus, as, unless these organisms are carefully studied it is almost impossible to differentiate them. He describes the cultural characteristics of the organisms isolated. From his observations of the opsonic index and the phagocytosis he believes that this organism apparently immunizes itself against the antibodies of the heart. He found that inoculation of the patient with large doses of their own dead pneumococci was always harmful and that even in small doses this form of treatment for infectious endocarditis due to the penumococcus is not only devoid of benefit to the patient, but is probably harmful.

2. Peabody reports two cases of paroxysmal tachycardia, with tracings, showing the ventricular type of wave in the venous pulse. He discusses at length the theories of Mackenzie and Hirschfelder and others to account for this phenomenon.

3. The article by Marine and Lenhart takes up the study of the human thyroid in the light of their previous work on animal thyroids. They point out the similarity between the human and animal gland. They consider the gland under three great divisions, the normal, the actively hyperplastic, and the colloid thyroid. They describe at length these three divisions in regard to their differences macroscopically and microscopically, considering the conditions of atrophy, regeneration, degeneration, inflammatory tumors and the conditions seen in exophthalmic goiter, cretinism and myxedema. They show that the iodin content of the gland bears a perfectly definite relation to the histologic changes. They find that active thyroid hyperplasia is present in all developing goiters, in all animals, and that hyperplasia develops in both normal and colloid glands. Of the hyperplastic type the colloid gland is the nearest approach to the normal. The degenerations, hemorrhages and cysts are secondary and complicating changes of the fundamental types. They show that iodin is necessary for normal thyroid activity and that the iodin content varies inversely with the degree of hyperplasia. The percentage of iodin is variable, but there is quite a constant minimum percentage necessary for the maintenance of normal or colloid structure. Iodin is taken up rapidly by the thyroid, the rapidity depending on the degree of hyperplasia. They also find that mild degrees of thyroid hyperplasia accompany or follow many of the chronic nutritional disturbances without detectable clinical symptoms referable to the thyroid; that exophthalmic goiter is constantly accompanied, during the progressive stage, by thyroid hyperplasia, and that iodin percentage

varies inversely with the degree of hyperplasia. In endemic cretinism the fibrous overgrowth with atrophy of the gland cells is consequent on active hyperplasia and is associated with a very low iodin content. In myxedema the anatomical and chemical (iodin) changes are similar to those of cretinism.

4. The author takes up the study of the Noguchi reaction for the serum diagnosis of syphilis in connection with the objections raised against the use of "active serum" in the reaction. He finds that the use of "active serum" gives more delicate results in syphilis but is not to be recommended, because it gives too high a percentage of reaction with non-syphilitic sera. When, however, "inactive serum" is used, the non-syphilitic cases give a negative reaction. The use of "inactive serum" instead of active renders the Noguchi method more accurate and nearly as convenient as originally described, and still easier than the Wassermann method. [W. B. R.]

Deutsche Medizinische Wochenschrift. No. 46.
Nov. 18, 1909.

1. Gruber, M. *Inheritance, Natural Selection and Hygiene.*
2. *Ribbert, H. *Nephritis and Inflammation of Parenchymatous Organs.*
3. Hildebrand. *Surgery of the Cerebellum.*
4. Henkel, M. *Glycosuria in Women, with Experimental Investigation upon Its Etiology.*
5. Baisch, K. *Pelvic Osteotomy and Extraperitoneal Cesarean Section.*
6. Krönig, B. *The Value of Compression of the Aorta by Momburg's Method in Post-Partum Hemorrhage.*
7. Heine. *Diagnosis and Treatment of Glaucoma.*
8. Weygandt, W. *Imbecility from a Clinical and Forensic Standpoint.*
9. Treupel, G. *The Use of Drugs in Combination.*
10. Hoerder, C. *Simplification of the Technic in Opsonotherapy.*
11. Schmidt, P. *Diagnostic Value of Blood Examination in Lead Poisoning.*
12. Aufrect. *New and Rapid Method of Quantitating Albumen in Urine.*

2. Ribbert calls for a correction of the nomenclature in regard to inflammation of the parenchymatous organs. He points out that the suffix "-itis" should be applied only to inflammatory conditions. Inflammatory conditions are manifested histologically by the reaction of connective tissue to increased blood supply and serum and cell exudation. The real lesion to the parenchymal cells is a degenerative one. It may be partial or complete. This death of the cell causes the liberation of toxins which call forth inflammatory reaction on the part of the connective tissue. The only harm that results from inflammation is due to the over-development of connective tissue which increases the destruction of the parenchymal cells by pressure.

The symptoms from a so-called myocarditis, nephritis, etc., are due entirely to the degenerative phenomena and not to the inflammatory reaction. [C. F., Jr.]

Münchener Medizinische Wochenschrift. No. 47.
Nov. 23, 1909.

1. *Holzknecht, G. *The Normal Peristalsis of the Colon.*
2. Treupel, G. *Cardiac Neuroses.*
3. *Ebstein, W. *Neuralgic Intestinal Pain.*
4. *John, M. *Further Observations on the Intravenous Injection of Suprarenin in Severe Circulatory Collapse.*
5. Veiel, T. *Treatment of Eczema.*
6. Meyer, W. *Improvements in Pressure-Regulating Apparatus for Intrathoracic Operations.*
7. v. Baeyer, H. *Foreign Bodies in the Organism. Pieces of Zinc and Copper in the Tissues.*
8. Lippmann, H. *The Relation between Idiocy and Syphilis.*
9. Heller, A. *Value of Chloral for Pathological-Anatomical Purposes and for Local Treatment.*
10. Noesske, H. *Prophylaxis and Treatment of Gangrene of the Finger in Severe Cases of Raynaud's Disease.*
11. Grashey, R. *How Far may Wrong Diagnoses and Unfortunate Results in Fractures and Luxations be Avoided in Practice?*
12. Trumpp. *Treatment of Rhinitis Acuta.*
13. v. Herff, O. *Value of Modern Prophylaxis against Conjunctival Gonorrhea of the Newborn.* (Concluded.)
14. Guleke, N. *Surgical Impressions of Travel in North America.* (Concluded.)

1. Holzknecht describes the movements of feces in the colon as seen by the x-ray. In a great number of cases observed from five to fifteen minutes, the sacculations were visible, but no motion of the bowel was detected. In two cases a sudden peristaltic wave produced a quick onward movement of a long column of feces, and then almost immediately subsided. This seems to be the normal action of the colon, the activity lasting for only a few seconds at a time and being followed by a period of quiescence.

3. A variety of pains in the body, limbs and joints are described which yielded to treatment for constipation. Many painful affections are attributed ultimately to this cause.

4. This article is on the slow intravenous injection of suprarenin in 30 cases of severe circulatory collapse. In all but 2 of these cases other remedies had been tried in vain. The recovery of 8 of the patients is attributed by the writer directly to the use of suprarenin. His conclusions are as follows: In severe cases of cardiac or of vascular collapse, in which other means have failed, the intravenous use of suprarenin is indicated; that 0.2 to 1.0 ccm. of the original solution may be given at a dose; there is no advantage in diluting the dose 1 to 10 before injection; after the injection other stimulants are unnecessary; the danger of death from adrenalin need be considered only in bad cases of cardiac insufficiency combined with contracted kidney. [G. C. S.]

Berliner Klinische Wochenschrift. No. 47.
Nov. 22, 1909.

1. *Veit, J. *The Treatment of Placenta Previa.*
2. Wegelin, C. *A Case of Dissecting Aneurism in Puerperal Eclampsia.*
3. Hochheimer, A. *Two Cases of Multiple Abscesses of the Liver with Cholangitis. Recovery after Operation.*
4. Beyer, W. *Two Cases of Pneumonia Complicated with Pemphigus.*
5. *Frankfurther, W., and du Bois-Reymond, R. *The Influence of Athletics on Vital Capacity.*
6. Kaminer, S. *The Diaphoretic Action of Diaspirin.*

1. Veit dismisses Cæsarean section as an operation to be avoided, the danger to the mother being too great. The chief causes of death are hemorrhage and infection. In his early practice he used the method of Braxton Hicks with very good results on the maternal side. More recently he has employed in cases of partial and incomplete placenta previa manual delivery with rupture of the membranes. With this method he has had equally favorable maternal results and slightly better results for the child. He discusses the method of artificial dilatation by means of a ball syringe. Fetal mortality is due to the child's inhaling amniotic fluid during delivery and to loosening of the placenta, the latter being the more frequent cause of death. He reports 19 cases with no maternal deaths, and 68% living babies. The operation of choice was version and rapid extraction. His conclusions are as follows: Skillful technic is demanded, avoidance of loosening the placenta, preparation for suturing the cervix, are of prime importance. The Braxton Hicks delivery is indicated where the fetus is dead or much premature. In cases of lateral and marginal placenta previa, dilate artificially for about eight hours, then do a version and extraction. The technic in complete placenta previa should be *accouchement forcé* with preparation for suturing the uterus, the use of a colpeurynter for a few hours or Cæsarean section.

5. From rather insufficient statistics the authors conclude that the vital capacity of the lung is increased about 8% over the average in people participating in the ordinary field sports. [H. P. G.]

Deutsche Zeitschrift für Chirurgie. Bd. 102.
Heft. 1–3. October, 1909.

1. *Exner, A. *Cerebral Herniæ.*
2. Lenk, R. *The Method of Nephropexy.*

3. Foramitti, K. *The Technic of Total Rhinoplasty.*
4. Lorenz, H. *The Nature of So-Called Retrograde Incarceration of the Intestine.*
5. Urbach, J. *Pulmonary Herniæ.*
6. Jäger, K. *Contributions to Prehistoric Surgery.*
7. *Schulz, O. E. *Divided Scaphoid in the Hand.*
8. Fibich, R. *The Significance of So-Called Concave Torsion in the Treatment of Scolioses.*
9. Meixner, K. *External Feminine Pseudohermaphroditism.*
10. Schwarz, F. A. *Pathologic Cubitus Valgus.*
11. *Boise, J., and Heyrovský, H. *Experimental Investigations on the Increased Secretion of the Rabbit's Intestine in Intestinal Obstruction.*
12. Piperata, G. *The Statistics of Sarcoma of the Extremities.*
13. Lenk, R. *Massive Hemorrhages into the Renal Capsule.*
14. Richter, M. *Two Cases of Leiomyosarcoma of the Gastro-Intestinal Tract.*
15. Paschkis, R. *The Treatment of the Ureter in Nephrectomy for Tuberculosis.*
16. *Milner, R. *So-Called Primary Carcinomata of the Appendix.*
17. Gelpke, L. *Incarcerated Left Obturator Hernia, Laparotomy, Recovery.*
18. Gelpke, L. *A Case of Ileus as Result of Double Intestinal Obstruction, a Strangulated Hernia and a Stricture at a Meckel's Diverticulum.*
19. Sellheim, H. *Spontaneous Delivery as a Cause of Shoulder Deformities.*
20. Kreuter and Pöhlmann, R. *The Significance of the Wassermann Reaction in Surgical Diagnosis, with Special Reference to Stern's Modification.*
21. Kinoshita, S. *Adamantinoma, Especially Its Operative Treatment.*

1. From an embryologic study of the genesis of congenital cerebral hernia, Exner concludes that anencephalus, exencephalus and the cerebral herniæ are all to be referred to developmental disturbances of the brain-stalk, recurring in the first weeks of embryonic life, and caused by ventricular hydrops.

7. To Pfitzner and Dwight belong the credit of recognizing the clinical importance of congenitally divided scaphoid in the hand. Schulz reports an admirably illustrative case in a young physician in whom x-ray examination, on account of pain in the wrists on certain movements, showed the radial and ulnar elements of the scaphoid entirely separate in both hands. There had been no trauma. The author considers the condition a rare but definite cause of carpal disability.

11. From a series of animal experiments the writers find that after low ligation of the large intestine there is in the colon an increased mucous secretion which is itself a poor culture medium for intestinal bacteria. Only after the appearance in the bowel lumen of a transudate, due to the vascular injury from stagnation, does bacterial growth become rapid and convert the scybalous feces into a pasty mass. The administration of atropin does not notably influence either process. These findings are thought to be of value in explaining the nature and sequence of the phenomena of ileus.

16. Under the caption of a "contribution to the errors of microscopic diagnosis," Milner states his belief that all hitherto reported cases of primary carcinoma of the appendix are unreliable, and are either secondary or not carcinoma. His contention does not seem adequately grounded. [R. M. G.]

Archiv für Klinische Chirurgie. Bd. 90.

1. *Busch, M. *The Surgical Treatment of Benign Gastric Affections, Especially of Gastric Ulcer and Its Sequelæ, with Particular Reference to Late Results.*
2. Beirnath, P. *Subcutaneous Rupture of the Liver, with Subsequent Expulsion of Relatively Large Hepatic Sequestra, with Treatment of the Condition.*
3. *Krause, F. *The Employment of Aspiration in Operative Surgery.*
4. Heinecke, H. *The Value of Intravenous Adrenalin Saline Infusions in the Treatment of Peritonitis.*
5. Czerny, V. *The Use of Fulguration and of the Kreuznach Radial Preparations in the Treatment of Cancers.*
6. Goebel, C. *Partial Necrosis of the Colon after Gastric Resection.*
7. *Pagenstecher, E. *Interileo-Abdominal Exarticulation with Momburg's Anemia.*
8. Bockenheimer. *The Treatment of Surgical Diseases in Asia.*
9. Heile. *The Pathogenesis of Appendicitis.*
10. Parlavecchio, G. *The Immunizing Action of Nucleinic Acid.*
11. Preised, G. *A Typical Periosteal Callus Formation on the Internal Femoral Condyle after Knee Distortions.*
12. *Lexer, E. *Joint Transplantation.*
13. Bergemann, W. *How Long after Death or after Amputation does Bone Remain Transplantable in Respect to Its Sterility?*
14. *Sudeck, P. *The Status of the Ether-Jag among the Methods of Anesthesia.*
15. *Abel. *Experiments on the Fulguration of Carcinomata according to Keating-Hart.*
16. *Kreuter. *The Serology of Tetanus.*
17. *Rehn. *Experimental Researches on Spinal Anesthesia.*
18. Bier, A. *The Present Status of Lumbar and Local Anesthesia.*
19. *Heller, E. *A Duodeno-jejunal Hernia of Treitz Cured by Operation.*
20. Hoffmann, A. *Bone Suture and Bone Pegging.*
21. Ritter, C. *Experimental Investigations on the Sensitiveness of the Peritoneal Cavity.*
22. Frangenheim, P. *Experimental and Clinical Investigations on Arthrodesis by Bone Pegging.*
23. Lärven, A. *The Histology of Freely Transplanted Periosteum-Covered Bone in Man.*
24. Haim, E. *Chronic Inflammatory Tumors after Abdominal Operations.*
25. Volbrecht. *The Injection of Gunshot Injuries and Their Treatment with Balsam of Peru.*
26. *Jander. *Experimental Investigations on Bactericidal Properties of Balsam of Peru.*
27. Schloffer, H. *Rupture and Dislocation of the Extensor Aponeurosis of One Finger.*
28. Voelcker. *The Diagnosis of Dilated Renal Pelvis by Gauging and Pyelography.*
29. *Sticker, A. *Experimental Production of Carcinoma in the Dog.*
30. Boese, J., and Heyrovsky, H. *Experimental Investigations of Normal and Pathologic Intestinal Movement.*
31. Moszkowicz, L. *The Technic of the Abdomino-Perineal Operation for Carcinoma of the Pelvic Portion of the Rectum and of the Pelvic Colon.*
32. Noetzel, W. *The Operative Treatment of Diffuse Suppurative Peritonitis.*
33. *v. Bramann. *The Value of Puncture of the Corpus Callosum in Brain Surgery.*
34. *Colmers. *The Injuries Caused by the Earthquake in Messina on Dec. 28, 1908.*
35. *Schmieden, V. *A New Method for the Operation of Male Hypospadias.*
36. Eichmeyer, W. *Scalping Injuries.*
37. Hanel. *Alloplastic Repair of the Dura.*
38. Nieuwenhuyse, P. *Experimental Investigations of the Action of High-Frequency Currents (Fulguration).*
39. Nowakowski, K. *Contribution to Tracheoplasty.*
40. Lücke. *Contribution to the Local Operative Treatment of Congenital Sarcoma without Roentgenization.*
41. *Hoffmann, A. *Phenomena Following the Artificial Removal, on the One Hand, of the Sero-Muscular Coat; on the Other, of the Mucosa of the Gastro-Intestinal Tract of the Dog.*
42. Gangele. *The Treatment of Spondylitic Paralyses.*
43. Krukenberg, H. *New Problems in the Treatment of Static Deformities.*
44. Zinner, A. *Cancer of the Rectum.*
45. *Payr, E. *Experiences in Excision and Resection of Gastric Ulcers.*
46. *Kusnetzow, M. M. *The Question of Trephining in Traumatic Injuries of the Cranial Vault.*
47. Grekow, I. I. *The Question of Disinfection of the Hands and the Operative Field with Alcohol and Tincture of Iodine.*

48. Schultze, E. *Two Cases of Stasis Hemorrhage after Crush of the Trunk.*

1. From a careful clinical and statistical study, based on the report of 45 selected cases from Körte's clinic at Berlin, Busch reaches the following conclusions relative to the treatment of benign gastric affections: (*a*) For ulcerative stenosis, as well as for ulcer persisting in spite of medical treatment continuously carried out for a considerable time, the procedure of choice is posterior retrocolic gastro-enterostomy with circular, double-row suture. In a particularly lax dilated stomach an entero-anastomosis by Braun's method should be done prophylactically. (*b*) Especially in open ulcer there is important need of after-treatment for several weeks with alkaline agents and irrigations, as well as of careful choice of diet. (*c*) The question of resection arises as soon as there exists a suspicion of malignant property of a gastric tumor; further, in severe callous ulcers, especially when they are extending into neighboring organs (liver and pancreas). Resection should always be circular, as suggested by Riedel. Much depends on the individual relations in the particular case whether one carry out the more radical but more efficacious resection, or the safer gastro-enterostomy. (*d*) Nervous gastric affections should not be operated. There are, however, cases in which only exploratory laparotomy can determine surely whether or not an ulcer is present.

3. Krause recommends the use of suction in the removal of cerebral and hypophyseal tumors, and describes various apparatus by which it may be applied, illustrating with cases from his own experience. He believes that many inaccessible tumors may thus be removed intact, through suitable osteoplastic incision, with minimum damage to healthy brain tissue. He suggests that the same method may to advantage be employed in the pelvis in pulmonary surgery, and in the removal of deep-seated intrathoracic tumors, such as retrosternal thyroid.

7. As an addition to the rapidly growing literature on the subject of Momburg's artificial anemia of the lower half of the body, Pagenstecher reports two severe operations performed bloodlessly with its aid, the first an interileo-abdominal exarticulation, or removal of the entire leg with half the pelvis, for sarcoma; the second, a resection of the sacro-iliac joint. He discusses the technic of the operations and enthusiastically emphasizes the immense gain in speed, accuracy and the prevention of shock afforded by the new waist-tourniquet.

12. Lexer reports experimental work on joint transplantation, discusses the technic of the procedure and presents, with convincing illustrations, the case of an admirably successful transplantation of an entire knee into a girl of eighteen for complete bony ankylosis following an old infectious arthritis.

14. Sudeck recommends the more extensive use of primary ether anesthesia for minor surgical procedures, and undertakes to describe the knack of obtaining it successfully.

15. After experiment with the Keating-Hart method of fulguration treatment of cancer, Abel concludes that it is valueless and prefers surgical excision, as early as possible and as radical as technically practicable.

16. From a series of experiments with complement-binding and antilysin in tetanus, Kreuter concludes: (1) That the tetanus bacillus belongs to that class of bacterial antigens which are not capable of producing complement-binding substances; (2) that human and animal sera, in the preponderating majority of cases, contain normal antilysins against tetanus hemotoxin, though the content of these antibodies is subject to not inconsiderable individual variations; (3) that under the influence of tetanus infection there appears no noteworthy increase in the antilysin content of the blood; (4) and that, consequently, a serodiagnosis of tetanus is impossible, either with the complement-binding method of Bordet and Gengou, or by means of antilysin determination.

17. Rehn presents some interesting histologic research on the effects of spinal anesthesia on the various cells of the central nervous system.

19. Heller reports successful operation on a case of duodeno-jejunal hernia of Treitz, the seventh thus far recorded in the literature.

26. From his series of experiments, Jander finds that balsam of Peru in itself has but slight bactericidal properties, but that by the addition of formalin (2%) these may be increased so as to destroy the ordinary pyogens without fail, though not enough to kill spores or the more resistent bacteria. He believes that with this combination, which is also highly chemotactic, ordinary wound-infections may be checked, if application is made within two hours of infection, and that, in infections with more resistent bacteria, its use will at least postpone the fatal result for some time.

29. In experimenting with the transplantation of spindle-celled sarcoma in dogs, Sticker observed the development of a carcinoma at the site of an implantation in the breast. This he considers not an instance of tumor metamorphosis, but of autochthonous origin of carcinoma from local irritation.

33. From clinical discussion of the use of puncture of the corpus callosum in brain surgery, with report of three cases, the author reaches the conclusion that this procedure is indicated: (*a*) In all cases of hydrocephalus which resist medical treatment and are not relieved by the simple operative measures of ventricular and lumbar puncture; (*b*) in all cases of tumor and pseudotumor of the brain producing internal hydrocephalus and choked disk and threatening to lead to blindness; (*c*) for decompression before extirpation of brain tumors in cases in which the brain is under so great pressure as to protrude through the trephine opening, crack, tear, and make examination by palpation impossible. He also briefly describes the technic of the process. Its value in epilepsy he considers as yet undetermined.

34. Colmers classifies the surgical injuries observed by the German relief expedition to Syracuse after the recent earthquake in Messina, and briefly describes 119 cases.

35. Schmieden describes, with illustrations, his method of operating for hypospadias by free transplantation of the ureter for repair of the urethra, the ureter being obtained from operation for hydronephrosis or from a recent human cadaver, and reports three cases successfully thus treated.

41. As result of an experimental study on 20 animals, Hoffmann found that removal of either the sero-muscular or the mucous layer in the gastro-intestinal tract of the dog and the cat was never followed by necrosis or gangrene of the remaining layers or by peritonitis; that the dog can undergo extensive strippings of the stomach and a stripping of the small intestine for 1 meter begining at the duodeno-jejunal fold and of 2 meters ending at Bauhin's valve without evincing clinical symptoms; that the maximum non-fatal stripping of the intestine seems to be between one third and one half of its total length; that small and medium mucous defects of the stomach and intestine heal with mucous membrane, larger ones by simple epithelialization; that in very large defects a non-epithelialized area may remain; that in the stomach contractions may be observed, but that in the intestine there is no evidence of stenosis.

45. From his personal experience with the radical methods of treating round gastric ulcer, Payr reaches the following conclusions.

(*a*) Callous, hyperplastic, invading ulcers, as well as hour-glass stomach developing on an ulcer basis, should be treated if possible by circular resection. The immediate as well as the ultimate results of this procedure are good, its danger less than that of resection for carcinoma.

(*b*) The decision as to choice of procedure may be aided by orienting measures such as mobilization of the stomach or exploratory gastrotomy.

(*c*) Resection is preferable to excision, since it permits sufficiently extensive removal of the pathologically modified gastric wall in the neighborhood of the ulcer and the closure of the wound by sutures in sound tissue free from adhesions without too great tension and without deformity.

(*d*) A sharp distinction between excision and resection should hereafter be made in order to determine clearly from the future experience the results of each procedure.

(*e*) A larger number of experiences in the permanent results of the radical operative procedures is necessary to judge objectively their value in comparison with gastro-enterostomy.

46. From a study of 11 cases of fracture of the cranial vault, Kusnetzow reaches the following conclusions relative to the treatment of such injuries:

(*a*) Compound depressed fractures demand immediate operative intervention, which affords the prospect of best results.

(*b*) In simple fractures operative intervention is indicated only by the presence of brain symptoms.

(*c*) Fissures may be treated expectantly.

(*d*) The indications for operation in head injuries must be determined for each individual case.

(*e*) In compound fractures, resection of the skull with chisel and bone forceps is preferable to classic trephining.

(*f*) The chief requisites for success are adequate enlargement of the cranial defect, careful removal of bone fragments, good hemostasis and drainage.

(*g*) Primary trephining gives better results than secondary.

(*h*) The best treatment of complicating meningitis is free exposure and drainage.

(*i*) Operation should be followed by protracted observation of late results. [R. M. G.]

Annales de l'Institut Pasteur.

Oct. 25, 1909.

1. *Richet, Ch. *Studies upon Crepitine* (*the Toxin of Hura Crepitans*).
2. Besredka. *Anaphylaxis.*
3. Chausse, P. *Intestinal Tuberculosis in Cattle.*
4. Mazé. *Note upon the Production of Citric Acid by the Citromyces.*
5. Tschistovitch, N. *The Antiphagines* (*Substances Inhibiting Phagocytosis*) *Produced by the Spirillum of Chicken Cholera.*

1. Richet has done considerable work on the toxin of the Hura crepitans of South America which he calls crepitin. Although a rather preliminary report, it contains a good many facts in regard to the toxin. As a rule the crepitin except in large doses does not kill immediately, but after a period of ten to twenty days, during which time the animal has shown marked loss of weight and sanguinous diarrhea. It seems to act upon the functions of nutrition.

When mixed with normal blood the poison is attenuated, and when given to animals after a hemorrhage the animals succumb more easily, so there is presumably some antitoxic property in blood.

By giving small doses, immunity may be established to a slight degree, but this is marked very considerably by the anaphylactic action.

Anaphylactic action may be produced also by small doses which will be active from thirty-five to ninety days. The blood from an anaphylactized animal when mixed with crepitin *in vitro* and then injected will cause sudden death in animals. This is due to the production of a poison which the author calls apotoxin. This he considers the fundamental principle of all anaphylaxis.

The apotoxin is the cause of death whether formed *in vitro* or *in vivo*. His work is chiefly on dogs, but also on rabbits and on guinea pigs. In the first part of the paper he describes preparation of crepitin. [C. F., Jr.]

Bulletino delle Scienze Mediche.

October, 1909.

1. Cuneo, G. *Alterations of the Proteid Metabolism in Certain Diseases: Trigeminal Neuralgia.*
2. Muggia, A. *Clinical Contribution to the Study of Cardioptosis.*
3. Stretti, G. *The Surgical Sterilization of the Skin by Means of Tincture of Iodine.*

2. Under the name of Rummo's disease, a condition first described by Cherchewsky in 1887, the author reports two cases of cardioptosis, both associated with a slight degree of herpatoptosis and right nephroptosis and relative gastrectasis. He believes the cardiac displacement to be primary and due to skeletal and somatic lesions in the form of elongated thorax with wide intercostal spaces, depressed ensiform, articular nodosity, pug-nose, dorsal scoliosis, tibial bowing, deficient adipose, and flaccid musculature. The symptoms are palpitation, slight dyspnea and neurasthenia; the signs, displaced area of cardiac dullness without enlargement or evidence of pleural or pericardial adhesions. X-ray confirms the diagnosis. Traube's semilunar space is usually diminished. [R. M. G.]

Correspondence.

"EDUCATION IN MEDICINE."

Cambridge, Dec. 18,1909.

Mr. Editor: With your permission we wish to discuss Professor Dearborn's reply to our article ("Education in Medicine," *Harvard Bulletin*, Nov. 3, 1909) in the light of your editorial comments of Nov. 25 and Dec. 9.

On the earlier date you expressed general approval of the principles and proposals stated in our article. But, in the more recent editorial, we are confronted by the declaration that "it must forthwith be admitted that Dr. Dearborn has struck at the weak side of his opponent's argument when he maintains that there is danger in interfering too greatly with the somewhat rigid organization of our medical schools."

Now, whatever sides, weak or strong, our argument may have, we cannot admit that Professor Dearborn has struck at any of them. For throughout his paper our supposed critic has been aiming, not at us, but at a phantom of his own imagining.

We confess to no little surprise that Professor Dearborn's misconception, viz., that we propose to produce specialized M.D.'s, quite like so many Ph.D.'s or S.D.'s, should not be patent to all. No one, certainly not we, has for an instant thought of relaxing the requirements for the M.D., nor has it been suggested, and assuredly it shall not be suggested by us, that any of the important subjects of the medical curriculum be omitted from anybody's medical education.

So far as the projects attacked by Professor Dearborn are concerned, our proposals are two, and these two proposals are organically linked together. First, we propose that the rigidity of the present medical curriculum (*not* the degree requirements!) should be relaxed; and, secondly, we desire that a system should be established whereby the finished product of the medical school shall be thoroughly tested by written, oral and practical examinations, modeled after the examinations for any particular Ph.D. or S.D. To-day there seems to be nowhere in America such a competent test as this system would provide. Unfortunately, our State Board examinations are even less convincing tests than those afforded by graduation from our better medical schools, and no one supposes for an instant that either of these latter plans can compare in thoroughness with the German *Staatsexamen*, or, in the field of law, with our own bar examinations.

In brief, Professor Dearborn's fear of our plan of relaxation was grounded on his belief that we were turning away from the ideal of developing practitioners. We see no evidence that Professor Dearborn has any fundamental objections to curricular relaxation, or even the elective system as such, and he would be the last to deny us a hearing for a plan of producing better practitioners.

Your second editorial also contains the hint that the "Henderson and Southard ideas" are inconsistent with evolution, and scores us a trifle on the ground of nonfeasibility of our plan. We do not need to inform your readers that evolution is not necessarily a continuous process, and that, without rather sharp saltations, many of our present advantages would be still in the bosom of the future.

It is not an experiment that we propose, at least no novel experiment. The system of examination for a degree is in general use for the doctorate in philosophy and in science, and the continent of Europe has no other method for the medical doctorate. The anomalous American system is doubtless an inheritance from the days when schoolboys were put directly to the study of medicine and were appropriately taught under a system of extreme rigidity now outgrown.

Of course we agree with you that "it is well to recognize, as Dearborn points out, that practitioners of medicine, whether special or general, are what the public demands from the medical school, and what the medical schools in their turn are bound to supply." We have never heard of any one who fails to recognize this truism, and we cannot believe that any one has forgotten it.

Finally, we venture to protest vigorously against the implication, to be found both in Professor Dearborn's article and in your second editorial, that the development of highly trained specialists and original investigators is the main occupation of the Harvard Medical School. True, we rejoice in such a by-product. But, really, the Harvard Medical School has too good a record, and there are too many practical men in every department, to permit the abrogation of its plain duty.

We are

Yours, etc.,
E. E. Southard, M.D.
L. J. Henderson, M.D.

TESTING OF REFRACTION IN GENERAL PRACTICE.

Newburyport, Mass., Dec. 12, 1909.

Mr. Editor: I have just read with interest the leader in the current number of the Journal on "Testing of Refraction in General Practice." The example of the Michigan State Board of Registration in making a practical knowledge of simple refraction a requirement for a license to practice is cited with approval by the editor.

I remember at the time of the hearing before the legislative committee on the question of state recognition of optometry that it was urged by the Committee on State and National Legislation, who opposed the bill, that none but trained specialists ought to be intrusted with even the simplest refractive work. It was represented that the non-medical refractionist, not being versed in the use of the ophthalmoscope, might easily overlook incipient cataracts, optic neuritis and floating retinæ, and that consequently much harm might be done by giving a legal status to an unscientific and incomplete system of practice. Obviously, then, if the general practitioner is to equip himself for refraction work, he must become a skillful ophthalmologist in order to avoid falling into these same errors.

The general practitioner, Mr. Editor, is a very busy man. He is doing his best to make himself a skilled obstetrician and is trying hard to perfect himself in the difficult art of diagnosis of acute diseases. He realizes that, as an up-to-date physician, he must not neglect the aids which the laboratory furnishes, and, being but a general practitioner, he is largely thrown upon his own resources for his laboratory work. He must do it himself or not have it done at all. The general practitioner would like to have a little time for reading, Mr. Editor. He looks with regret upon the pile of medical publications on his office desk with articles marked for future reading, and occasionally he finds leisure to open a volume of the new system of practice which he bought a year ago.

And now he is to be expected to test eyes for glasses — presumably not for those interesting and important cases that are able to pay from fifteen to twenty-five dollars for the services of a fashionable specialist, but rather for that uninteresting class that can pay but a dollar or two, including glasses.

The general practitioner feels a deep sympathy for the overworked ophthalmologist, but he does not take kindly at present to any increase in his own labors.

Very truly yours,
A General Practitioner.

THE DECLINE OF THE PERINEAL ROUTE.

Boston, Dec. 7, 1909.

Mr. Editor: Similar to the decadence of certain nations which have thrown an incomparable luster on the world, the perineal route, after having been triumphant, appears at present to be decidedly on the decline and may finally vanish, never again to appear on the field of surgery.

If one considers what may with all propriety be called the brilliant days of perineal section, one will find Frère Jacques, in the seventeenth century, proclaiming its marvelous results, although all the calculous patients confided to his care by the surgeons of the Hôtel-Dieu and of the Charité of Paris only obtained deplorable results from perineal section, a condition which forced this curious empiric to search in other parts of Europe a theater better adapted for his exploits, after which, having become more expert and richer in anatomical knowledge, he finally received with his more successful results both honor and fortune. Later on appeared Frère Côme, who, although not so ignorant as his predecessor, caused perineal section to arrive at the height of its triumph when he invented his famous *lithotome caché,* which rivaled with the *cystitome gorgeret* of Lecat.

This was the time when lateral section shone in its most intense luster, the one which in the nineteenth century was again taken up by the famous Dupuytren under the name of bilateral section, by Nélaton under the name of prerectal section, and lastly by Civiale under the appellation of medio-bilateral section. This form of perineal section has still held its ground at the present time in certain mountainous districts of France and in other European countries where children, so often the subjects of vesical calculus, are operated by the perineal route. It is undoubtedly a deplorable procedure because the almost certain destruction of the ejaculatory ducts brings about disturbances in the sexual function later on and alone should cause this procedure, which is both blind and barbarous, to completely give way to either lithotrity or suprapubic section.

Some ten years back it was thought that the perineal route would again triumph when surgical attempts were made to remove the hypertrophied prostate by this technic. Goodfellow certainly deserves the honor of being the first to remove the prostate by the perineal route, and later on Gosset and Proust, in France, endeavored, from their splendid studies of the cadaver, to bring this method into vogue, and suggested to Albarran the undertaking of the operation on man.

The profession is now fully aware of the success, at least ephemerous, which crowned this enterprise, and the method would have remained probably without a rival were it not for the tenacity of Freyer, of London, who, with the audaciousness and strength which give power to statistics of seven hundred cases, every day affirms the superiority of the suprapubic route. The perineal route subjects patients to the same complications and inconveniences which were reported in the patients of Frère Jacques and Frère Côme, that is to say, beside the impossibility of removing large prostates, incontinence or fistula result. Thus, little by little, the perineal route is being given up at the present time. Already practised by the ancient surgeons, the perineal route as it developed has been dethroned successively by simpler and more direct methods, which arrive at the same result without the unfortunate occurrences. The perineal section of our forefathers has been advantageously replaced by lithotrity, and the perineal route in the first place employed in modern prostatectomy has given way to the more perfected and easier suprapubic route.

Very truly yours,
Charles G. Cumston, M.D.

PROFESSOR WEIDENREICH'S ADDRESS.

Boston, Dec. 16, 1909.

Mr. Editor: Prof. Franz Weidenreich, of the University of Strassburg, has accepted the invitation of the Association of American Anatomists to participate in their sessions during convocation week next, and to deliver an address, to be followed by demonstrations of specimens, upon the history of the blood. He is well known to all hematologists as the leading authority of Germany upon the development and structure of the blood corpuscles, for the series of memoirs which he has published within recent years upon the subject are regarded as the most important contributions to our knowledge of the blood which have been made for a long time. Especial significance attaches to Professor Weidenreich's researches because he has been able to clarify many obscure parts of the blood problem, to set straight many distorted conceptions and to rectify several very serious errors which have gained currency with the clinical writers on the blood.

The address will be delivered in German on Wednesday, Jan. 5, at 12 o'clock, in the amphitheater of the Anatomical Building of the Harvard Medical School.

All persons interested are invited to attend.

Respectfully yours,
Charles S. Minot

RECORD OF MORTALITY

FOR THE WEEK ENDING SATURDAY, DEC. 11, 1909.

CITIES.	Reported deaths in each.	Deaths under five years.	CITIES.	Reported deaths in each.	Deaths under five years.
New York	1,432	389	Waltham	7	2
Chicago	570	160	Pittsfield	10	3
Philadelphia . . .	452	100	Brookline	8	1
St. Louis	—	—	Gloucester	5	2
Baltimore	171	33	North Adams . .	6	2
Cleveland	—	—	Northampton . .	3	—
Buffalo	—	—	Chicopee	5	3
Pittsburg . . .	—	—	Medford	7	1
Cincinnati	—	—	Beverly	3	—
Milwaukee	—	—	Leominster . . .	3	1
Washington . . .	—	—	Hyde Park . . .	2	1
Providence . . .	—	—	Melrose	—	—
Boston	203	41	Newburyport . .	3	—
Worcester	42	7	Revere	1	1
Fall River	36	14	Westfield	4	1
Cambridge	28	3	Woburn	6	1
Lowell	27	10	Peabody	—	—
New Bedford . .	32	10	Marlboro	2	0
Lynn	25	5	Attleboro	2	0
Springfield	28	9	Adams	4	2
Lawrence	14	8	Clinton	3	—
Somerville	16	0	Gardner	4	0
Brockton	13	4	Milford	7	1
Holyoke	17	8	Watertown . . .	3	1
Malden	12	3	Plymouth	—	—
Chelsea	8	1	Southbridge . . .	1	1
Newton	8	2	Weymouth . . .	7	1
Salem	8	—	Framingham . .	—	—
Haverhill	8	1	Wakefield	—	—
Fitchburg	6	2	Webster	—	—
Everett	3	1	Arlington	1	—
Quincy	—	—	Greenfield	6	1
Taunton	15	5			

CHANGES IN THE MEDICAL CORPS U. S. NAVY FOR THE WEEK ENDING DEC. 18, 1909.

BENTON, P. L., surgeon. Detached from the "Franklin" and ordered to the "Prairie." Dec. 11.

SHIPPEN, L. P., assistant surgeon. Detached from the Nava Prison, Portsmouth, N. H., and ordered to the "Prairie." Dec. 11.

STEPP, J., passed assistant surgeon. Detached from the Naval Station, Newport, R. I., and ordered to the "Franklin." Dec. 15.

BAKER, M. C., assistant surgeon. Detached from the "Ohio" and ordered to the Naval Recruiting Station, Cincinnati, Ohio. Dec. 15.

CLIFTON, A. L., assistant surgeon. Detached from the Naval Recruiting Station, Cincinnati, Ohio, and ordered to duty in connection with the fitting out of the "Michigan" and to duty on board that vessel when placed in commission. Dec. 15.

SOCIETY NOTICE.

BOSTON MEDICAL LIBRARY IN CONJUNCTION WITH TH SUFFOLK DISTRICT MEDICAL SOCIETY.—Medical Sectio Meeting, John Ware Hall, Wednesday evening, Jan. 5, 1910, at 8.15 P.M. "The Present Status of Vaccine Therapy," Dr. Wilder Tileston, Assistant Professor of Medicine, Yale University Medical School. Discussion by Drs. G. G. Sears, T. Leary, G. P. Sanborn, D. D. Scannell, H. F. Hartwell, R. Lee, C. Floyd and others. Light refreshments after the meeting.

EDWIN A. LOCKE, M.D., *Secretary*, 311 Beacon St.	HENRY JACKSON, M.D., *Chairman*, 380 Marlborough St.

RECENT DEATH.

DR. FERDINAND C. VALENTINE, of New York, a well-known specialist in genito-urinary diseases, died at his country home at Belle Harbor, Long Island, on Dec. 13, at the age of fifty-six years. He was born in Missouri and was graduated from the Missouri Medical College in 1876. Soon afterwards he came to New York to practice, and at the time of his death was consulting genito-urinary surgeon to the Manhattan State Hospital, the Red Cross Hospital and the West Side German Dispensary.

BOOKS AND PAMPHLETS RECEIVED.

Bibliography of the Contributions of George M. Gould, M.D., to Ophthalmology, General Medicine, Literature, etc. Ithaca, N. Y. 1909.

Tonsil Removal, Opsonic Index and Immunity. By Bryan D. Sheedy, M.D. Reprint.

An Appeal for the Sake of Man and of Medicine. By George M. Gould, M.D. Reprint.

Sixteenth International Medical Congress, Budapest, August–September, 1909. Section VII: Surgery. A New Method of Intestinal Anastomosis. New Instrument for Direct Transfusion of Blood and Temporary Anastomosis between Blood Vessels. Ether Anesthesia by Compressed Air. By A. L. Soresi, M.D. Reprint.

High-Frequency Current in Ophthalmic Practice. By L. Webster Fox, A.M., M.D. Reprint.

The Value of Morphine Derivatives in Ocular Therapeutics. By L. Webster Fox, A.M., M.D. Reprint.

The Causation of Sex. By E. Rumley Dawson, L.R.C.P. (Lond.), M.R.C.S. (Eng.) Illustrated. London: H. K. Lewis. 1909.

New World Science Series. Primer of Sanitation. By John W. Ritchie. Illustrated. Yonkers-on-Hudson, N. Y.: World Book Co. 1909.

Those Nerves. By George Lincoln Walton, M.D. Philadelphia and London: J. B. Lippincott Co. 1909.

Quain's Elements of Anatomy. Edited by Edward Albert Schafer, LL.D., Sc.D., F.R.S.; Johnson Symington, M.D., F.R.S., and Thomas Hastie Bryce, M.A., M.D. In four volumes. Vol. III, Part II. Eleventh edition. Illustrated. New York, Bombay and Calcutta: Longmans, Green & Co. 1909.

Dose-Book and Manual of Prescription Writing. By E. Q. Thornton, M.D., Ph.G. Fourth edition, revised and enlarged. Illustrated. Philadelphia and London: W. B. Saunders Co. 1909.

Treasury Department. Public Health and Marine-Hospital Service of the United States. Hygienic Laboratory. Bulletin No. 52. Report No. 3 on the Origin and Prevalence of Typhoid Fever in the District of Columbia (1908). By M. J. Rosenau, L. L. Lumsden and Joseph K. Kastle.

Soil Pollution and Its Relation to Hookworm Disease and Typhoid Fever. By Ch. Wardell Stiles, Ph.D.

Summary of Transactions of the Public Health and Marine-Hospital Service, Fiscal Year 1909, and to Nov. 1, 1909.

The Prophylaxis of Pellagra. By C. H. Lavinder. Washington. 1909.

Third Report of the Babies' Dispensary and Hospital of Cleveland, Ohio, for the Year ending Sept. 30, 1909.

Report of the Surgeon-General, U. S. Army, to the Secretary of War. 1909. Washington.

Annual Report of the Surgeon-General, U. S. Navy, to the Secretary of the Navy for the Fiscal Year 1909. Washington.

St. Luke's Hospital Medical and Surgical Reports. Vol. I for 1908 and 1909. New York.

The American Society of Tropical Medicine. Vol. IV. 1909.

Reflex Aural Neuroses Caused by Eyestrain, with Report of Cases. By Samuel Theobald, M.D. Reprint.

Summary of the Results Obtained, and Features of Interest, in Two Hundred and Fifteen Consecutive Cataract Extractions. By Samuel Theobald, M.D. Reprint.

Rachitic Erosions of the Permanent Teeth Associated with Lamellar Cataract. By I. A. Abt, M.D., and Mortimer Frank, M.D. Reprint.

An Inquiry into the Status of the Kindergarten. By Isaac A. Abt, M.D. Reprint.

Congenital Syphilis in Infants. By Isaac A. Abt, M.D. Reprint.

Nervous Children. By I. A. Abt, M.D. Reprint.

The Fruits of Medical Research with the Aid of Anesthesia and Asepticism. By Charles W. Eliot, LL.D., M.D. Reprint.

Visiting Nursing in the United States. Yssabella Waters. New York: Charities Publication Committee. 1909.

Diseases of the Nose, Throat and Ear, Medical and Surgical. By William Lincoln Ballenger, M.D. Second edition, revised and enlarged. Illustrated. Philadelphia and New York: Lea & Febiger. 1909.

Diseases of the Nose, Throat and Ear. By Charles Huntoon Knight, A.M., M.D., and W. Sohier Bryant, A.M., M.D. Second edition, revised. Illustrated. Philadelphia: P. Blakiston's Son & Co. 1909.

The Practical Medicine Series. Under the general editorial charge of Gustavus P. Head, M.D. Series 1909, Vol. VIII. Chicago: The Year Book Publishers.

Address.

THE MEDICAL ACHIEVEMENTS OF DR. HOLMES.*

BY EDWARD O. OTIS, M.D., BOSTON.

While deeply appreciating the honor you have done me in your invitation to join with you in the celebration of Dr. Holmes's centenary, it is at the same time with much hesitancy that I have undertaken the task of speaking upon the subject you have assigned me, feeling doubtful if I shall be able to say anything which you do not already know regarding Dr. Holmes's medical writings and achievements, or of doing more than expressing my own opinion regarding their value, influence and permanence. In the words of Dr. Holmes himself, "No one can bring his tribute of words into the presence of great deeds, or try with them to embellish the memory of inspiring achievement, without feeling, and leaving with others, a sense of their insufficiency."

It is, however, a peculiar pleasure to me to join with you in this celebration, for it was my good fortune to be a pupil of Dr. Holmes when he taught anatomy in the old Harvard Medical School. I never learned very much anatomy, it must be confessed, — not from any fault of Dr. Holmes, I hasten to add, — but I shall ever remember with keen satisfaction that year I spent under the genial doctor's influence. I learned, perhaps, something better than anatomy. We were a motley, boisterous crowd as we rushed for the front seats of that old unventilated amphitheater when the doors were opened for his noon lecture and awaited with noisy impatience the appearance of the little professor, who seemed to skip into the room with the lightness of tread of a child and an indescribable glow upon his face. It is a source of much regret to me that I did not take notes, not so much of the anatomical descriptions, for we knew they were all in "Gray," but of the side-plays, so to speak, of his bright, witty, striking interjectory sentences and happy analogies.

One of the few incidents I do recall was an occasion when Dr. Holmes entered the lecture-room one day all aglow and said, "Gentlemen, I went last night to see Salvini, the great Italian actor. If you want to see a wonderful display of the facial muscles in action, go and see Salvini." On another occasion when lecturing upon the foot, he referred to a young woman who had recently called upon him to obtain his opinion, if I remember correctly, upon some of her verses. He noticed, he said, the beauty of her foot, — its high, aristocratic instep, — and in his admiration for it he asked her if she would mind removing her shoe that he might examine her foot the more carefully.

Upon still another occasion he was exhibiting some of the anatomical plates of the old anatomist which he so dearly cherished. It might have been those of Spigelius, "in which," he says, "lovely ladies display their viscera with a coquettish grace implying that it is rather a pleasure than otherwise to show the lace-like omentum, and hold up their appendices epiploicæ as if they were saying, 'These are our jewels'"; or the skeletons of Vesalius or the muscles of Albinus. Whatever they were, a tall, stately figure was represented with more or less of his fleshly substance removed and with a background of very ornate scenery with some huge wild animal in the distance, an elephant or a giraffe, it may have been. "There, gentlemen," said he, "is represented such and such a portion of man's anatomy, and with all this scenery thrown in."

It was the doctor's custom to frequently walk through the old dissecting-room just previous to his lecture and inspect our dissections. On one such tour of inspection I had been dissecting the lower extremity and, having freed and hidden to one side the plantaris muscle, I had dissected the posterior tibial nerve, I believe it was, and made it look as much as possible like the hidden muscle. When Dr. Holmes reached my table, I asked, with a very innocent look, if he would kindly tell me what nerve that was. "Nerve," said he, "that isn't a nerve; that is the plantaris muscle." I quietly removed that muscle from its hiding place and displayed it. "Stop," said he; "you are right and I am wrong; that comes from being too hasty"; and as he passed on the smile was transferred from his face to mine for a moment.

The less is always eclipsed by the greater, whether with individuals or achievements. The local hero loses his glamor when the national one arrives, and the modern artist is passed by when one of the old masters hangs near. One remembers Stedman as the poet and critic and not as the banker. In estimating Dr. Holmes's medical achievements, we have this fact to bear in mind. Dr. Holmes is so universally known as a literary man and for his contributions to general literature that what he did as a professional man and what he contributed to medical literature very naturally take a minor place in the estimation of the public, and the profession as well, and even may fail of receiving just recognition. Furthermore, it is difficult to disassociate completely, it seems to me, in estimating his influence upon the thought and opinion of the medical and general public of the times in which he wrote, the influence of his purely medical essays from that of the medical references and reflections which are so often discoverable in his general literary works. "His medical training," says Sir Conan Doyle, "peeped out in every paragraph, and his exquisite similes were drawn from our common profession." In the Breakfast Table series one is constantly meeting with anatomical, physiological, psychological or pathological allusions. One feels that it is the doctor who is writing and not the merely literary man. Thus, for example, in the "Professor," speaking of the choice of a physician, he says: "If you are making choice of a physician, be sure you get one, if possible, with a cheerful and serene countenance. A physician is not — at least ought not to be — an executioner; and a sentence of death on his face is as bad as a warrant for execution signed by the governor." And again in the "Poet," speaking of new things that are really old, he says: "The dome, the round and the Gothic arch, the groined roof, the flying buttress, are all familiar to those who have studied the bony frame of man." "All forms of the lever and all the principal kinds of hinges are to be met within our own frames." One constantly finds the medical man speaking in these essays. "Elsie Venner" is a study of prenatal influences, "The Guardian Angel" is a study in atavism, while "A Mortal Antipathy" illustrates the effect of a strong impression received by a nervous shock in childhood extending its baneful influence into adult life. In all three of these stories a psychopathological problem is worked out, and they could only have been written by a trained psychologist or physician, and Dr. Holmes was both.

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* An address delivered before the Medical Society of the County of New York, at the Academy of Medicine, Oct. 9, 1909.

In estimating, therefore, Dr. Holmes's influence upon medicine as practiced and studied in his day, and his lasting influence upon medicine of to-day, it seems to me we must take into account this indirect influence in his general works as well as his direct medical studies and contributions. Only then can we fully realize, I believe, that Dr. Holmes was, first, a medical man, highly trained in the best medical learning of his day; and, secondly, a literary man. I believe also that Dr. Holmes himself felt, at least for the greater part of his life, that while literature was his avocation, medicine and the teaching of his branch of medicine, anatomy, was his vocation. He did not resign his professorship of anatomy until he was over seventy years of age. He never taught in a perfunctory manner or wrote upon medical subjects as if it were subordinate to his literary work. He always maintained a deep and lively interest in all that was going on in the medical world, and was ever proud of his association, extended over so many years, with the medical school and medical students. He was during these years a constant, deep and independent thinker upon medical problems, as both his medical and general writings testify.

No medical writer of his day recognized more clearly than did he, or so persistently opposed, the evils of an inordinate use of drugs, or so insistently advocated the study of the causes of disease and the supreme importance of depending upon nature and nature's remedies for their cure. This is the dominant chord in his essay on "Currents and Counter-Currents," a chord which he plays upon many times in other essays, medical and literary. Indeed, the whole oration is as instructive reading to-day for the practitioner as it was for the members of The Massachusetts Medical Society, for whom it was written, fifty years ago. I cannot forbear quoting one or two passages from it: "I will venture to say this," he remarks in stating the "case on the side of nature," "that if every specific were to fail utterly, if the cinchona trees all died out, and the arsenic mines were exhausted, and the sulphur regions were burned up, if every drug from the vegetable, animal and mineral kingdom were to disappear from the market, a body of enlightened men, organized as a distinct profession, would be required just as much as now, and respected and trusted as now, whose province should be to guard against the causes of disease, to eliminate them if possible when still present, to order all the conditions of the patient so as to favor the efforts of the system to right itself, and to give those predictions of the course of disease which only experience can warrant and which in so many cases relieve the exaggerated fears of sufferers and their friends, or warn them in season of impending danger. Great as the loss would be if certain active remedies could no longer be obtained, it would leave the medical profession the most essential part of its duties, and all, and more than all, of its present share of honors; for it would be the death-blow to charlatanism, which depends for its success almost entirely on drugs, or at least on a nomenclature that suggests them."

Compare the above clear-visioned prophecy with the recent remarks of President Eliot before a medical body: "The probability is," says President Eliot, "that the great part of the work of medical men is hereafter to be done in preventive medicine." And further he adds: "Is not the function of the medical profession, regarded as preventive, higher, better, happier than the function of the medical and surgical profession regarded as curative?" Or with this recent assertion of a well-known scientist, that rational hygiene and preventive measures will ultimately rid man of disease.

"Throw out opium," Dr. Holmes again says, "which the Creator himself seems to prescribe, for we often see the scarlet poppy growing in the cornfields, as if it were foreseen that wherever there is hunger to be fed there must also be pain to be soothed; throw out a few specifics which our art did not discover and is hardly needed to apply; throw out wine, which is food [present investigations would seem to indicate that not even alcohol need be thrown out] and the vapors which produce the miracle of anesthesia, and I firmly believe that if the whole materia medica, *as now used*, could be sunk at the bottom of the sea, it would be all the better for mankind — and all the worse for the fishes." How clearly he recognized then, fifty years ago, what the profession more clearly recognizes now, but which they did not so fully perceive then, that the study of the natural history and causes of disease was of the first importance, and its treatment by obviating the causes and by the application of hygienic measures was in so many cases of far greater value and effect in producing a cure than a blind, indiscriminate use or abuse of drugs; and by so vividly, in his inimitable, glowing epigrammatic style, making this plea for rational treatment as opposed to medicinal treatment, he made a very distinct contribution towards the uplift of medical practice, — it may well be called a medical achievement.

There are two ways by which one may aid

medical advance and practice, both of which are, perhaps, of equal importance in their value to the profession, although the second seems now to occupy the foreground: The one is the interpretation, the clear generalization, of medical knowledge and the results of investigation and observations; the other is medical research, or original investigation, so-called, so popular, as I have said, at the present time. Indeed, one is sometimes inclined to question whether a portion of all this effort expended upon original research with little regard, it sometimes seems, to the value of the results when or if obtained, might not better be expended upon the study of the great principles of health and disease, and of the old masters and their wise reflections. There may be too many "researches with the trivial," as some one has wittily expressed it. Perhaps we hardly appreciate the rôle of the genuine medical interpreter and what he has been and is doing for the profession. The value of rest and the significance of pain were never so clearly realized until Hilton in his classic interpreted them anew. Fordyce Barker, in his famous "Puerperal Diseases," gave the profession for the first time a clear conception of these maladies; and the elder Da Costa interpreted, with a luminousness perhaps never equaled before or since, in his "Physical Diagnosis," the significance of the symptoms and signs of disease. These, with a host of others, all great medical interpreters, co-ordinated and correlated the scattered knowledge existing upon the subjects of which they wrote, and presented them in an orderly manner and attractiveness of style which compelled attention.

Dr. Holmes, judging from what little evidence we have, might well have been an original investigator if he had been less of a literary man, but he was in some respects an incomparable medical interpreter and critic. He was a profound student of the past and a clear-visioned prophet of the future. He had sat at the feet of the Gamaliels of medicine at the Mecca of medical knowledge of his day. He had an original creative mind, which had not been stifled or attenuated by too much so-called culture or education. He possessed the power of systematizing and generalizing medical knowledge in an orderly form, and, more than all, he possessed that rare ability, genius we may almost call it, of expression or style which captivates and holds fast the reader by its keenness, wealth of illustration, striking analogies, epigrammatic forms of expression and airiness of touch. With this equipment he necessarily became a medical interpreter of a high standard, as his medical essays show us. He gave to the profession new and clearer ideas upon the great principles of medical practice, and in doing so he raised and established upon a saner basis the treatment of disease and of the diseased individual. To have been such an interpreter was indeed a medical achievement, for which we at this day are indebted to him. His message was ever to the practitioner of medicine, the doctor, and while not decrying the scientific side of medicine, and scientific training, he always emphasized its art, — experience as distinguished from science. "Is it not well to remind the student from time to time," he says in "Scholastic and Bedside Teaching," "that a physician's business is to avert disease, to heal the sick, to prolong life, and to diminish suffering?" "I know," he continues, "that many branches of science are of the greatest value as feeders of our medical reservoirs. But the practicing physician's office is to draw the healing waters."

Of the various purely medical essays of Dr. Holmes, I suppose the one upon "The Contagiousness of Puerperal Fever" would be generally regarded as constituting his greatest claim to recognition as an achiever in medicine. It was a notable contribution then and would be so now under similar conditions. Here again the rôle of the interpreter is strikingly illustrated. The contagiousness of puerperal fever had long been suspected, and here and there was a voice crying in the wilderness, asserting the fact. Cases had been reported which seemed to point towards it. Some obstetricians had their suspicions, but no authoritative voice had assembled all the evidence and then, with the force of impassioned rhetoric, drawn the inevitable conclusion that the disease was conveyed through the medium of the attending physician. As one reads the fervid words of Dr. Holmes written with an intense conviction of their truth, and the feeling of horror from the needless sacrifice of so many young mothers, he can almost see in his mind's eye the menacing finger of the doctor raised against the unconsciously guilty obstetrician, and hear him exclaim, as did of old the prophet Nathan to his guilty royal master, "Thou art the man!" There is something finely chivalric in the writing of this essay. Here was a young physician, with no very wide reputation in the profession, or large experience in obstetrics, boldly pitting himself against some of the most experienced and accomplished obstetricians of his day, but he felt he was right and his heart yearned for the unfortunate young mothers. With what a solemnly appealing and eloquent peroration he closes his essay: "The woman about to become a mother, or with her new-born infant upon her bosom, should be the object of trembling care and sympathy wherever she bears her tender burden, or stretches her aching limbs. The very outcast of the streets has pity upon her sister in degradation, when the seal of promised maternity is impressed upon her. The remorseless vengeance of the law, brought down upon its victim by a machinery as sure as destiny, is arrested in its fall at a word which reveals her transient claim for mercy. The solemn prayer of the liturgy singles out her sorrows from the multiplied trials of life, to plead for her in the hour of peril. God forbid that any member of the profession to which she trusts her life, doubly precious at that eventful period, should hazard it negligently, unadvisedly or selfishly!"

Of his other essays, I should, perhaps, place "Currents and Counter-Currents," to which I have already referred, next in value and importance; and, possibly, next to that, his Boylston prize essay on "Direct Exploration." This latter, written in 1837, only about fifteen years after auscultation and percussion had been before the English-speaking public, is a careful and thorough exposition of the value and use of the methods of direct exploration and their employment in the detection of thoracic diseases. It is instructive reading now, and would not make a bad manual upon auscultation and percussion for the medical student. In some respects it is superior to the many needlessly complicated modern guides upon the subject. That its value was appreciated at the time is shown from the fact that some philanthropic individual had a copy sent to every member of The Massachusetts Medical Society, — perhaps he had suffered through the ignorance of these methods in his own attending physician. The dissertation is also exceedingly interesting in its many references to the discoverers of percussion and auscultation, Auenbrugger and Lænnec, and to the great men of the French school who developed and popularized these methods of direct exploration, Piorry, Louis, Andral and Chomel. To Louis, his beloved master, he is constantly referring, and dedicates all three of his prize dissertations to him. "Do the new methods of exploration produce any useful results?" he asks, and thus answers his question: "They enable us in many cases to distinguish phthisis before its existence is shown by the general symptoms, at a period when we can say, Do this and you may live; do that and you must die. They enable us to determine the stage and the degree of pneumonia, even when its rational signs are wanting, at the time when treatment is most effectual," which treatment in his day, as he says, was the abstraction of blood, though, apparently, having some doubt as to its value, he quotes Lænnec as saying that "some theorists, heretics in medicine, have alone dared to proscribe this remedy." "They reveal to us," he continues, "the existence of pleuritis, which, clear as the day, when properly sought after, has yet been long wasting the patient and perplexing the physician; they declare so distinctly the existence of pericarditis that this once dreaded and most obscure disease may be recognized even by the half-taught student; they have, in a word, rendered the derangements of the very organs which nature seems to have barred and bolted from our reach most carefully the best understood of all those which affect the organs of the visceral cavities."

His dissertation upon intermittent fever in New England, which, he says, "required far more time and patience than both the others united," is an orderly marshaling of facts laboriously obtained and submitted *in extenso*, leaving the reader for the most part to draw his own conclusions. As an interesting bit of early New England history, it is well worth reading. Even in this essay, which, he says, contains "much that is arid and wearisome," one comes here and there upon an oasis of Holmesian humor. Thus, in referring to the case of a certain Mr. Oakes, he says: "There is no doubt, too, that Mr. Oakes had a fever and ague, but whether he brought it from England with him, or contracted it after his arrival, sleeps forgotten beneath the '*Hic jacet Oakesius.*'"

The essay upon homeopathy is full of keen satire and uncompromising denunciation. Dr. Holmes fairly revels in his arraignment of the false doctrine, which he seems pretty effectually to have done up before he got through. It is, however, by no means a mere contemptuous condemnation of the "pretended science," but a logical *reductio ad absurdum*. His concluding sentence is a charming tribute to the profession and a scathing rebuke to the pseudo-science: "As one humble member of a profession which for more than two thousand years has devoted itself to the pursuit of the best earthly interests of mankind, always assailed and insulted from without by such as are ignorant of its infinite perplexities and labors, always striving in unequal contest with the hundred-armed giant who walks in the noonday and sleeps not in the midnight, yet still toiling, not merely for itself and the present moment, but for the race and the future, I have lifted my voice against this lifeless delusion, rolling its shapeless bulk into the path of a noble science it is too weak to strike, or to injure." It must be admitted in truth, however, that many years have passed, and still the same curiosity excited by one of Perkins's tractors is not yet awakened at the sight of one of the infinitesimal globules, as Dr. Holmes prophesied it would be. His Phi Beta Kappa oration upon "Mechanism in Thought and Morals," which it was my privilege to hear, is the production of an accomplished psychologist with a "creative imagination." It is filled with suggestive thought upon problems which will ever be of absorbing interest so long as men think and will, and it admirably illustrates Dr. Holmes's inimitable style in writing.

The addresses to medical students, "Border Lines in Medical Science," "Scholastic and Bedside Teaching" and "The Young Practitioner," are full of original and wise reflections, rich in illustration and analogy, and sparkling in epigrammatic expressions. As purely literary productions, they are delightful reading, and for every young practitioner they will always be inspiring, uplifting and deeply suggestive. Whenever Dr. Holmes referred to the medical profession and the doctor, it was always with a sincere appreciation of the dignity and nobility of the calling. He scoffed and held up to ridicule the charlatan, but ever honored the honest practitioner. To be sure, he laughed at the doctor's foibles, but was gentle and considerate with his weaknesses and mistakes. In his literary writings, whenever the doctor comes in, he is always a man of character and ability, a man to be respected. Such were Bernard and Dr. Kittredge in "Elsie Venner." The latter, as he says, "was a shrewd old man, who looked pretty keenly into his patients through his spectacles, and pretty widely at men, women and things over them." And in "A Mortal Antipathy," Dr. Butts is described as "an excellent specimen of the country doctor, selfreliant, self-sacrificing, working a great deal harder for his living than most of those who call themselves the laboring classes. He had that sagacity without which learning is a mere incumbrance, and he had also a fair share of learning, without which sagacity is like a traveler with a good horse, but cannot read the directions on the guide-boards." In "The Guardian Angel," old Dr. Lemuel Hurlburt, at the age of ninety-two, he tells us, though "very deaf, very nearly blind, very feeble and liable to odd lapses of memory, was yet a wise counselor in doubtful and difficult cases." The "young doctor" in "Over the Teacups," "waiting for his bald spot to come," and Dr. Benjamin in "The Poet," "a worthy young man," are both mentioned with the respect which he had for the profession and its worthy members. What a fine eulogy upon the doctor he uttered in his poem at the centenary celebration of The Massachusetts Medical Society:

> "How blest is he who knows no meaner strife
> Than Art's long battle with the foes of life;
> Unmoved by praise, he stands by all, confessed,
> The truest, noblest, wisest, kindest, best."

We owe Dr. Holmes much gratitude for thus ever and always upholding the dignity and nobility of the profession.

Dr. Holmes loved the old medical masters and was always an enthusiastic student of the early history of medicine, as his medical writings everywhere bear witness. In giving us such delightful sketches of the masters of medicine in Europe and America in his day, he enriched the literature upon the history of medicine and made its study attractive. That we have his delineations and epigrammatic characterizations of so many of the old medical worthies is a cause of congratulation on the part of the profession. It is another of Dr. Holmes's medical contributions to the profession. What a fascinating character sketch he draws of Dr. James Jackson, whose smile, he says, "was itself a remedy better than the potable gold and the dissolved pearls that comforted the precordia of medieval monarchs." How well, in a few terse lines, he sums up the influence of the great Sydenham upon the practice of medicine. "He studied the course of diseases carefully, and especially as affected by the particular season; to patients with fever he gave air and cooling drinks, instead of smothering and heating them, with the idea of sweating out their disease. . . . He used few and comparatively simple remedies; he did not give any drug at all if he thought none was needed, but let well enough alone. He was a sensible man in short, who applied his common sense to diseases which he had studied with the best light of science that he could obtain."

In his farewell address at the completion of his thirty-sixth course of lectures, in 1882, Dr. Holmes tells us, in a most entertaining way, of his early teachers in Paris, and lives over again his experiences in the French clinics and hospitals. He speaks of Broussais, whom he compared to an "old volcano which has pretty nearly used up its fire and brimstone, but still boiling and bubbling in its interior, and now and then sends up a spirt of lava and a volley of pebbles"; of Lisfranc, "a great drawer of blood, and hewer of members"; of Velpeau, "who came to Paris on wooden shoes," he says, and "whose example may be an encouragement to some of his younger hearers who are born, not with a silver spoon in their mouths, but with the two-tined iron fork in their hands. A good sound head over a pair of wooden shoes," he adds, "is a great deal better than a wooden head belonging to an owner who cases his feet in calf-skin." Ofh is esteemed Louis, of the numerical system, in whose wards he learned that "a very large proportion of diseases get well of themselves without any special medication"; who taught him "the love of truth and the habit of passionless listening to the teachings of nature"; of Trousseau, the therapeutist, who taught the *art* of medicine; of Ricord, whom he denominated the "Voltaire of pelvic literature, a skeptic as to the morality of the race in general, who would have submitted Diana to treatment with his mineral specifics, and ordered a course of blue pills for the Vestal Virgins"; of Piorry, the percussionist and poet, expert alike in the resonances of the thoracic cavity and those of the rhyming vocabulary"; and of "jolly old Baron Alibert, in his broad-brimmed hat, worn a little jauntily on one side."

In anatomy, his own particular department, he was an enthusiastic lover of the old anatomists, and was ever fond of exhibiting in his lectures his treasured folios of their dissections. "Noble old Vesalius with its grand frontispiece not unworthy of Titian"; "fine old Ambroise Paré, that quaint and delicious writer, the surgeon of princes, and the prince of surgeons"; Spigelius "with his eviscerated beauties," "who made the liver his perpetual memorial"; Albinus, whose dissections of muscles were masterpieces of accuracy as of art; "Dutch Bidloo with its miracles of fine engraving and bad dissection," and John Bell, "whose picturesque descriptions and bold figures," he remarks, "are as good now as they ever were."

Of the old authors he was equally fond. "There are practical books," he says, "among these ancient volumes which can never grow old." "Would you know how to recognize 'male hysteria' and to treat it, take down your Sydenham; would you read the experience of a physician who was himself the subject of asthma, and who, notwithstanding that, in the words of Dr. Johnson, 'panted on till ninety,' you will find it in the venerable treatise of Sir John Floyer. . . . Would you get at first hand the description of the spinal disease which long bore his name, do not be startled if I tell you to go to Pott, to Percival Pott, the great surgeon of the last century."

There is still another contribution which Dr. Holmes made to the profession, and one to which those who do medical writing owe much: it is the literary style he set in his purely medical writings. He made medical subjects interesting reading from the standpoint of literary style. Of course, one can hardly imagine any subject which would not have been made attractive by his fascinating style, for whatever he chose to write upon he made luminous by his wit and lively imagination and happy comparisons. In his purely medical addresses, however, he strikingly illustrated the supreme value of style in rendering readable and interesting a scientific subject, the lack of which has so often left stranded and unappreciated much otherwise good medical stuff. Even the specialist finds tiresome reading a subject in his own department which is unclothed of style, written on the dreary dead level of commonplace expressions, lacking the illumination of an analogy or illustrative comparison or case upon which one can tack his memory of it, and find it hanging there when he wants it. For example, I can well imagine a non-medical reader finding pleasure in reading the dry subject of bones, written in the attractive style of Holden. Baxter's "Saints' Rest" and the "Call to the Unconverted" are doubtless orthodox presentations of the subjects of which they treat, but I fancy that a sermon of Phillips Brooks, in his glowing, inspiring style, would convert more sinners and afford greater rest to the saints. The weariness of much of the medical literature, if we may call it that, where the unfortunate writer with good material has failed of getting an extended hearing is due to the lack of any literary style in presenting his subject, for I believe that, however scientific the subject, it can be clothed in an attractive garb.

An example or two from Dr. Holmes will show his illuminating style while writing upon abstruse medical subjects. In speaking of the cell in his essay upon "Border Lines in Medical Science," he says: "As we have seen Nature anticipating the plasterer in fibro-cartilage, so we see her beforehand with the glass blower in her dealing with the cell. The artisan blows his vitreous bubbles, large or small, to be used afterwards as may be wanted. So Nature shapes her hyaline vesicles and modifies them to serve the needs of the part where they are found. The artisan whirls his rod, and his glass bubble becomes a flattened disk, with its bull's-eye for a nucleus. These lips of ours are all glazed with microscopic tiles formed of flattened cells, each one of them with its nucleus still as plain and relatively as prominent to the eye of the microscopist as the bull's-eye in the old-fashioned window pane." When referring to the physiology of the nerves, in the same essay, occurs this happily expressed sentence: "Reflex action, the mechanical sympathy, if I may so call it, of distant parts; instinct, which is crystalized intelligence, — an absolute law with its invariable planes and angles introduced into the sphere of consciousness, as *raphides* are inclosed in the living cells of plants; intellect, the operation of the thinking principle through material organs, with an appreciable waste of tissue in every act of thought, so that our clergymen's blood has more phosphates to get rid of on Monday than on any other day of the week." Almost a single reading of these two sentences fixes them indelibly in the mind, for the memory is well tacked up by the apt comparisons. Few medical writers, however, can convey their ideas in such exceptional language and style as Dr. Holmes did; but a study of his medical writings as a study in consummate style will always be of much value in aiding the medical writer in developing a readable, attractive style of his own, which is of almost equal importance with the quality of the material he has to present. Dr. Holmes, while strenuously advocating the *art* of medicine, admirably illustrated at the same time the *art* of good medical writing.

Finally: There is another debt which, it seems to me, we of the medical profession owe to Dr. Holmes, though perhaps it may not have occurred to any of us, and that is the profound faith in God and the immortality of the soul which he ever held and taught. Our profession, as we know, is sometimes accused of its want of religion and of faith in things spiritual, more often, however, I believe, a *seeming* than a real fact. "I am not disposed to deny," says Dr. Holmes, "the occasional injurious effect of the materializing influences to which the physician is subjected. A spiritual guild is absolutely necessary to keep him, to keep us all, from becoming the 'fingering slaves,' that Wordsworth treats with such shriveling scorn." Is it not, then, something to be grateful for that Dr. Holmes, one of our own clan, and who so often spoke for us and interpreted us, so to speak, to the public, while always an enemy to cant and to much of the narrow theological dogma of his day, was ever an earnest believer in the love and fatherhood of God and the divine nature of man? Would it have been strange that one who for so many years and so constantly had to do with the material part of man — the clay — should have at last come to believe that death ended all and that the soul was only a cerebral phenomenon, and he should have become the "fingering slave" of Wordsworth to whom he refers? "Our reverence," he says, "becomes more worthy, or, if you will, less unworthy of its infinite object in proportion as our intelligence is lifted and expanded to a higher and broader understanding of the divine methods of action." And, again, in the same essay on "Border Lines in Medical Science," occurs this beautiful tribute to the Father of all knowledge: "These wonderful discoveries which we owe to that mighty little instrument, the telescope, of the inner firmament, with all its included worlds; these simple formulæ by which we condense the observations of a generation in a single axiom; these logical analyses by which we fence out the ignorance we cannot reclaim, and fix the limits of our knowledge — all lead us up to the inspiration of the Almighty, which gives understanding to the world's great teachers. To fear science or knowledge, lest it disturb our old beliefs, is to fear the influx of the divine wisdom into the souls of our fellow men; for what is science but the piecemeal *revelation* — uncovering — of the plan of creation, by the agency of those chosen prophets of Nature whom God has illuminated from the central light of truth for that single purpose?" And in a letter to

Mrs. Stowe he says: "My creed is to be found in the first two words of the Pater Noster. I know there is a great deal to shake it in the natural order of things, but my faith is strong enough to stand against all the untowardness of the blind elements amidst which we are placed here, and out of which our earthly tabernacles are shaped. I see no corner of the universe which the Father has wholly deserted." Again, in a letter of condolence, he concludes with these impressive words: "We must all soon cast anchor, if we have one, and mine is trust in God."

Dr. Holmes's medical writings may have passed into oblivion before another centenary comes around; and his literary works may no longer "echo through the corridors of time"; his name even may be but an empty sound; but if all else is forgotten, congregations of devout worshipers will still be praising God in that noble and inspiring hymn of his:

"Lord of all being, throned afar,
Thy glory flames from sun and star;
Center and soul of every sphere,
Yet to each loving heart how near!

"Sun of our life, thy quickening ray
Sheds on our path the glow of day;
Star of our hope, thy softened light
Cheers the long watches of the night.

"Our midnight is thy smile withdrawn;
Our noontide is thy gracious dawn;
Our rainbow arch, thy mercy's sign;
All, save the clouds of sin, are thine.

"Lord of all life, below, above,
Whose light is truth, whose warmth is love,
Before thy ever-blazing throne
We ask no luster of our own.

"Grant us thy truth to make us free,
And kindling hearts that burn for thee,
Till all thy living altars claim
One holy light, one heavenly flame."

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Original Articles.

MEDICAL EXPERT TESTIMONY.*

BY HON. WILLIAM SCHOFIELD, MALDEN, MASS.,
Judge of the Superior Court of Massachusetts.

It is plain that medical expert testimony has fallen upon evil days. There is a widespread belief that it is entitled to little weight in courts of justice. The principal ground of complaint is that the medical expert, while nominally a witness, is in fact a partisan or advocate, who takes sides in the case and uses medical science merely as a means of supporting that side which he represents.

There is a general disposition to assume that this complaint is true. There are some reasons, however, for believing that it is not true to the extent that many persons assert.

In the first place, medicine is not an exact science. It is subject to growth and change. In some of its branches, especially those which treat of mental and nervous disorders, eminent members of the profession admit that there is much which is imperfectly understood or wholly unknown. This being so, it is manifest that there may be wide differences of opinion among medical experts in the same case, upon the same facts, without justifying a belief that they testified merely as advocates or partisans, still less an imputation that they testified with intentional dishonesty.

That there are members of the medical profession who have given or who habitually do give dishonest expert testimony may be true. This may happen under any system of regulation which can be devised. No profession or society of men can be protected completely against unworthy members. On the other hand, any one who has had much experience in courts can call the names of gentlemen who as medical expert witnesses always were entitled to credit and respect. I will name one, Prof. Edward S. Wood. He testified as an expert witness in many important cases. Both in the honesty and accuracy of his statements and in the thoroughness of his preparation he was a model of what a medical expert witness should be. I doubt if any defendant in a capital case, whose condemnation after trial was due in whole or in part to Dr. Wood's testimony, ever thought for a moment that he testified as a partisan or advocate, or otherwise than as a conscientious and honest witness. If the medical profession must suffer, as it does suffer, in its good name from the public exhibition of alleged insincerity or dishonesty given by some of its members in courts of justice, it is entitled to credit, on the other hand, for the modest, steadfast and powerful assistance rendered to the cause of truth in the courts by members like Professor Wood.

After making all deductions which fairly can be made, however, there remains cause for the belief that there is some unsoundness in medical expert testimony which renders it unworthy of full credit. The practical question is to discover the source of this unsoundness and find a remedy.

It is common to assume that the unsoundness is wholly in the law and that the remedy is in legislation. I venture to assert that the question presents a moral issue which ought to be fairly met, with a view to determine whether reform cannot come from the efforts of the medical profession.

What is the obligation of a medical expert upon the witness stand? He is summoned like an ordinary witness and sworn to tell the truth, the whole truth and nothing but the truth. His duty is so clearly defined by his oath that there would seem to be no room for mistake or misunderstanding. He is bound to state facts and opinions truly. When called upon to state reasons for his opinions it is his duty to give reasons which he honestly believes to be sound, in the exercise of his best judgment as a medical man.

There are many medical men who believe that a medical expert or any scientific expert is a witness of such special character that he ought not to be classified as a witness at all. The expert differs from an ordinary witness in this: that he is called by reason of special training and experience to give opinions as to the significance of facts testified to in the case, and also to testify to facts and principles which he has a knowledge of by his special study and experience in his science. A medical or scientific expert has been well described as an interpreter of science to the court. Suppose that in a case of homicide an ordinary witness testifies that he saw upon the clothing of the prisoner stains which resembled blood or rust. A medical or chemical expert examines the clothing, using the methods and instruments of science, and testifies that the stains were caused by blood, and that the blood was human blood. By the aid of science the expert is enabled to see more than the ordinary witness can see with the naked eye. He explains to the court the meaning of an object which has no important meaning without his aid, just as a sworn interpreter translates to the court in English testimony spoken by a witness in a foreign tongue. In the illustration given, the medical expert does two things. He testifies both to fact and opinion. As a scientific man he can see more in the stains than an ordinary witness, and he testifies to what he sees as the result of his examination. He also testifies to his opinion as to the meaning of the facts which he observed. Fact and opinion are usually inextricably bound together in the testimony of an expert witness. To separate them by a clear line is well nigh impossible; but even if it were possible and practicable, it is still true that in cases where the medical expert testifies to matters which are clearly matters of opinion based upon medical science, it is his duty to state opinions which he honestly believes as a medical man to be true. While he may well be described as an interpreter of science to the court, he is like an ordinary witness in this essential point: He furnishes to the court material to be used by it in deciding the issues of fact in the case. There is no system of law, so far as I know, which permits expert witnesses in a contested case to determine questions submitted to them conclusively and finally, thus taking the decision of scientific facts out of the hands of the court. The opinion of experts in France and Germany is merely advisory or evidential in character. There is no way known to our law, or practically possible, by which a trial can be divided into parts, and the decision of experts on medical or scientific matters treated as final, except by consent of the parties. There is no place in the common law scheme of a trial where the expert can be put except among the witnesses. He cannot be a judge or a juror. He cannot take part openly as counsel in the trial without causing confusion and delay. There are some who believe that medical experts have a useful and proper place as advisors to legal counsel, but so long as they are treated by the law as witnesses, they must accept the obligations of a witness.

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* Read at the semi-annual meeting of the Suffolk District Medical Society, Oct. 30, 1909.

Another reason why the medical expert may be led to assume that he is not strictly a witness is this fact: That before the trial he is in communication with counsel and parties on only one side of the case. This exclusive contact with one side is likely to create a feeling of sympathy and loyalty for that side and to make the medical expert a partisan.

This danger is increased by the fact that to the opposing parties the trial is a contest. Not infrequently most intense feelings are excited by a legal controversy. The parties regard it as a trial of strength, and are eager for victory. It is natural that medical experts should be affected by this feeling of rivalry, forgetting that while the object of each of the parties is victory, the object of the law is the truth. Acute and able medical men, unfamiliar with courts and the methods of trial, may hastily or thoughtlessly assume that it is permissible in law to advance opinions in a contest in court in behalf of one side which they would reject as untenable in a consultation of physicians dealing with the same facts for the purpose of treating a patient. The medical expert should understand that it is his duty as a witness to preserve a judicial and impartial attitude as an interpreter of science to the court. If this were the prevailing practice there would not long be any dissatisfaction in regard to medical expert testimony. Fundamentally the reform of medical expert testimony is a moral question. Good morals will avail more to settle it than good laws.

It is a question of great importance, not only to the medical profession, but to the public. There are three classes of cases in which medical expert testimony is frequently used, although it may be necessary at times in any kind of a case. The three classes referred to are actions for personal injuries, homicide cases and will cases. Will and homicide cases frequently involve the issue of insanity, and attract great public attention. Cases for personal injuries are far more numerous, embracing more than one half of all the litigation in the courts. In Suffolk County during the year ending in June, 1909, out of 1,146 cases actually tried in the Superior Court, about 660 were for damages for personal injuries. One or more medical experts testify in almost every personal injury case. The quality of this expert testimony is a factor of great importance in the daily administration of justice in the courts.

The two principal ways by which legislation can control medical expert testimony are by changing the method of selecting experts and fixing their compensation.

In countries governed by the common law, medical experts are selected by the parties in every litigated case. This is merely an application of the fundamental principle that the office of court and jury, in the common law, is to hear and decide the cause upon the evidence presented by the parties. The production of witnesses or evidence is not a duty of the court. "It is placed wholly upon the parties to the litigation." (Wigmore, s. 2483.) The trial judge may in special circumstances order a person to be called as a witness who is shown to have knowledge of material facts. This right of the judge is exceptional, and rarely exercised, and nowhere clearly defined.

When the practice of calling expert or skilled witnesses was introduced, the rule applicable to ordinary witnesses was gradually applied to them. They were selected and called by the parties. This custom is now so firmly established that it cannot be changed except by legislation. Some lawyers affirm that even legislation cannot change it, on the ground that it is a fundamental constitutional right.

In marked contrast with the common law is the system in use on the continent of Europe. There all expert witnesses are appointed by the judge, usually from an official list of experts. Those appointed by the judge are obliged to serve and are paid a reasonable sum for their services. If the parties agree upon the names of the official experts to be appointed, the judge must appoint them. If they do not agree, the judge may appoint *ex officio*. The judge decides upon application of the parties or of his own motion whether there is occasion for expert evidence in a cause.

The continental method of dealing with expert evidence seems to be a consistent part of the continental theory of judicial procedure and trial, just as our method is a consistent part of the common law theory. There the procedure is more in the nature of an inquisition conducted by the court, and less under the control of the parties. The judge leads the trial. "The examination of witnesses is in theory conducted by or through the judge, by repetition of questions, and in practice cross-examination is so casual or so feeble as to be a negligible quantity." (Wigmore, s. 1367, Note 1.) The law there provides for the procedure of the experts and the form of their report and its use as evidence. The fundamental point in the continental system is that the selection of expert witnesses is taken out of the hands of the parties by the state. This system has many admirers in the United States. It is more favored by medical and scientific men than by lawyers, although I have heard it called by a lawyer the ideal system. In the recent efforts for reform of medical expert testimony the continental system has a strong support.

Considered from the point of view of abstract principle, it must be admitted that the continental system has one great advantage: It keeps the medical expert outside the atmosphere of conflict which surrounds the parties, in a position favorable to a judicial attitude of mind. In the opinion of many, the practical exemption of the continental expert from the excitement of cross-examination tends still further to preserve candor and increase the value of his testimony. On the other hand, from the point of view of principle, if the object of a trial is the ascertainment of the truth on the issue between the parties, there is much to be said in favor of the common law system. Professor Wigmore says (s. 1286): "The whole spirit of the Anglo-American system of trials is to leave the search for evidence in the hands of the parties themselves. Their interested zeal is regarded as sufficient to insure a full and exhaustive marshaling of all the evidential data on either side; and this attitude of the law, whether abstractly wise or not, has so thrown the parties upon their own efforts that in practice parties do exert themselves as effectively as could be desired. In fact, our system of partisan responsibility for the purveying of evidence, while it is marked by the natural defects of partisanship, is at least more successful in the thorough canvassing of all sources of evidence than any system of judicial responsibility could be in this country or (perhaps) than in any other country such a system actually appears to be to-day." He is speaking here of the production of ordinary witnesses and evidence. If the zeal and intelligence of the parties can be relied upon in regard to such evidence, why may they not safely be relied upon for the production of the best attainable expert evidence for the discovery of truth?

The common law system, it is true, exposes the medical expert witness to the process of cross-examination, which is sometimes exceedingly severe. But in the hands of an able advocate, familiar with the subject under inquiry, cross-examination is an instrument so destructive to false testimony that it can never be given up. It is particularly effective when skillfully used in exposing the unsoundness of expert opinions based upon false theories or erroneous reasoning. Expert witnesses, more than any others, should be subject to it, because they are exposed to the danger of bias in favor of one or the other of several conflicting scientific theories, a danger from which ordinary witnesses are free. Upon this point I set great value upon the testimony of Sir James Stephen, an authority of the first rank upon any question in the Criminal Law or the Law of Evidence. In 1856 he attended the trial of Queen *v.* Palmer, in which the defendant was accused of murder by the use of antimony or strychnine. In his "History of the Criminal Law" Sir James Stephen says: "I was present throughout the greater part of this celebrated trial, and it made an impression on my mind which the experience of twenty-six subsequent years, during which I have witnessed, studied and taken part in many important cases, has strengthened rather than weakened." (3 History Criminal Law, 422.) "No case could set in a clearer light the advantage of two characteristic features of English criminal law, namely, its essentially litigious character, and the way in which it deals with scientific evidence. A study of the case will show, first, that evidence could not be more condensed, more complete, more closely directed to the very point at issue; secondly, that the subjection of all witnesses, and especially of all skilled witnesses, to the most vigorous cross-examination is absolutely essential to the trustworthiness of their evidence. The closeness and the skill with which the various witnesses, especially those for the defense, were cross-examined and compelled to admit that they could not really distinguish the symptoms of Cook from those of poisoning by strychnine was such an illustration of the efficiency of cross-examination as is rarely indeed afforded." (P. 424.) While this powerful agency is sometimes abused, and is usually too long, it never can be abandoned in favor of medical or other expert witnesses.

Even if the continental system were to be preferred in theory, there are obstacles of the most serious character to its adoption in the United States. The sixth amendment to the Federal Constitution and the constitutions of many of the states provide that in all criminal prosecutions the accused shall enjoy the right to be confronted with the witnesses against him. This secures the right of cross-examination in all criminal cases, and renders it impossible without an amendment to those constitutions to make the report of a medical expert or board of experts competent evidence in a criminal case, in a federal court, or in the court of any state where the constitution contains that provision, unless the defendant has an opportunity of cross-examining the expert. The effect is to make one part of the continental system of expert testimony by which a report is evidence without cross-examination impossible of adoption in criminal cases.

It is commonly assumed, however, that constitutional provisions in the United States have a much larger effect in restricting the power of the legislatures over expert testimony than is above stated. In 1905 a committee of the State Bar Association of Michigan, in reporting a draft of a bill which has been enacted by the Michigan Legislature, said: "The radical reformers say that the courts should select and fix the compensation of all expert witnesses. Your committee believes that there are constitutional objections to the court making such selection. Parties have a right, under the law, to select their own witnesses." In January of this year a committee of the Bar Association of the State of New York reported "that every party to an action, civil or criminal, has the constitutional right to call such witnesses as he may deem important to the maintenance of his cause, and the right to cross-examine those who may be called against him."

I do not assent to those opinions. There is no provision of the Federal Constitution or of any state constitution, so far as my knowledge extends, which secures to a party the right to select his witnesses. The Federal Constitution protects the right of trial by jury, of confrontation in criminal cases, and grants to the accused the right to compulsory process to summon witnesses in his defense, and secures in all cases due process of law. The constitutions of many of the states contain similar provisions. Neither the federal nor any state constitution expressly provides that a party may select his witnesses. On the contrary, the rules of evidence and the qualifications of witnesses are wholly under the control of the legislature. I believe that the legislature has full control over the subject of expert testimony, saving only to the defendant the right of confrontation in criminal cases. So firmly established, however, is the belief that a party cannot be deprived of the supposed right of selecting his own witnesses, including expert witnesses, that every bill enacted or proposed which I have seen, providing for a list of officially designated medical experts, contains the express provision that nothing in the act shall preclude either party from summoning and using other expert witnesses at the trial.

The prevalent feeling in favor of this right of a party to select his witnesses, including expert witnesses, is so strong that probably no American legislature could be persuaded to pass a statute which did not reserve it. The probable result will be that statutes providing for officially designated experts to be appointed by the court will not be used by the parties. Parties will use the right to select experts for themselves unless some advantage will come to them from accepting the official experts. We are not without experience to guide us on this point. In Massachusetts the statutes provide that in a capital case the court may approve bills for expenses incurred by counsel for the defendant and order them paid from the county treasury. By a standing order of the court the employment of experts for the defense in such cases must be approved in advance by the court, in order that compensation to them may be allowed. Under this statute and order, counsel for defendants are not content to accept the experts employed by the commonwealth, no matter how eminent or trusted they may be. They apply for leave to employ experts on their own side, and capital trials in Massachusetts held under the operation of this law furnish striking examples of contradictory medical expert testimony. In Rhode Island there is a statute which has been in force since 1896, now included in the Court and Practice Act of 1905, which provides for the appointment of medical experts by the court in both civil and criminal cases. One section (s. 372) provides that in actions for personal injuries wherein an expert shall be appointed, the justice making the appointment shall require the person injured to submit to a reasonable examination of his body and health. By this provision defendants in such actions acquire a right which as a rule they did not have at common law, viz., a right to a physical examination of the plaintiff. Appointments of experts by the court under this statute can be made only on application of the parties. The result is that a party does not apply except when some advantage is to be gained by his side. The only section of this act which is much used in practice, as I have been informed, is the one relating to actions for personal injuries. That is exactly what a lawyer reading the act would expect. Until public opinion or legislative opinion shall be so changed as to make it possible to prohibit the selection of medical expert witnesses by the parties, there is no practical advantage in enacting statutes which provide for the appointment of experts by the court. The parties will go on selecting their own experts, and medical expert testimony will go on as it was before. If authority should be given to the court, as is given in the Michigan statute of 1905, and in proposed statutes in other states, to appoint experts on its own motion, and to call them as witnesses subject to cross-examination, the result will be merely to add a third class of experts to those selected by the parties, and to increase the number and possibly also the variety of medical expert opinions. The fact that the official board or list of medical experts cannot be made exclusive is a strong practical reason against adopting the system of official medical expert witnesses in the United States.

There are other minor objections to the system. (1) It is not probable that the most eminent physicians could be induced to accept appointment on a board or list of official medical experts. It would be as unreasonable to expect the leading physicians to serve for the compensation which the court could award as to expect the leaders of the bar to sit as auditors or masters for the usual legal compensation of $15 per day. The result of establishing an official list of experts probably would be that they would not be equal in quality, on the whole, to those selected by the parties. (2) If a permanent board or list of medical experts should be established, the power of appointment ought not to be vested in the courts. The number of experts required would be considerable, the appointments would be valuable to some physicians, and the system would expose the judges to a kind of solicitation which would bode no good to the courts. (3) Neither the judges nor the officers of any branch of the government can be assumed to have special knowledge of the qualifications of physicians to serve as medical experts.

Finally, to my mind, the grand reason why we should not adopt the continental system is that it would be giving up, in an important matter, the time-honored principle of individual freedom which pervades and animates the old common law, and the Anglo-American law as well. If an eminent physician should be sued for malpractice, he would surely deem it a great hardship if he could not select and present to the court in his defense the best medical experts whom he could obtain who would give testimony in his behalf. What an eminent physician would feel in such a case, every citizen would feel, though perhaps in less degree, who should have a case in the courts in which expert testimony was necessary. Conceding freely that the legislature may restrict individual freedom in this matter for the public good, and should do so, it is also true that the individual should be left free until it is reasonably probable that some public benefit will result from imposing a restraint upon him. There is no substantial ground for believing that under present conditions in the United States the quality of medical expert testimony will be raised, or that the cause of truth will be advanced in the courts by taking the selection of medical expert witnesses out of the hands of the parties and putting the power of selection in public officials or in the judges.

The compensation of medical expert witnesses is probably of more importance than the method of their selection. Large fees, and especially large contingent fees, depending upon the result of the litigation, cannot fail to have an influence upon the testimony of medical experts. Such fees are likely to cause them to forget their obligations as witnesses, and to feel that they are employed and paid as advocates. This is a subject which legislation can regulate, and, as it seems to me, ought to regulate.

At the present time in Massachusetts, and generally in other states, medical expert witnesses, if summoned, are required to attend court upon payment of the fees of an ordinary witness. In practice they often attend upon request of the party by whom they are called, without legal summons. An expert could not be required, upon summons and the payment of ordinary witness fees, to perform any services in order to prepare and qualify himself as an expert witness. He would be required to testify only to such material matters, whether of fact or opinion, as he was qualified to give testimony upon when served with summons, without further preparation. Usually, indeed almost always, a medical expert witness is obliged to perform service before the trial in order to qualify himself to testify as an expert. Unlike an ordinary witness who becomes connected with a case casually, in the ordinary course of events, the expert is brought into a case by selection and employment. The law permits the party calling him to make a contract in reference to his compensation. (Barrus *v.* Phaneuf, 166 Mass. 123.) In the case of attorneys at law, the courts, influenced, no doubt, by a desire to enable every person to prosecute any clain which he honestly believes to be just, and to obtain the services of a competent legal adviser, have permitted the client to make a contract with the attorney as to his services which may be contingent upon success in the cause. This does not sanction champerty or maintenance, which would require a mere sharing in the proceeds of a suit by the attorney, with no personal liability of the client to his attorney for services. In order that the contract may be valid it is essential that the client shall assume a personal liability for the services, but the amount to be paid may be contingent upon circumstances, including, among other circumstances, the amount recovered. The contingent contract of attorneys, subject to various distinctions in different states, has become widely prevalent in American law. It was introduced in New York in 1848 in the celebrated Field Code of Civil Procedure, and has spread to other states. Wherever it goes it carries evils of a grave character in its train. In New York, after half a century of experience, a movement has been begun to make such contracts subject to approval by the courts.

Contingent contracts by medical expert witnesses, depending upon the success of the party calling them, and upon the amount recovered, are more objectionable than those of attorneys at law, and have not the same practical necessity for their recognition by the law. If contingent contracts were not sustained under carefully defined conditions in the case of attorneys, a practical denial of justice might result to many deserving persons. In the case of medical expert witnesses this hardship does not exist. The law, as it seems to me, ought to put medical experts thoroughly and unmistakably in the class of witnesses by fixing their compensation for attendance at court at a reasonable sum, and taxing the amount in the costs, as in the case of ordinary witnesses, and also by providing that the compensation to be paid to them for services in preparing to give expert evidence shall be such reasonable sum as may be approved by the court in each case, and that any contract for a larger sum or a contingent fee shall be invalid. A provision of this kind was enacted into law in Michigan in 1905. Any expert witness receiving, or any person paying, a larger sum than the amount awarded by the court is made guilty of a misdemeanor and subject to fine, or imprisonment, or both. This statute seems to me to strike a vulnerable part of our system of medical expert testimony, and to be well calculated to do good.

There is no single remedy, however, that will cure all existing evils. A number of causes have contributed to bring medical expert testimony into its present state of disrepute, and the coöperation of a number of different forces will be required for its restoration. Legislation is not the sole, nor even the principal, remedy. A committee of the Bar Association of the State of New York, in its report, submitted this year, summarized the evils of medical expert testimony in six propositions, three of which were as follows, viz.:

"*First.* Want of satisfactory standards of expertness, with its result of inviting the testimony of charlatans.

"*Second.* The prolongation of trials and the consequent increase of expense on account of the number of witnesses.

"*Sixth.* An unfortunate tendency upon the part of some trial judges to permit incompetent so-called medical experts to testify to opinions predicated upon widely unrelated facts, and under oath to express views which are but the speculative vagaries of ill-informed minds."

Of course this report was made with reference to conditions existing in New York. It is manifest that the evils above stated are all within the common law powers of the trial courts, without the aid of statutes. The trial judge determines the competency and qualification of all expert witnesses, subject to very slight control by appellate courts. At common law he can limit the number of medical expert witnesses, prevent the abuse of the right of cross-examination and the abuse of the right to put hypothetical questions to experts. If these powers were fully exerted, much good would result. Judge Garretson, of the Supreme Court of New Jersey, in a published address, has said that it is useless to look to the courts for a remedy because these evils have grown up in the courts. The blame does not rest wholly upon the trial judges, for in many states they have been deprived by the legislatures of much of the power which they had by the common law. President Taft, in a speech last month at Chicago, which attracted wide attention, said: "In this country there seems to have been on the part of all state legislatures a fear of the judge and not of the jury, and the power which he exercises in an English court has by legislation been reduced from time to time until now, and this is especially true in Western states, he has hardly more power than the moderator in a religious assembly."

The efforts of bar associations and medical societies for the improvement of medical expert testimony are mainly directed, so far as I have observed, to obtaining new legislation. The power of the courts may also be made to help the reform effectively in all states where the trial judges retain their common law powers. In states where those powers have been restricted or taken away, the most effective legislation that could be devised to improve the quality of medical expert testimony would consist of statutes restoring those powers. All legislation depends for its efficiency upon the manner in which it is construed and enforced by the courts. In order to administer any new statutory authority in relation to medical expert testimony the courts should first have and should be encouraged to exercise the powers which they had by the common law. Situations frequently arise in the trial of causes both in regard to medical expert testimony and other details where a trial judge, clothed with the powers which he exercised by the common law, can deal effectively with evils which legislation cannot reach. Legislation should provide general rules, based upon principles. The courts apply those rules to individual cases. The legislatures and the courts should work together in a spirit of harmony and mutual confidence, not of distrust. Both should have all the power needed to discharge in the most effective manner the duties with which they are intrusted by the Constitution.

In Massachusetts the trial judge retains the powers which he had at common law, with one important exception, viz., the power or right to advise the jury on the facts. This was taken away in the revision of the laws enacted in 1860, under the name of the General Statutes. Attempts have been made recently to have this power restored with respect to expert evidence, but thus far without success. A bill for that purpose passed the Senate this year, but failed in the House. Opinions differ as to the practical value of this power and as to the effect upon jurors of advice by the trial judge in regard to the facts. It should be carefully noted that the common law power of the judge was merely to advise, leaving the responsibility of decision upon the jury. In the matter of medical expert testimony, cases may frequently occur where a trial judge of experience who had the power to comment directly upon the evidence could exhibit to the jury the relative strength and weakness of different medical experts in such a manner as to aid the jury materially in reaching a sound result. The judge would also be in a position to restrian more effectively any impropriety of conduct on the part of medical experts during the trial or in preparation for the trial. Conceding that this particular power of the trial judge may be overvalued, it is, nevertheless, an ancient common law power which exists in the federal courts and in some of the state courts, and should exist in them all.

If statutes were enacted regulating the fees and contracts of medical expert witnesses, and prohibiting the acceptance by them of any different fees, either for attendance at court or for services, and restoring the common law powers of the trial judge, conditions would be established in the courts by which the evils of medical expert testimony could be greatly mitigated, if not wholly removed. Medical societies can aid the reform by bringing forward the moral issue involved and impressing it upon students and practitioners. They can establish rules of conduct to be observed by their members when called upon to act as medical expert witnesses. Sir James Stephen says: "If medical men laid down for themselves a positive rule that they would not give evidence unless before doing so they met in consultation the medical men to be called on the other side and exchanged their views fully, so that the medical witnesses on the one side might know what was to be said by the medical witnesses on the other, they would be able to give a full and impartial account of the case that would not provoke cross-examination. For many years this course has been invariably pursued by all the most eminent physicians and surgeons in Leeds, and the result is that in trials at Leeds (where actions for injuries in railway accidents and the like are very common) the medical witnesses are hardly ever cross-examined at all, and it is by no means uncommon for them to be called on one side only. Such a practice, of course, implies a high standard of honor and professional knowledge on the part of medical witnesses, but this is a matter for medical men. If they steadily refuse to act as counsel and insist on knowing what is to be said on both sides before they testify, they need not fear cross-examination." (1 Gen. Hist. Criminal Law, 576.)

This was written in 1883. Dr. James J. Putnam, in an excellent article published in 1896, recommended a comparison of views among medical experts before trial similar to the method above described as practiced in Leeds.[1] It is quite probable that such a course on the part of physicians would be resisted by the parties and their counsel at the start. It is the ancient and deep-seated habit of the common law not to require the parties to disclose their evidence in advance of trial. It would be very natural that parties and counsel should resist as an innovation which would lead to a disclosure of evidence to the opposing party a movement in favor of conference before trial between the experts on each side of the case. But expert witnesses are an exceptional class of witnesses, and the proposition is so manifestly fair and well-intentioned that it ought to have a trial. It would be a step toward the restoration of confidence in the sincerity of medical expert testimony, and would tend to reduce the divergence of medical expert opinions in courts to legitimate and reasonable limits. These are objects greatly to be desired. Medical expert testimony is likely to be needed more in the future than it has been in the past. The flood of litigation arising from personal injuries which is overwhelming the courts in all large cities throughout the country, will demand radical changes in legal procedure in order to keep it within manageable bounds. There are signs that serious attention must soon be given to this subject. The medical expert should have, and probably will have, a greater influence in the settlement of those cases in the future than he has under existing methods of trial. This to my mind is one of many reasons why the subject of medical expert testimony is of great importance to the public at the present time. The medical profession will do the state a service in bringing about any measure of reform.

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POSSIBLE REFORM OF JUDICIAL PROCEDURE.*

BY WILLIAM G. THOMPSON, LL.B., BOSTON,

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Judge Schofield has, as usual, covered the issues thoroughly in his charge. All that is left for me is to discuss a few of the points he has already made; and if I differ with him, it will be only in the matter of emphasis.

The aim of medical science is the ascertainment of the truth; its purpose, the prevention and cure of disease. The aim of trials at law is also the ascertainment of the truth. The purpose is to establish the rights and liabilities of the parties. The complaint about medical testimony is that it fails of its purpose; it does not promote the ascertainment of the truth at trials. The problem, therefore, is primarily a problem in the administration of the law and not a problem in medical science or medical ethics, although the solution may indirectly affect both.

In approaching any question like this involving both the interests and the methods of the two professions, it is important, it seems to me, at the outset that each profession should try to realize as far as possible the traditions and the point of view of the other.

Modern medicine is a branch of modern science. Its method is the method of inductive science. It observes facts, forms a working hypothesis and discards it for a better one the moment the hypothesis first formed fails to account for the further observed facts. Fluctuation, difference and change of opinion, are, therefore, an essential characteristic of those branches of medical science which are advancing. Partisanship is wholly alien to the spirit of true science, and any manifestation of it is personally discreditable to the scientific man. His interest is supposed to be solely the attainment of truth for its own sake, and not the advancement of his own opinions for any ulterior purpose.

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[1] Dr. Francis Wayland Anthony, in Boston Medical and Surgical Journal, Jan. 16, 1908, writes that at a meeting in Boston recently, by delegates from several of the district societies, it was voted, "That this committee recommend to the various district societies of the state a plan by which physicians, when called to make examinations for the purpose of testifying in court, shall make that examination upon the basis of professional consultation. I have done this for several years, with the result that in a great majority of cases the medical testimony was absolutely in accord, and in many cases was omitted, either by the plaintiff or the defendant since there was to be no variation."

* Read at the semi-annual meeting of the Suffolk District Medical Society, Oct. 30, 1909.

The law's traditional method of ascertaining truth is quite the contrary. The tradition of the law, established centuries before the methods of modern science were dreamed of, is based upon the theory that the truth will be evolved from the clash of a purely partisan presentation on one side and on the other. Both the characteristics and the method of the tribunal which the law has gradually evolved have been determined by the source of all the inquiries with which it has to deal. Those inquiries are in every case the result of controversy and not of an unselfish and disinterested desire on the part of litigants to ascertain the truth. Men litigate because they want either to get or to keep something, and not because of any abstract interest in the truth. The result is a tribunal composed of a judge and a jury, and a body of men called lawyers who are supposed to be able to present the cases of the respective litigating parties more persuasively than the parties could do if left to themselves. The point of view of the lawyer is, therefore, and must remain purely partisan. This does not mean unfair. It simply means that the duty of the lawyer to his client, while it does not involve a suppression of truth, does commit him in advance to the advocacy of only one side of a proposition, requires him to procure and present the evidence favorable to that side; and not only does not require him to present, but in many, if not all, cases, precludes him from presenting the evidence favorable to the other side. And in accomplishing this function the most powerful and often the most abused weapon that the law gives him is the right to cross-examine adverse witnesses.

It thus appears that the points of view and methods of the two professions of medicine and law in reference to the ascertainment of the truth of those questions of fact in which they have a common interest are and must remain radically different.

The question, therefore, is narrowed to this: What changes, if any, are required in judicial machinery to secure a more accurate discrimination between sound and unsound medical opinions and a greater certainty that the jury will accept the sound and reject the unsound view?

Before attempting to indicate an answer to this question — and all I can hope to do in the short time available to-night is merely to indicate an answer — it is necessary to inquire more particularly in what respect the present legal machinery for the ascertainment of truth fails in respect of medical expert testimony. The prevailing view appears to be that it fails (1) because the legal standards of qualification for giving expert testimony are so low that doctors are constantly permitted to testify who are either ignorant, or dishonest, or both; and that the average jury is not sufficiently intelligent to detect the dishonesty or the ignorance of the witness, and thus to discriminate between him and the intelligent and honest doctor; (2) because the court permits honest physicians to be subjected to unfair, tricky and abusive cross-examination designed simply to befog the issues and to confuse both the witness and the jury; and (3) because where the doctors on each side are honest, and even where they are both intelligent, their opinions are so often found to be quite contradictory. Many persons are inclined to ascribe the contradictions in such cases wholly to the partisan attitude into which it is alleged medical men are forced at the outset by the anomalous nature of their relation to the party for whom they expect to testify, accentuated by the partisan spirit in which the trial itself is conducted.

To remedy these evils two plans have been proposed. The first is the one advocated by Judge Clearwater in the *North American Review* for June, 1909, and consists in the establishment of a board of well-qualified official medical experts to be paid by the county, to be called to testify by either party, or by the court of its own motion, and, of course, to be subject to examination and cross-examination as other witnesses are; the parties to be at liberty to employ, also, as heretofore, their own medical experts, if they desire to do so. In support of this plan it is urged that the official experts will come into court with such clear credentials of disinterestedness, honesty and intelligence as will relieve the jury from the duty of passing upon those characteristics of the experts, a duty which the jury is not qualified to perform. It is further suggested, though not usually explicitly insisted, that official experts, being free from pecuniary or other bias, may be expected to agree; so that in every case the jury may reasonably believe that the testimony of such men expresses the sound and accepted opinion of the medical profession upon whatever question of medical science is in controversy between the parties. It is not, and obviously could not be, urged in favor of this plan that it would eliminate the abuses of cross-examination. It may also be noted that the plan does not and could not constitutionally prevent more than one official expert from testifying in the same case.

The second plan, proposed sometimes as a substitute for, and sometimes as a supplement to, the first plan, is to improve the quality of jurors and judges by a more careful selection, and to restore to the judges the power which they always possessed at common law, and still possess in England and in the courts of the United States, and in the courts of a few of the states, to advise, although not to control, the jury in the decision of complicated questions of fact, of which questions involving medical expert testimony are the most typical. In support of this plan it is urged that the selection of intelligent and honest jurors, and of judges who possess, in addition to knowledge of the law, that general knowledge of scientific methods which is now deemed an essential part of a liberal education, is obviously necessary to an efficient administration of justice in modern times, when the questions of fact presented for decision so often touch the domain of science. It is further urged that historically the power of the trial judge to advise the jury upon complicated questions of fact was an essential part of the system of trial by jury, and that that power has grown not less but more necessary as the class of questions of fact presented for decision has come to include a larger and larger proportion of subjects remote from the knowledge of the honest and intelligent, but uneducated and untrained, man.

Let us consider the objections to each of these plans. The objections to the first plan are, first, that it does not eliminate or touch the evil of unfair cross-examination. This objection seems too clear to require discussion. Second, that, even assuming for purposes of argument that all honest, unbiased and intelligent doctors agree on all or most of the scientific questions presented in ordinary litigation, there is grave doubt whether any plan can be devised which would insure, not perhaps the presence upon the official board of some honest and intelligent physicians, but the exclusion from the board of physicians who, while perhaps honest, nevertheless represent schools or sects based upon unsound and erratic views. It may be dangerous to attempt to illustrate what is meant, and I speak with diffidence on this point. But any candid observer of our American democracy must realize that up to the present time public opinion has been not only distrustful of the expert in all branches of knowledge, but also antagonistic to any attempt on the part of the few to require acceptance on the part of the many of any standards or tests for distinguishing between the wise and the ignorant. The juror who fails in court to discriminate by reference to sound principles between the osteopath, the hydropath, or the Christian healer on the one hand, and the graduate of the Harvard Medical School on the other hand, is also a voter and a member of the great majority of voters, and as such would look with little favor upon the establishment of a body of official experts in medicine composed of any one "school." Representation in accordance with quantity and not in accordance with quality is the instinctive demand of the general public. Is there not, therefore, real reason for apprehension that into whatever hands the selection of a body of official experts were put, influences of the kind I have hinted at, and perhaps others less legitimate, would prevent its being composed of the class of men contemplated by the plan, namely, exponents of the best medical knowledge of the day, and no others?

The third objection to the first plan is to my mind the most serious of all— and here perhaps I have no right to expect that you will agree with me. But could the establishment of such a body of official experts, even if it were made up as its advocates would have it, eliminate the conflict and contradiction of medical testimony? Is it possible that the great divergence of medical opinion which lawyers note upon such questions, for instance, as the extent to which neurasthenia and hysteria are due to physical injuries, is to be accounted for simply, or even to any appreciable extent, by the supposition that the doctors who testify to these conflicting views are influenced by pecuniary or other improper considerations? I remember two cases tried at an interval of three or four years, in both of which the same gynecologist testified as an expert witness for the plaintiff. He had received the best medical education obtainable in this country, and I believed him, and still believe him, to be an intelligent and honest man. In the first case he testified without qualification that a certain proposition concerning the effect of sudden violence upon the uterus was true. In the second case he testified that that same proposition was false. When pressed for an explanation of this inconsistency by a cross-examination which must have been irritating, and by many doctors would have been deemed unfair, he finally said that when he testified to the first view he believed it to be true, but that further study and observation in the interval had convinced him that it was not true, and that thus on both occasions he had respected his oath. When asked what he had to say about the effect of his first testimony upon the defendant corporation, which had been compelled to pay a considerable sum of money because the jury believed the view which he now admitted to be untrue, he stated that that was not a matter for which he felt any responsibility, or with which he had any concern. And at the first trial an expert called by the defendant testified to the view which the plaintiff's expert at the second trial admitted was sound, but differed at the second trial with the plaintiff's expert on other equally important questions of medical science. The men were equally intelligent and equally honest. Both were qualified to be members of such an official board of experts as is contemplated in the first plan. Had both been members of such a board, one would have been called by the plaintiff and the other by the defendant in each of the cases to which I refer; both would have been paid by the state; but the same conflict of testimony would have occurred that occurred when they were paid by the parties. I do not believe that the views of either were influenced in the slightest degree by pecuniary considerations, although the views of both appeared to be somewhat sharpened by the partisanship aroused by persistent cross-examination. Experience has led me to believe that cross-examination is a more powerful and certain cause of partisanship in medical expert witnesses than all other causes combined. But if the first plan will eliminate neither unfair cross-examination, nor conflict of opinion, nor partisanship on the part of the medical experts, what reason remains for adopting it?

Another objection to the first plan is implied in what has already been said. It is that if the difference of opinion among medical expert witnesses is inevitable, and is an essential characteristic of the progress of their profession in a large field of medical topics, it is unfair that the party who can find an honest and intelligent expert representing medical views on the whole favorable to his case, and just as intelligent and able as any member of the official board, should find himself handicapped by the argument that the difference of opinion developed between his expert and the official expert is not legitimate, but is due to the fact that his expert is interested and partisan, and the official expert disinterested and fair. A little thought along these lines will suggest to any one possibilities of grotesque situations; as, for instance, if the leading surgeon in Boston employed by one of the parties as an expert were contradicted on the witness stand by an official and therefore disinterested and unbiased osteopath. Yet the average juryman would probably see nothing grotesque in such a situation.

Let us now consider the objections to the second plan. The first objection is that the judge, even though he may be an able and cultivated man with a sufficient general knowledge of the methods of modern science, will still not be qualified to form any independent opinion of his own upon a matter requiring expert medical knowledge; and so, even if he is permitted to advise the jury on the subject, it will still be a case of the blind leading the blind. This objection, though plausible, is superficial. The judge in advising the jury at the end of the case, after all the evidence is in, upon the credibility of the respective expert witnesses, and the relative reliability of their conclusions, and the soundness of their methods of thought as disclosed by examination and cross-examination, is not really expressing to the jury his own independent opinions upon questions of medical science. What he is doing is indicating to the jury those general tests which must be applied in dealing with the conclusions of scientific men, and with conflicting scientific opinions. No one familiar with the mental power and acumen of the best English judges, selected as they are from among the leaders of the bar, and trained by long experience in sifting out from the conflict of testimony those conclusions which are, on the whole, more sound and reliable than the others, though not necessarily wholly true, can doubt for a moment that the average juryman with no experience in such matters would be greatly assisted by the advice of such a man in reaching a conclusion in a conflict of medical expert testimony. I do not mean that infallible judges can be found, or that the ascertainment of truth can be guaranteed. I merely mean that the traditional and existing system of the English common law affording the jury this invaluable assistance from the judge is a much better method than the American system of distrusting the judge and stripping him of his power, and correspondingly over-estimating the capacity and increasing the power of the jury.

The next objection to the second plan is that whatever may be the case with the courts of the United States and of England, the trial judges of our state courts are not competent to be intrusted with this power. If this is the fact, which I do not admit, I simply point out that it has not always been the fact. I never heard it doubted that Chief Justice Shaw and his associates were entirely competent to advise the juries of their day upon the medical expert testimony that was then given in the courts of Massachusetts. Nor is doubt often expressed of the capacity of the present judges of the courts of the United States to exercise this power. It is significant that the only judges whose capacity to exercise the power is doubted are the judges from whom the power has been taken away. If those judges really do lack the capacity, I suggest that the reason is likely to be that when the power and responsibility attached to an office are diminished, the qualifications of the incumbents of that office are apt correspondingly to diminish.

But even if this objection is well-founded, the answer to it is that better judges should be selected and given appropriate powers. It may also be said that one never knows what capacity a judge has until he is put to the test. The judges of our Superior Court are certainly entitled to at least a trial in this matter before they are declared incompetent to exercise one of the powers historically inherent in the office of a trial judge.

The last objection to the second plan is that it is undemocratic; and I suspect this is the objection that in the minds of the opponents of the plan outweighs all the others. It would be interesting to trace historically the origin of the peculiar view of democracy implied in this view. It certainly is not English, and yet England is in many significant respects more democratic than America. It is probably French; and it probably came into the American body politic at the time of the French Revolution. But whatever its origin, it is certainly wholly unsound. It is one aspect of the distrust of the expert in all fields of knowledge which has, until recently, been characteristic of our people. It will not bear a moment's analysis. The present statute taking away the power of trial judges to advise juries upon matters of fact was introduced without discussion, and, it is said, at the request of the late Gen. B. F. Butler, into the General Statutes of 1860. It is apparently based on that idea of democracy which supposes that by adding together a sufficient number of uneducated or untrained minds a collective mind may be produced more intelligent and more capable of dealing with scientific knowledge and methods of thought than any of the units of which it is composed. *Vox populi vox dei.* If this is true it would seem unnecessary to establish medical schools to apply the general methods of science to the exploration of a particular field, or universities to instruct men in the history of human error, and to train them in sound methods of thought. It would seem sufficient to bring together a sufficient number of uninstructed persons and to take their decision on any question that might be proposed. On this theory I doubt whether the number should be limited to twelve. Again, many persons speak as if democracy as such were interested in erroneous decisions of controverted questions of fact, provided only the decisions are determined by creditable feelings, sympathies or emotions. Such is not the case. Democracy is interested only in securing equality before the law, and the removal of artificial and unjust barriers to individual advancement. But there is no democratic, as contrasted with aristocratic, organon for the ascertainment of truth. The methods of inductive science are the same whether applied to the ascertainment of truth in St. Petersburg or Boston, and so is the chance of error.

The truth of the whole matter appears to me to be that the difficulties with which we are confronted are due to the belittling of the expert — not the doctor, but the judge. It is he who at any trial is the one disinterested expert in the matter in hand, namely, the ascertainment of truth from the clash of conflicting testimony. The doctors, therefore, should not take up this matter as doctors, or the lawyers as lawyers. Both should strive as citizens to restore to the courts of common law their traditional dignity and their traditional powers, and to encourage the use of those powers. The most important of them are the power to dominate the court room, to suppress unfair and illegitimate cross-examination, and to give to the jury the benefit of the advice of a mind trained by education and long experience in the analysis and weighing of human testimony.

The fundamental features of the existing judicial machinery cannot be changed. No class of witnesses, however wise and honest, can be allowed to invade the province of the jury and decide for them any questions of fact. Nor can the weaknesses in the administration of justice now under discussion, and others equally serious, be remedied at once or by any single measure of reform. For their causes lie deep in certain human instincts and prejudices which have always retarded the attainment of justice and truth. But the effort for reform is none the less worth making.

"For like a child sent with a fluttering light
To feel his way across a gusty night,
Man walks the world again and yet again.
The lamp shall be by fits of passion slain.
But shall not He who sent him from the door
Relight the lamp once more, and yet once more?"

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IMPROVEMENT OF THE PRESENT SYSTEM OF EXPERT TESTIMONY.*

BY EZRA R. THAYER, LL.B., BOSTON,
Member of Suffolk Bar.

We lawyers have come forward, one after another, and borne our testimony. I fear that you have found it unpleasantly unanimous. There have indeed been some incidental points of disagreement, as, for example, upon the question whether we ought to muzzle the judges for fear lest their bias or partisanship may sway the unprejudiced intelligence of the jury, or whether we shall accept assistance from the one person in the court room who combines impartiality with a trained mind and legal experience; in other words, have a *real* trial by jury, which, as it has come down to us through centuries of development in England, means a trial by *judge and jury*. But upon the question which no doubt chiefly interests you, whether the present system of expert testimony can be improved by legislation, you have heard but one opinion. Each of us in turn has assured you that the existing state of affairs is the only proper, or at least the only practicable, one, and that it devolves upon you to develop without legislation any reforms which may be needed; "therein the patient (for in this matter you seem to be the patients) must minister to himself."

If this advice has proved not altogether palatable, I suggest to you by way of consolation the reflection that many great law reforms have come about, not through the lawyers, but in spite of them. When it comes to changing inherited conditions with which we are familiar, our profession has a tendency to be exceedingly conservative, and the motive power for reform often has to come from other sources. Take, for instance, the history of England during the last century. The radical and sweeping reforms which have taken place there, especially in procedure, are well known. And it is also well known to what inspiration those reforms have in large measure been due. The author of "Bleak House" and "Hard Times" was certainly no lawyer, and his opinion of lawyers may be gathered from his writings. Jeremy Bentham, of whom it has been said by the authority perhaps best qualified to judge that there has been no single law reform since his day which could not be traced to his influence, was, indeed, called to the bar; but he never did anything in particular there, and his opinion of the profession may be gathered from such observations as these: that "barristers are so-called because they bar from reform the extremes of the law," and that "it is as impossible for a lawyer to wish men out of litigation as for a physician to wish them in good health." I do not ask you to endorse the latter sentiment any more than I endorse it myself, but I mention these matters as encouraging the hope that the prospect of curing existing evils by legislative enactment may be brighter and nearer than it appears to the imperfect vision of my profession, and that you may in due time refute some of the prophecies which you have heard to-night.

But after all I am only a lawyer, and so, after having said this much, I end by joining in the chorus of my professional brethren. I do not mean that there is no room for legislation. On the contrary, I think it most desirable that the unwise limitation which now exists upon the power of the judge in commenting on the facts of the case should be done away with. But on the question of changing the position of the medical expert witness, and adopting the continental system, I am very skeptical. And, furthermore, I venture to suggest that the evils of the present system are greatly exaggerated, and that this exaggeration has come about in large part from a confusion of its effect upon the medical witnesses themselves and its effect upon the administration of justice. I want to urge you to keep these two questions apart as much as possible in your minds. It is unfortunately true that medical expert witnesses suffer all sorts of discomforts and annoyances of which they may justly complain. In part these are no doubt the fault of the lawyers. Witness the evil, only too common, of rude and offensive cross-examination, and the not less common and hardly less serious evil of stupid and unduly prolonged cross-examination. In large part, however, these inconveniences are the same which other witnesses must suffer, and are unavoidable in the trial of cases; and the sacrifice of money, time and patience which is involved is only the same contribution to the public welfare which is made in another form by the man who does jury duty. Of course where a physician has been through these tedious and irritating experiences, he is naturally led to take a dark view of the whole situation, and he is not in the best position to see the bright side of the picture. A very similar situation exists in regard to jury duty. I think it is generally agreed by those who understand the situation that the jury system (provided proper measures are taken to get the right kind of jurymen) is a very good system indeed, and much better as a practical matter than any other method that could be devised for trying issues of fact in our community. But if you ask the best men who have served on juries for their opinion of the jury system, especially just after they have completed a term of service, you will almost always get a depressing view, and this view will be reinforced by illustrations drawn from cases which were perfectly clear and yet where stupid or perverse jurymen persisted in holding out for the wrong side in defiance alike of common sense and the instructions of the judge. But if you take one of these very illustrations and follow it through to the end, you will be likely to find that the verdict which was rendered was that which your interlocutor believed was the right one, although this result has been overshadowed in his mind by the time it took to reach the verdict, and the irritations that had to be gone through before it was reached. In other words, justice was done and the system worked right, but at an expense to the patience and temper of the man concerned which obscured to his vision the good which would have been apparent to one who was looking on from a distance with a better perspective.

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* Remarks at the semi-annual meeting of the Suffolk District Medical Society, Oct. 30, 1909.

Just so in the case of medical expert testimony. I believe that if this question of the discomfort to the witness himself is clearly separated from the effect upon the administration of justice, it will be found that the present system is far better than most people suppose, and that as a whole it works very fairly well. How well it works is best seen by a lawyer when he compares medical experts with other experts. To a lawyer the question which interests you is only a branch of the wider question of expert testimony in general. We have to do not only with medical experts, but with patent experts, real estate experts, handwriting experts and so on. I thing it is safe to say that none of these other kinds of expert testimony will bear comparison for a moment with that of medical experts, and that if you were to make even a superficial comparison you would find yourselves even prouder men than you now are. As a conspicuous example of what the contrast means, take the Tucker trial. With a single negligible exception, the medical expert testimony at that trial was an admirable exhibition and reflected the greatest credit on all concerned. Dr. Wood's testimony for the government was an extraordinary example of perfect fairness, keen analysis, and careful and exact statement, and the testimony of his pupil, Dr. Pease, for the defense was worthy to go with it. But turn to the handwriting testimony at the same trial — "Look here upon this picture and on this." The spectacle presented would be comic were it not tragic. Four experts, leaders in their profession, testified on their oath, and at the peril of a man's life, that a certain document was written by the defendant, a young man of no particular cultivation or education. Then came four other equally eminent experts, and they upon their oath, and with the stake of a capital trial, testified not merely that the handwriting was not the defendant's — the mere negative would not give their side quite as strong a pull as the affirmative had given to the government — but that it *was* the handwriting of the deceased, a young woman of refinement and education, who wrote a strongly marked hand characteristic of a cultivated woman, and with no perceptible resemblance to the handwriting of the defendant. And the arguments by which these gentlemen supported their conclusion appeared to rest largely upon the *difference* between the handwriting of the paper and Miss Page's natural hand. Obviously, said they, she must have been in a state of great excitement when she wrote this paper, and must have written it in a cramped position; it would, therefore, differ much from her natural hand; and the manifest differences which are to be seen thus prove that it was written by her.

The statement of the situation makes its own best argument, and comment would not make it stronger.

The Tucker trial was not an isolated instance. An example of medical testimony at its best may be found in one of the latest important murder trials hereabout, when the testimony of Dr. W. T. Councilman for the defense may be compared with the equally admirable testimony of his pupil, Dr. G. B. Magrath, for the government. Of course, there are instances of a different kind. Your profession, like ours, contains unworthy members, and no reform, legislative or otherwise, will eradicate them all. But speaking for myself, my observation of medical expert witnesses (dealing with them as a class, and not with individual exceptions) has given me a constantly increasing respect both for their competency and their fairness, and this in spite of the fact, which Mr. Thompson has clearly pointed out, that neither profession thoroughly understands the other's attitude of mind, and therefore each fails to do the other full justice. In the very last case which I tried before a jury, only a few days ago, when I was acting for a defendant in an accident case, there was nothing whatever to criticise in the testimony of any one of three medical witnesses called by the plaintiff, and the defendants did not call the doctor whom they had employed to examine the plaintiff for the very simple reason that his report did not differ materially from the testimony of the plaintiff's experts. While this was, no doubt, a happier situation than the ordinary one, I, nevertheless, sincerely believe that there is much unjustifiable and unthinking pessimism in the loose talk which is heard upon the subject; that even as things now are the system works very fairly well with respect to medical expert testimony; and that public sentiment and organized effort among your profession can make it work very much better.

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MEDICAL EXPERT TESTIMONY.*

BY GEORGE W. GAY, M.D., BOSTON.

For many years the prevailing method of introducing certain kinds of medical expert testimony into our courts has been a reproach, and at times a disgrace, to the legal and medical professions. Quoting from Judge Clearwater's excellent paper in the *North American Review* for June, " a court of last resort in a New England state recently stated that ' if there be any kind of testimony that not only is of no value at all, but even worse than that, it is that of the medical expert,' and by the Supreme Court of the United States, ' Experience has shown that opinions of persons professing to be medical experts may be obtained to support any view.' "

These are serious allegations from the highest of legal authority in the land. It would, therefore, seem incumbent upon the legal and medical professions to combine for the purpose of correcting, so far as may be, the existing condition of affairs.

For our present purposes medical experts may be considered as of two classes, the partisan and the non-partisan. The former are too prominent in our courts, the latter much less so than could be desired. The former are bought or hired in the open market and are paid for a special purpose, namely, to serve the cause of the purchaser, regardless of its merits or of the cause of justice.

While the better class of experts are obtained in the same manner, yet, as a rule, they endeavor to be as unbiased and as non-partisan as is consistent with their notion of duty to their employer. Undoubtedly most of them would much rather be called into the case by the court than by one of the contestants, thus leaving them free and untrammeled to give their opinions in accordance with their unbiased judgment. Summonsed by the court, they would naturally care more for the cause of truth and justice than for the interests of the parties at suit. The latter would engage the attention of the experts employed for the purpose. The court expert is in the case to assist the court and jury. He aims to place medical expert evidence upon the high plane appropriate for all scientific testimony. He is the representative of the soundest conclusions of experience and of the authorities in that special field of knowledge. He occupies a position entirely different from the ordinary expert, and he should conduct himself accordingly. On the other hand, these experts should be treated as gentlemen. They ought not to be badgered and insulted in cross-examination for the purpose of destroying their influence with the jury. They should be allowed to state their opinions in their own way, and should be subjected to cross-examination solely for the purpose of explaining and elucidating those opinions. The court and the jury want facts and unbiased opinions as the sure foundation for their work. Given these two essentials, they may be trusted to perform their duties in a much more satisfactory manner than is possible at times under the present conditions.

Some of our most accomplished experts utterly refuse to appear in court or to accept service as an expert under the present methods of conducting examinations. They very naturally object to placing themselves in a position in which they may be subjected to the taunts, to the ridicule and to the insults of third-rate lawyers. They are gentlemen endeavoring to serve the cause of justice to the best of their ability, and hence will not submit to the humiliation of being treated as adventurers and mountebanks.

Of course the correction of this state of affairs rests with the bench and the bar, and not with the legislature. To the credit of the courts of Massachusetts it may be said that this abuse of expert witnesses is not as glaring in this commonwealth as it is in some of the other states. The matter is of considerable importance, as it tends to discourage desirable experts and to hamper the administration of justice.

The partisan expert of the present day, however, is a necessary factor in the existing order of affairs. The time-honored custom of each contestant employing medical experts to look out for his interests cannot and should not be abandoned. In many instances it is sufficient for the ends of justice, and may well be continued.

This class of experts has made a reputation for themselves and must abide the consequences. Unfortunately almost any one, be he a graduate from a medical school or not, so long as he has a license to practice in this state, may qualify as an expert and give opinion evidence in our courts. For this and other reasons it must be admitted that some of the so-called medical experts lack the knowledge, the character and, I am sorry to say, the honesty which are so essential to the high position. It follows, of course, that not a little of the stuff which is offered in our courts as expert evidence would not pass muster in any of the medical schools, societies or clubs. Yet it is foisted upon the public as the opinion of the medical profession, to the detriment and chagrin of the better portion of it.

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* Read at the semi-annual meeting of the Suffolk District Medical Society, Oct. 30, 1909.

As the writer understands the matter, it is a very small part of the duty of the counsel in any suit at law to see that justice is done. It is their duty to look after the interests of their clients. That is what they are employed to do and paid to do. If they are faithful and zealous in their work, they will take all legitimate methods to win their cause without much regard to the matter of abstract justice. In cases calling for the services of experts, they will naturally employ those who will best help their case. This is common sense and common business practice.

The cause of abstract justice, however, is in many instances a separate matter and is not always served by the above tactics. It is evidently the business of the court and jury to see that justice is done all parties. It would also seem to be the plain duty of the court to see that the jury comprehends the nature and meaning of the testimony laid before it, and that he should have the authority to aid them in weighing and sifting evidence, especially if it be of a scientific or technical nature. Of course the opponents to this idea will claim that the jury and not the court is trying the case, and that it is no part of the court's business to render any such aid in the matter. It would seem to a layman, however, to be good sense, if not good law. In cases in which the evidence has been conflicting, leaving the jury hopelessly confused and unable of their own knowledge to reach a fair decision, who is to assist them if not the court? It would seem far better that the judge should have authority to render judicious aid under these circumstances than that the jury should do what it has done in numerous instances and at times by the advice of the court, namely, throw out the contradictory expert evidence altogether and base the verdict upon other testimony which can be more easily comprehended. The latter course is a severe arraignment of the prevailing method of introducing expert evidence in our courts, and should not be allowed to continue indefinitely.

Two conditions exist in relation to expert medical testimony which call for relief. First, cases in which the court could serve the cause of justice very materially were he allowed to charge the jury upon the expert evidence offered at the hearing. By reason of his superior knowledge and experience he would be enabled to indicate to the jury the chief points for their consideration, as well as the character of the testimony, often blind and confusing, which had been brought before them.

The plan suggested by Mr. Thompson, which he has so ably advocated upon several occasions, would seem to cover this condition admirably. It is to be hoped that another effort will be made to obtain legislation on this point during the coming session of the General Court, and that it may be successful. The medical profession will heartily endorse the plan and will do what it can to help secure its adoption.

While plan number one would seem to remedy the conditions named, yet it does not reach condition number two, namely, those cases in which, from the nature of the questions at issue, the court is unable to decide upon their merits or demerits. Questions of a purely technical or scientific character not infrequently arise which can be satisfactorily explained and decided only by those who are especially trained in the subject. Just here is the field for the independent, unbiased expert, who should be selected by the court upon his own motion and paid by the county in which it falls. Said expert should hold a purely impersonal relation to the cause in hearing, should be required to give opinions upon technical and scientific questions only, and should appreciate the fact that it is his duty to serve the cause of justice and not that of either party at suit. Plan number two is a supplement of number one. From the nature of the points involved it will not be resorted to as frequently as will number one, but the importance of the points occasionally at issue would seem to justify its enactment into law.

The personal equation of the medical expert is an important factor and has much to do with the efficiency of the witness. Not every one can give definite, sensible opinions in simple terms which any one can understand, and too many cannot say "I don't know," when it is evident to everybody that they do not. Not infrequently questions arise upon which there will be an honest difference of opinion. This fact was shown in a recent trial for homicide in this vicinity in which three leading experts appeared upon each side and gave conflicting opinions as to the mental condition of the prisoner, to the confusion of the jury, if not the court, to the mortification of the medical profession and to the disgust of the general public.

While this is a difficult situation to meet, yet instead of fighting it out in court, a far better plan, which is sometimes resorted to, is to refer the medical questions to a commission of alienists, who should conduct their examinations along the lines of ordinary consultations, and their conclusions embodied in reports and submitted to the court. The physicians would appear at the trial and be subject to examination and cross-examination, as are the ordinary witnesses. This method tends to serve the cause of justice, to prevent those unseemly wrangles which at times have been a disgrace to both professions, and should be more frequently brought into cases in which mental conditions are in dispute.

At various times during the past thirty years the medical profession of this state has endeavored to obtain legislation looking to an improvement in the matter of medical expert testimony, but, owing largely to the opposition of a certain portion of the legal profession, without success. One mistake we have always made is in asking for too much, thereby destroying for the time being the chance of getting any change made in the laws. For instance, it is useless to request that all medical experts shall be appointed by the court and shall not be subject to cross-examination, or that the state shall pay for all expert testimony. The former propositions are unconstitutional and the latter is not practicable.

The failure to obtain legislation two years ago was due partly to the fact that the legal and medical professions did not work in unison. The committee of the Bar Association had no conference and very little communication with the committee of the medical profession, although the latter gave due notice that it was ready for a conference at any time. As might have been expected, the result was that a divided committee appeared before the joint judiciary committee, one party seeking one thing and the other something else. We were very naturally given leave to withdraw. It is to be hoped that we have learned something by past experience and will be enabled to profit thereby in any future efforts to obtain legislation in this direction.

The medical profession would not favor any very radical change in the present methods of introducing medical expert testimony into our courts for the very good reason that it would do no good, would accomplish nothing. This is the lesson of past experience. The profession will do its utmost to forward any reasonable measures looking to a reform. Among other plans it insists emphatically that some method shall be established by which our best experts may be called into trial cases in such manner that they may be an aid to the court and the jury and shall be entirely independent of the parties at suit. It believes that in some such way the cause of justice may be forwarded, the business of the courts not only expedited but accomplished more satisfactorily than at present, and that the standard of expert medical testimony may thereby be raised to a position which will command the respect of the best portion of the community, and perhaps of the Supreme Court of the United States!

Men of character, intelligence and experience, who have been trained in the work and who are selected by the court and paid by the state, should come as near being the ideal expert witness as may be expected in human affairs. This experiment has worked well in other countries, as in France, Germany and several European nations in which the experts are appointed by the judges and are obliged to serve under heavy penalties for refusing to do so. The experiment would seem to be worth trying here.

In a recent canvass made by the legislative committee of the American Medical Association it was found that, of thirty-five states heard from, only two have any laws regulating the admission of medical expert testimony to the courts. Michigan has a law giving the court authority to call from one to three experts in trials for homicide only, said experts to be paid by the county. In civil cases neither party is allowed to call over three medical experts without permission of the court—a wise provision, as it saves time and confusion.

In Rhode Island the court may appoint one or more experts in any case, civil or criminal, upon the request of either party, the expenses of such experts to be paid by the party requesting their appointment. Information from reliable sources indicates that these regulations are an improvement upon the old order of things in both states and are fairly satisfactory.

In view of the widespread dissatisfaction which exists all over this country in relation to the matter in hand, as shown by repeated efforts to obtain relief of the different legislatures, reasonable experiments are certainly worthy of a faithful trial. Some sort of legislative action is favored by most of the judges and leading lawyers of this state. The main questions to be decided relate to the definite plans to be advocated before the legislature. From the nature of the points at issue, this is largely a legal problem, and yet little is likely to be accomplished without a united front on the part of the two professions interested. Their representatives should get together, decide upon just the measures to be asked for and the plans necessary for securing their adoption.

The committee on state and national legislation of The Massachusetts Medical Society stands ready to assist in any reasonable manner in this work, simply requesting that our efforts be made along the same lines and in unison with each other. If we do not ask for too much, for too radical legislation, and if we work together persistently, it is only a question of time when something will be accomplished in the way of reform.

By way of summary the reader would beg leave to submit the following propositions, the adoption of which would very materially improve the present unfortunate condition of medical expert testimony in our courts:

First. Give the court authority to charge the jury upon the medical expert evidence.

Second. Give the court authority to appoint medical experts in certain cases upon his own motion, said expert to be paid by the county.

Third. Refer all important questions relating to the mental condition of the parties at suit to a commission of alienists or experts before the trial.

Fourth. The bench and the bar to correct certain abuses attending the hearings of expert evidence in the courts.

The first two propositions call for legislative action, the last two do not. They are all respectfully submitted for consideration with the hope that something tangible and reasonable may be accomplished.

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Clinical Department.

TUBERCULAR ENDOMETRITIS.

BY FREDERICK W. JOHNSON, M.D., BOSTON,

Gynecologist in Chief, Carney Hospital.

Mrs. W. J. H., forty years old. Mother of three children, the youngest eight years of age. No family history of tubercular disease. Husband, though never having shown any tubercular trouble, has a very tubercular family history. Twenty-seven months previous to my seeing her she became pregnant. For three months she flowed three or four times a month up to the fourth month, when she aborted. She had miserable health during that winter. Since the abortion there has been flowing most of the time up to my first seeing her. During the last year she has enjoyed excellent health and has gained in weight. Menstrual history was negative. Except from looking somewhat anemic she was a large, strong, healthy appearing woman. On examination a ruptured perineum and a large uterus with slightly lacerated cervix were found.

Jan. 7, 1909. The uterus was curetted and a small amount of endometrium and a few polypi were obtained. The perineum was repaired. I rather expected a diagnosis of malignant disease would be made, but Dr. Councilman's examination showed the case to be one of tubercular endometritis. A diagnosis of tubercular endometritis made from the curettings must be rare as this is the first case where such a diagnosis has been made, hundreds of curettings having been examined by the pathologists (it having been our custom for years to send to the pathologist the curettings from every case). Believing in tubercular cases as I do where malignant disease is present that as clean a sweep as possible should be made, Jan. 23, 1909, an abdominal hysterectomy was done and she was discharged well in twenty-three days and has remained well since. At the time of the operation no evidence of tubercular disease was to be seen within the peritoneal cavity except in a few places on peritoneal covering of the tubes.

The following is a careful and minute pathological report of the organs removed, made by Dr. Rushmore: The specimen consists of the uterus (including the cervix), the tubes and ovaries. Uterus, 3¾ by 2½ by 1½ inches, symmetrical, regular in outline. On both anterior and posterior free surfaces are numerous fine shreds of adhesions. The cervix is normal, parous. On opening the uterus, the myometrium is of normal relative thickness and character, moderately firm consistency, ⅝ in. thick in the anterior wall. The blood vessels project slightly above the cut surface, but show no marked change. The mucous membrane of the cervix is of normal thickness, thrown into irregular folds, and the surface is of a delicate pink color.

The endometrium of the body of the uterus is about $\frac{1}{16}$ in. in thickness. The surface is slightly roughened, numerous small-rounded and irregular projections about $\frac{1}{16}$ in. in height are evident. A few small nodules suggestive of tubercles with lighter center are visible. These are seen particularly on the posterior wall and extend down to about half an inch from the internal os Almost everywhere there is some infiltration of the endometrium with blood.

Right tube is 4 inches long; from ⅛ in. in diameter at the uterine end to ½ in. at the fimbriated extremity. The surface of the proximal half is smooth and glistening. On the distal half numerous small tubercles, or blebs, are seen, increasing in number toward the fimbriæ, which are smaller than normal and with inverted edge. Some of the tubercles contain fluid; others are solid, but more contain a lighter center. They are miliary in size. Two hydatids are present; one near the extremity of the tube, the second about ¾ in. proximal to this. On account of numerous adhesions, the exact relationship of these bodies cannot be made out. The fimbriated extremity is patent. On opening the tube, the endosalpinx is thrown in folds and slightly thickened, but is otherwise normal in appearance. Left tube 3½ inches long, ⅛ in. in diameter at cornu to about ⅜ in. at the fimbriated extremity, which is patent, but torn and covered by adhesions. Surface smooth except the outer half, on which blebs similar to the right tube are found. No hydatid is present. Half an inch from the fimbriated extremity is a nodular swelling, proximal to which is a constriction, due to pressure of some instrument, apparently. The nodule is apparently due to inflammatory thickening and induration. The endosalpinx is otherwise normal. The ovaries are normal in size and appearance on section. On the surface are numerous fine adhesions.

Microscopical examination of tissue from the endometrium, which shows roughening to the external os; from several portions of both tubes, from the ovaries and the blebs and tubercles on the peritoneal surface is as follows: The myometrium shows slight round-celled infiltration throughout, especially in the neighborhood of the blood vessels. The line of demarcation between the myometrium and endometrium is fairly regular. The endometrium is of normal thickness. For the most part, the surface epithelium has disappeared. Where present it is lower than normal and among the epithelial cells are numerous small round cells and some polynuclear leucocytes. The glands are perhaps slightly decreased in number, but normal in size and arrangement. The glandular epithelium is normal, but among these cells are numerous small round cells.

The interglandular substance is perhaps slightly increased in amount, is more dense than normal and shows many small round cells; in places marked infiltration. Polynuclear leucocytes are relatively few. In the endometrium, rather nearer the surface than the myometrium, are several typical tubercles with giant and epithelial cells. In several places there has been necrosis with considerable infiltration with polynuclear leucocytes. The blood vessels of the endometrium are normal. There is little blood seen in the capillaries or free in the tissue. Sections in series show chronic inflammation of the cervix, but no tuberculosis below the internal os.

Sections from the tubes show everywhere evidence of slight chronic inflammation, but only in the outer portions of the tubes are giant cells and tubercles found.

The endosalpinx is thickened; in general the surface epithelium is preserved.

The ovaries show no evidence of tuberculosis.

The peritoneum shows some small cystic areas lined by peritoneal endothelium and some true tubercles.

Diagnosis: Tuberculosis of the tubes and endometrium.

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Book Reviews.

Treatment of Diseases of Children. By CHARLES GILMORE KERLEY, M.D., Professor of Diseases of Children, New York Polyclinic Medical School and Hospital, etc. Second revised edition. Octavo of 629 pages, illustrated. Philadelphia and London: W. B. Saunders Company. 1909.

This the second edition of this admirable work is even better than the first. The book has been revised, and in places rewritten, while several new sections have been added. There are a good many minor points in treatment in which we are inclined to take issue with the author, but on the whole this book gives the most complete and rational treatment of disease in early life of any with which we are familiar. The author in his preface states that the work has been prepared for the general practitioner and not for the specialist in children's diseases. While this may be true, we are sure that there is no pediatrist who will not be benefited by its careful perusal. We can recommend it most highly to every one who has to do with the treatment of children.

American Pocket Medical Dictionary. Edited by W. A. Newman Dorland, A.M., M.D. Sixth edition, revised and enlarged. Philadelphia and London: W. B. Saunders Company. 1909.

This small volume fills a recognized need in providing a remarkably complete yet concise medical dictionary. The various dictionaries, both large and small, edited by Dorland have found a definite and permanent place, and each succeeding edition amplifies and improves its numerous predecessors. The binding is particularly attractive and serviceable, flexible leather of good quality.

A Textbook of the Diseases of the Ear. By Adam Politzer, Imperial Royal Professor of Aural Therapeutics in the University of Vienna. English translation by Milton J. Ballin and Clarence L. Heller. Fifth edition. Pp. 892. Philadelphia and New York: Lea & Febiger. 1909.

After an interval of six years a new edition, the fifth, of Politzer's "Textbook of Diseases of the Ear" has been issued. On comparing the new edition with the one which preceded, it is found that the customary titlepage phrase "revised and enlarged" is true as far as the revision of the text is concerned, but not so true as regards the enlargement of the book, because the increase in the number of pages is very slight. The revision has brought the volume up to date, and the statement made by the translators in their preface must be assented to heartily. They say that the profession will again find the book a standard and complete treatise on diseases of the ear.

The treatise has been somewhat rearranged. All the sections on anatomy and physiology have been grouped together at the beginning. In the previous edition, the chapter on the anatomy and physiology of the sound-perceiving apparatus was placed nearer the end of the volume. No change has been made in the position of the index of literature; that is, it precedes the general index. The articles which compose the index of literature have not been added to, so that the chief interest of this index to-day is historical. Recent literature is given in the regular course of the text at the end of appropriate chapters. The newer work, which has been accomplished in the last ten years, appears in smaller type instead of being incorporated in the main text. This revision by footnote, as it were, enables the reader to see at a glance what is new and what is old.

In examining a book on diseases of the ear of recent issue the reader naturally turns first to the chapter on the labyrinth, because of late great progress has been made in the diagnosis and treatment of labyrinthine diseases. This chapter has been entirely rewritten. It is clear, full and satisfactory. The surgical measures advocated are conservative, but at the same time they are sufficiently radical to escape the epithet of timid. In the last ten years the fuller realization of the effect of diseases of the pharynx and of the nose upon the ear constitutes another important advance. It would be better had the chapter on diseases of the pharynx been rewritten. Proof is more than abundant that the majority of the pathological conditions of the pharynx have their origin in the lymphatic ring of Waldeyer or in the nose. The modern otologist is as much a specialist in diseases of the nose as in diseases of the ear. The bearing of disease of the nasopharynx upon the ear is stated by Politzer, it is true, but without sufficient emphasis. Old methods of treatment, like douching, are relied upon, and a suspiciously long list of local applications is given. In discussing the removal of adenoids, the instruments figured are old and the operative technic inadequate. On page 725 the following paragraph is found: "The operative removal of adenoid vegetations is best accomplished without an anesthetic, provided that we have to do with children who are well behaved and sensible and who will not offer any resistance which would interfere with the operation. If the children offer great resistance it is better to perform the operation under slight chloroform anesthesia, or under ethyl bromide, the effects of which quickly pass away." The necessity of cleaning the adenoid tissue from the opening of the Eustachian tube, from the cartilage of the tube and from the fossa of Rosenmüller is not emphasized. The treatment of the diseases of the accessory sinuses is too short to be satisfactory, and there is no mention of the correction of deformities of the septum by submucous resection. In the section on anatomy nothing is said of the anatomy of the temporal bone at birth.

The illustrations of the pathology of the ear remain the same as in previous editions. Their value is great and unimpaired. The illustrations of the various mastoid operations have never been satisfactory. They compare unfavorably with the best modern work. Many of the instruments figured are old-fashioned. The illustrations of instruments and of the mastoid operations might well be changed in another edition. The spacing of the type on the page, the arrangement of the headings and the free use of smaller type for paragraphs containing matter which is new or controversial please and rest the eye.

No single book contains so much as this book by Politzer. Because it was one of the first, if not the first, great book on diseases of the ear it has a marked historical interest. No book in the English language on diseases of the ear has served as the foundation for so many other books. It has furnished both text and illustrations. The illustrations have been borrowed so freely that by this time they would be over-familiar were it not for the fact that they were taken from such rare and fortunate cases that they were epoch-making and can never lose their freshness. This book is the one which most of us studied first, and the one which the student always studies last. The reader turns to it from the modern handbooks innumerable with the same satisfaction and profit with which he turns from a pocket dictionary to the Century Dictionary.

THE BOSTON

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THE CORRELATION OF MEDICAL AND OTHER CHARITIES.

ONE of the striking and significant facts in medical progress of the past twenty years has been the gradual correlation of medical with charitable and other philanthropic activities. Examples of this may be noted on every hand. An admirable instance is the work done by the Social Service Department at the Massachusetts General Hospital, whereby patients are followed in their homes, and not only aided by advice and instruction in dealing with their social, economic, hygienic and moral problems, but in this way and by intelligent supervision helped to obtain fuller benefit from their hospital treatment. Similar to this is the work done by tuberculosis classes and societies associated with hospitals or with churches, which serve to carry out systems of treatment more thoroughly than could ever be done by a physician alone, and at the same time to deal with important individual domestic conditions.

Another, though somewhat different, phase of the same tendency may be seen in the work of district nurses, in the recently established system of school nurses, and in the provision of stations for the distribution of modified milk among the poor at a nominal cost. In all these institutions, and in many others which we have not named, is a fundamental aim, — to carry out more fully the remedial efforts of medical science, through agencies allied with the profession, by combining with its treatment measures of social service, economic relief, hygienic supervision and educational enlightenment.

Still another and valuable example of this co-ordination of medical and social charity is to be found in the work — to which we have made previous editorial reference, but which is as yet little known outside this city — undertaken last spring by the Women's Municipal League of Boston in connection with the house clinic of the Boston Lying-In Hospital. Applicants for admission to the hospital are visited in their homes from time to time during their pregnancy by a trained nurse under the direction of the League, who observes their environment, instructs them in the important essentials of their hygiene during that period, and maintains intelligent watch for early symptoms of the grave possible complications of pregnancy, particularly eclampsia. After their delivery and discharge from the hospital the patient continues to be visited by the same nurse, who observes their post-puerperal hygiene, guides them in the feeding and care of their infants and endeavors in every way to aid in the establishment of favorable conditions for their healthful development. Similar service has for some time been rendered in the out-patient clinic by the Instructive District Nursing Association.

The value and beneficient possibilities of such work as that of the League can hardly be overestimated by one who realizes the peculiar importance of such supervision in obstetric cases. In private practice a well-trained physician endeavors to give such anti-partum and post-partum care. In a hospital clinic this is impossible, but the needed care can be given even more efficiently by a method such as that outlined above. It is, of course, too soon to observe results in the development of infants under this system, or the effect of such measures on infant mortality, but good results should be certain to follow in due season. Meantime there has been noted improvement in the condition of preparation in which patients enter the hospital to stand the test of labor, and several cases of impending eclampsia have been observed by the nurse and sent into the hospital early enough for treatment to avert what might have been a serious or fatal complication.

It is sincerely to be hoped that so desirable a system may not only be continued and extended in Boston, but may be established in other communities. Opposition to such a measure could come only from those who do not realize its full possibilities and advantages. For it has been found by experience that all such correlations of charitable with medical service work ultimately to the advantage of physician as well as patient. And surely every physician worthy of the name should give his heartiest encouragement to every measure which can extend and complete the carrying out of those efforts at human relief which are the aim of medical as of every other form of charity.

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RIVALTA'S REACTION.

Rivalta's reaction would appear to furnish clinical data of value if one is to be guided by the writings of Rivalta (1895), Moritz (1902), Janowski (1907) and those of numerous Italian clinicians. In a very elaborate thesis (Bordeaux, 1909) on the subject by Dr. de Barbier de la Serre, it is pointed out that Rivalta's reaction permits making a precise distinction between the fluids of transudation and exudation, whether pleural or peritoneal.

The technic is as follows: 50 ccm. of distilled water are put in a test-tube and one drop of a 50% solution of acetic acid is added. To this one drop of the fluid removed by puncture or otherwise is added. The latter slowly drops to the bottom and when coming in contact with the acidulated water assumes the form of a bluish-white ring which broadens out and becomes honeycombed. This ring may become striated by numerous bluish-white lines. These opalescent and lactescent stripes occur only when the fluid has an inflammatory origin; in other words, when it is an exudate. The precipitate dissolves in an excess of acetic acid which differentiates it from mucin.

In pure transudates, such as those arising in cirrhosis, cardiac diseases or hydrothorax, no reaction is obtained. However, there are some exceptions to this. It may happen that a transudate gives a positive reaction after several negative results, this being due to the fact that the trauma caused by the puncture has produced a slight inflammatory reaction in the serous membrane. The reaction will again become negative in later punctures.

De Barbier de la Serre has collected 34 cases, 12 being his own; these can be divided into 21 instances of exudation and 13 of transudation. In these the classic reaction of Rivalta was searched for 86 times, and in every case of frank exudation the result was positive, while when the fluid was a pure transudate the reaction was absent. Exceptionally, at the first puncture a transudate gave a positive result, but further examinations gave a negative finding. Under these circumstances, both processes were combined in the formation of the fluid collection and offer an example of the complexity of clinical facts.

From a very large number of personal examinations, De Barbier de la Serre has endeavored to elucidate the nature of the element precipitated by acetic acid, and concludes that fibrin is out of the question. And what is more, the amount of albuminoid matter contained in the fluid has no influence upon the reaction, and since albuminous urine or the urine of patients presenting an exudate do not give rise to it, it may be assumed the special albuminoid substances coagulating by heat and Rivalta's reaction are two quite distinct substances, one a paraglobulin and the other a pseudoglobulin that may be found in the blood. In point of fact, the blood serum of both animals and man gives a distinct reaction.

Rivalta's reaction is very sensitive, for an exudate diluted to fifty times its normal bulk can still produce it.

It would seem safe to assume that this reaction may be of considerable value in those cases where clinical and cytological examinations do not permit a distinction to be made between an exudate and a transudate.

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STATE TREATMENT FOR RABIES.

The New York State Department of Health has determined to provide treatment for rabies. The State Hygienic Laboratory at Albany is prepared to undertake the matter, and plans and methods for distribution and for the laboratory work have now been perfected. The department has been moved to engage in this work in view of the marked increase in the prevalence of rabies. Prof. V. A. Moore, dean of the New York State Veterinary College at Cornell University, where hitherto the diagnosis of the disease has been made, by the examination of dogs' heads, reports that in 1908 there were sent to him 315 specimens, while up to Nov. 1, 1909, he had received 576 specimens.

Up to the present time no provision has been made by the state for the treatment of this disease, but the county law has provided that superintendents of the poor may send cases to the Pasteur Institute in New York, and pay the expense incurred. A large number of cases from various parts of the state have been sent to New York for treatment, at a considerable expense to the counties, and it is argued that much of this expense could be saved by the state's undertaking the treatment. Except in certain rare cases of infection there would be time to furnish treatment to persons in all parts of the state who had been bitten by animals supposed to have rabies.

THE HAYNES STREET INVESTIGATION.

The thirtieth annual report of the Associated Charities of Boston, recently published, contains interesting record of the work done by that organization during the past year. Among the data of especial medical importance is the report of the Haynes Street investigation in East Boston. This single short street contains 64 houses, in which are lodged about 160 families. During the past six years 34 cases of tuberculosis have been reported from this street, 11 of them between October, 1907, and January, 1909. "In one family of 8, living in three rooms, were found 3 cases of tuberculosis" in persons under twenty-one years. "The room in which two of the children slept was aired and lighted only from a front room which was the sleeping quarters for all the rest of the family."

The revelation of such conditions, familiar enough to all physicians who have done district work, should be of value in educating public opinion to compel the gradual elimination of such menaces to general health and hygiene. The example of Haynes Street emphasizes again the truism that pulmonary tuberculosis is essentially a disease of overcrowding and unhygienic surroundings.

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INFECTING AGENT IN POLIOMYELITIS.

Investigations in the effort to determine the nature of the infecting agent in acute epidemic anterior poliomyelitis are being prosecuted by Dr. Simon Flexner and Dr. Paul A. Lewis in the laboratories of the Rockefeller Institute for Medical Research, in New York. In a report of their progress thus far, published in the *Journal of the American Medical Association* for Dec. 18, 1909, Dr. Flexner and Dr. Lewis describe experimental evidence which convinces them that the infecting agent "belongs to the class of the minute and filterable viruses [analogous to those of vaccinia and rabies] that have not thus far been demonstrated with certainty under the microscope." The readiness, however, with which the disease can be transmitted to monkeys makes this fact not at all inconsistent with the possibility of preparing a curative serum.

In view of the recent epidemics of poliomyelitis in Massachusetts and elsewhere, the further results of these researches will be awaited with peculiar interest by the profession, and the contribution of the Rockefeller Institute of Medical Research to the study and treatment of cerebro-spinal meningitis lends ground to hope that results of practical value may be reached.

MEDICAL NOTES.

Plague and Yellow Fever at Guayaquil. — The city of Guayaquil in Ecuador remains a permanent focus of serious infection. During the first fortnight of December there were reported there 60 cases of bubonic plague, with 23 deaths, and 12 cases of yellow fever, with 5 deaths.

A Centenarian. — From the Jewish Sheltering Home in Philadelphia is reported the recent death of Mrs. Broyne Makedensky at the alleged age of one hundred and fifteen years. She is stated to have been born in 1796 in the province of Kiev in southwestern Russia. She was the mother of 19 children and at the time of her death her direct living descendents numbered about 150.

Smallpox at Amoy. — The United States Marine-Hospital Service reports the existence of a smallpox epidemic at Amoy, a Chinese seaport on the Strait of Formosa. Suitable quarantine is said to have been provided to prevent introduction of the disease into the Philippines. The extent of the epidemic is not stated.

A Consolidation of Medical Journals. — Dr. William J. Robinson, editor of the *Critic and Guide*, *The American Journal of Urology* and *Therapeutic Medicine*, has purchased the *Chicago Clinic* which has had an uninterrupted existence for twenty-three years (though known during the past year under the title of *Practical Therapeutics*) and has consolidated it with *Therapeutic Medicine*. The consolidated journal will be published monthly in New York.

Cats as Diphtheria Carriers. — In connection with a recent diphtheria epidemic in a village near Exeter, England, Dr. Black, of the Exeter Board of Health, noted that a number of cats in the district were sick, and from the throat of one that died he obtained a culture of the Klebs-Lœffler bacillus. The possibility of the transmission of diphtheria and other infections by domestic pets has for some time been recognized. Dr. Black's observation should be a reminder of the danger of close association with such animals, especially on the part of young children.

Spread of Typhoid Infection. — In a recent bulletin of the United States Public Health and Marine-Hospital Service there are interesting data relative to the probable sources of spread of typhoid infection. Investigations seem to show that in the District of Columbia less than 10% of the cases can be definitely attributed to infected milk. Probably the majority of infections are due to unknown carriers and to lack of proper disposition of the dejections from typhoid patients. The report emphasizes the desirability of more efficient control over such persons in order to check the extensive spread of the disease in needless and preventable ways.

Uncinariasis in Cornwall. — In a recent issue we referred editorially to the admirable work done by United States army surgeons in the suppression of hookworm disease in Porto Rico. Another valuable example for study by the Rockefeller Commission is to be found in the measures employed in dealing with uncinariasis in the tin mines of Cornwall. The disease was first recognized there in 1902, at which time it was estimated that over 60% of the miners were infected. The provisions adopted were largely sanitary, and consisted in requiring that all human dejecta in the mines be deposited in buckets, wherein they could be removed to the surface and disposed of suitably. Failure to observe these regulations was made a punishable offense. As a result the mines were soon freed from infection, and the disease is now essentially eradicated in Cornwall.

The Mary Putnam Jacobi Fellowship. — The Women's Medical Association of New York City offers the Mary Putnam Jacobi Fellowship of $800 available for post-graduate study. It is open to any woman graduate in medicine.

The fellowship will not be awarded by competitive examination, but upon proof of ability and promise of success in the chosen line of work.

Applications for the year 1910–11 must be in the hands of the committee on award by March 1, 1910, and must be accompanied by:

1. Testimonials as to thoroughly good health. 2. Letters as to ability and character. 3. A detailed account of educational qualifications. 4. A statement of the work in which the applicant proposes to engage while holding the fellowship. 5. Examples, if any, of her work, in the form of articles or accounts of investigations which she has carried out.

When possible it is considered desirable that the applicant should present herself in person to the committee.

All applications for this fellowship should be forwarded to the chairman of the Committee on Award, Emily Lewi, M.D., 35 Mt. Morris Park West, New York City.

Generous Public Gifts. — Donations of large sums of money for the study and suppression of disease continue to be reported almost daily. Last week was announced the gift of $300,000 to the New Haven Hospital for the erection of special buildings for the lodging and treatment of patients with tuberculosis, and to the University of Pennsylvania the gift by Henry Phipps, of New York, of $500,000, also to be used for studying the treatment and prevention of tuberculosis. Mr. Phipps is the founder of the Phipps Institute in Philadelphia, and this study for which he provides will be undertaken in a new hospital to be erected in that city under direction of the trustees of the university. Two such munificent gifts are further encouraging evidence, not only of the generosity of wealthy philanthropists, but of an enlightened interest in medical and hygienic problems to which medical science may look with confidence for co-operation in its efforts to ameliorate the conditions of human life.

Bequests under the Boyd Will. — Under the will of George William Boyd, who died about five years ago, the following bequests to hospitals have become available among many others: Boston Floating Hospital, $5,000; Boston Nursery for Blind Babies, $1,000; Boston Dispensary, $1,000; Carney Hospital, $5,000; Cullis' Consumptive Home, $1,000; Free Hospital for Women, $1,000; House of the Good Shepherd, $2,000; Industrial School for Crippled and Deformed Children, Instructive District Nursing Association, Infants' Hospital, $1,000 each; Massachusetts Eye and Ear Infirmary, $5,000; Massachusetts General Hospital and Massachusetts Homeopathic Hospital, each $2,000; New England Peabody Home for Crippled Children, $1,000; New England Deaconess Association, for maintenance of free bed, $5,000; Roxbury Homeopathic Dispensary, $1,000; Tyler Street Day Nursery, $5,000.

BOSTON AND NEW ENGLAND.

Acute Infectious Diseases in Boston. — For the week ending at noon, Dec. 28, 1909, there were reported to the Board of Health of Boston the following cases of acute infectious diseases: Diphtheria 75, scarlatina 51, typhoid fever 14, measles 64, smallpox 0, tuberculosis 55.

The death-rate of the reported deaths for the week ending Dec. 28, 1909, was 19.75.

Boston Mortality Statistics. — The total number of deaths reported to the Board of Health for the week ending Saturday, Dec. 18, 1909, was 215, against 247 the corresponding week of last year, showing a decrease of 32 deaths and making the death-rate for the week 18.00. Of this number 126 were males and 89 were females;

209 were white and 6 colored; 135 were born in the United States, 73 in foreign countries and 7 unknown; 54 were of American parentage, 127 of foreign parentage and 34 unknown. The number of cases and deaths from infectious diseases reported this week is as follows: Diphtheria, 65 cases and 4 deaths; scarlatina, 38 cases and 0 deaths; typhoid fever, 6 cases and 3 deaths; measles, 90 cases and 1 death; tuberculosis, 79 cases and 19 deaths; smallpox, 0 cases and 0 deaths. The deaths from pneumonia were 23, whooping cough 2, heart disease 27, bronchitis 4 and marasmus 0. There were 16 deaths from violent causes. The number of children who died under one year was 45; the number under five years 63. The number of persons who died over sixty years of age was 55. The deaths in public institutions were 81. Cerebrospinal meningitis, 1 death.

Of the above infectious diseases the following were non-residents: Consumption: 7 cases and 4 deaths. Diphtheria: 1 case. Scarlet fever: 1 case.

Deducting deaths of non-residents, the total is 179. The corrected death-rate is then 14.98.

SCARLET FEVER AT NANTUCKET. — It is reported that, on account of the recent outbreak of a number of cases of scarlet fever in Nantucket, the local board of health has prohibited all public gatherings in the town for the present. This wise provision prevented the contemplated public celebrations of the Christmas season in the island.

DEATH OF DR. PATRICK F. GAVIN. — The death last week of Dr. Patrick F. Gavin marks the passing of one of the older practitioners of South Boston. Dr. Gavin was born in Ireland, and, after graduating from the Harvard Medical School in 1870, returned to his native country for further study in the hospitals of Dublin. Subsequently he settled in South Boston, where he continued in the practice of his profession for over thirty years. He was for many years connected with the Surgical Department of the Boston City Hospital.

DANGERS OF ORAL PRESCRIPTIONS. — The Superior Court of Massachusetts has recently awarded George R. Sackett, of Chelsea, $2,500 damages for the death of his infant daughter alleged to have been caused by an excessive amount of opium in a medicine prescribed for her by her attending physician. It appears that the defendant dictated the prescription to a druggist, and now avers that the latter did not follow the dictation accurately. Whatever the merits of this unfortunate case, the moral is obvious as to the dangers of oral prescriptions for both patient and physician.

NEW YORK.

A STATE ORGANIZATION FOR HEALTH OFFICERS. — Advantage was taken of the opportunity afforded by the recent Conference of Sanitary Officers at Rochester for the health officers of the state to effect a permanent organization. The purpose of this is declared to be the providing of means for putting on record the sentiments of these officers with regard to questions affecting the public health. Dr. Robert Simpson, Jr., of Fulton, Oswego County, was elected president.

BETH ISRAEL HOSPITAL ASSOCIATION. — The annual meeting of the Beth Israel Hospital Association was held on Dec. 19, when addresses were made by a number of prominent Hebrews, in which the overcrowded condition of the hospital at present was set forth and the early erection of new buildings urged. Announcement was made of an additional donation of $10,000 by Adolph Lewisohn to the building fund, making $35,000 which he has subscribed in all, and other subscriptions to the amount of $9,000 were acknowledged.

Current Literature.

NEW YORK MEDICAL JOURNAL.

DEC. 11, 1909.

1. KNOPF, S. A. *An Appeal.*
2. JACOBSON, N. *Infantile Scurvy Involving the Hip-Joint.*
3. ROSEWATER, N. *Disguised Starvation and the Reasoning Faculties.*
4. AARON, C. D. *The Present Status of Stomach Lavage.*
5. *ZIEGLER, S. L. *Symmetrical Lymphomata of the Lachrymal and Salivary Glands (Mikulicz's Disease).*
6. FISHBERG, M. *Tuberculosis and Pregnancy.*
7. POMERANZ, H. *The Infancy of the Practice of Medicine and Surgery.*
8. WILSON, J. G. *Surgical Treatment of Atrophic Rhinitis.*
9. LEROY, B. R. *The Bacteriological Examination of the Mouth and Fauces.*

5. Ziegler reports two cases of symmetrical enlargement of the lachrymal, parotid and submaxillary glands, unassociated with disease elsewhere in the body. The name "Mikulicz's disease" has been given to this symptom-complex, which the writer regards as a distinct pathological entity. Histologically the neoplasms are true lymphomata. Respiratory obstruction seems to be of some etiological importance. [L. D. C.]

DEC. 18, 1909.

1. FISCHER, L. *Cerebrospinal Meningitis: Clinical Observations and Serum Treatment.*
2. FOX, H. *The Wassermann Reaction (Noguchi Modification) in Pellagra.*
3. TAYLOR, J. H. *The Question of the Etiology of Pellagra.*
4. ALLAN, W. *Amebæ in the Stools of Pellagrins.*
5. MASON, F. S. *What Can We Do to Prevent, Arrest and Cure Generalized Fibrosis?*

6. Epstein, H. B. *A Case of Malignant Precocious Syphilis.*
7. Tuckett, W. H. *A Case of Modern " Point Tying."*
8. Porter, M. F. *The Open Method of Treatment in Simple Fractures.*
9. Barnes, G. E. *Palliative Treatment for External Hemorrhoids.*

The Journal of the American Medical Association.

Dec. 18, 1909.

1. Dana, C. L. *The Symptomatology and Functions of the Optic Thalamus.*
2. Darling, S. T. *Transmission of Malarial Fever in the Canal Zone by Anopheles Mosquitoes.*
3. Goodman, E. H. *The Value of Alimentary Levulosuria in the Diagnosis of Hepatic Cirrhosis.*
4. Cobb, J. O. *Water Contamination Aboard Ships and Its Prevention.*
5. Powers, C. A. *Localized Subphrenic Tuberculosis.*
6. *Beck, E. G. *Surgical Treatment of Tuberculous Pleurisy, Lung Abscess and Empyema.*
7. Brown, E. W. *Clinical Estimation of Ammonia in Urine by Formalin Method.*
8. Martin, E. D. *A Plea for More Careful Diagnosis and Treatment of Fractures of Extremities.*
9. *Spiller, W. G. *Brain Tumor.*
10. Weisenburg, T. H. *Extensive Gliomatous Tumor Involving the Cerebellum and Posterior Portion of the Medulla, Pons and Cerebral Peduncle.*
11. Butler, W. J., and Mefford, W. T. *The Antibodies in Tuberculosis and Their Relation to Tuberculin Inoculation and Vaccination.*
12. Graham, E. A. *Olive Oil for Post-Anesthetic Nausea.*
13. Flexner, S., and Lewis, P. A. *The Nature of the Virus of Epidemic Poliomyelitis.*
14. Hammond, F. S. *Report of a Case of Primary Tuberculous Infection through the Intestine without Intestinal Lesion.*
15. Heff, F. C. *Recent Findings Regarding the Disturbing Elements in Milk for Infants.*
16. Barnes, G. E. *Sodium Nitrate in Bronchial Asthma.*
17. Burrage, T. J. *Recurrent Vomiting with Acetonuria.*

6. Some of the important points in Beck's very thorough article are as follows: 70% of all cases of the serofibrinous type of pleurisy in adults are of tuberculous origin. Approved methods of diagnosis are: cytodiagnosis, in which a preponderance of lymphocytes indicates a tuberculous origin; " inoscopy," by which the fluid is digested before the bacilli are demonstrated by staining; animal inoculations, the tuberculin test, radiography and stereoradiography of the chest. As to treatment, there is divergence of opinion in regard to the withdrawal of the effusion, some claiming that the collapse of the diseased lung produced by the effusion has a highly beneficial influence on the healing process, while others take the opposite view. Autoserotherapy has been tried, with some success. It consists of withdrawing 1 ccm. of the exudate and immediately injecting it again subcutaneously. Beck believes that the effusion is a symptom and not a disease, and that to treat it we should not withdraw it, but treat the underlying causes, the pulmonary tuberculosis. With the idea that compression of the lung is beneficial to the healing of the tuberculous focus, Forlanini and Murphy injected nitrogen gas into the pleural cavity. Schmidt substituted oil for gas. Brauer mobilized the entire chest wall by the extrapleural resection of the entire length of as many ribs as will permit the remaining soft structures to fall against the diseased lung and prevent its expansion. Beck believes in the principle of immobilization, but hopes to offer less radical means of effecting it. The rest of his article deals interestingly with his treatment of chronic empyema with bismuth and vaseline paste. His results are worth study.

9. Spiller enumerates the following as common diagnostic symptoms in brain tumor: (1) Progressive hemiplegia, which Williamson describes thus: " Provided there are no indications of cerebral abscess, progressive hemiplegia or hemiplegia of gradual onset in which weeks or a few months elapse before the paralysis is complete may be regarded as strong evidence of cerebral tumor, even when optic neuritis is absent, or when optic neuritis, headache and vomiting are all absent." Other conditions which may, however, cause a progressive hemiplegia are polioencephalitis and cortical meningitis. (2.) A peculiar symptom of cerebral tumor is intense hunger. (**3**). Severe pain in the neck is common and dissociation of color sense. [E. H. R.]

The Lancet.

Nov. 27, 1909.

1. Allbutt, T. C. *Fitzpatrick Lectures on Greek Medicine in Rome.*
2. Pendlebury, H. S., and Back, I. *A Comparison between the Antiseptic and Aseptic Methods of Operation.*
3. *Parkinson, P. R. *The Relation of Alcohol to Immunity.*
4. Tawse, H. B. *Some Complications and Dangers of Nasal Surgery.*
5. Newman, J. C. *Some Notes of a Severe Case of Exophthalmic Goiter in Which Treatment by X-Rays and Sour Milk Appeared to be Beneficial.*

3. Parkinson, in an interesting article in which he has experimented on many rabbits in regard to the effect of alcoholic, acute and chronic conditions on immunity, concludes as follows:

(1) Alcohol in small quantities has no effect on the phagocytic activity of the leucocytes; it has no action until it is present in 12.5% strength.

(2) Small quantities injected into rabbits may stimulate the production of antibodies temporarily, while large doses lower the opsonic index for 24°.

(3) Continuous moderate doses cause a permanent lowering of the opsonic index.

(4) The reacting mechanism to vaccines is much less effective in alcoholized rabbits than in normal rabbits; the difference is still more marked when living micro-organisms are used. [J. B. H.]

Dec. 4, 1909.

1. Morris, H. *Looking Back: A Glance from Empiricism to Experiment, from Superstition to Research.*
2. *Michels, E. *A Further Contribution to the Surgical Treatment of Puerperal Pyemia.*
3. *Morton, E. R. *The Treatment of Nævi and Other Cutaneous Lesions by Electrolysis, Cautery and Refrigeration.*
4. Wilson, T. S., and Miller, J. *The Influenza Bacillus the Cause of an Epidemic of Bronchopneumonia.*
5. *Herley, R. *Eight Cases of External Anthrax.*
6. *Wirgman, C. W. *Local Sepsis as a Factor in Rheumatism and Gout.*
7. Greenwood. *The Medical Profession and the Poor-Law Medical Service.*

2. Michels reports cases illustrative of his method of treating puerperal pyemia by ligation of the ovarian and pelvic veins. This is an attempt to localize the process; he advises tying the ovarian and internal iliac. Very acute cases are not suitable for this operation; more chronic cases promise well by this method. The veins should be exposed by the transperitoneal route rather than by the vaginal or retroperitoneal route.

3. Morton, in a useful article, describes the treatment of nævi and other cutaneous growths by means of electrolysis, the cautery and carbon dioxide snow. The first method he now uses only for the cavernous type of nævus. Cautery puncture has its chief value in the treatment of capillary and stellate nævi. The high-frequency spark is most beneficial in those nævi characterized as " port wine stains." The most important agent, however, is " carbon dioxide snow." The preparation and methods of application of this he describes in some detail.

5. Herley gives the details of eight cases of external anthrax treated by operative measures and injections of serum.

6. Wirgman believes that local sepsis, such as occurs in pyorrhea alveolaris, is the cause, or chief cause, of many chronic and acute joint infections which he classifies in tabular form under acute rheumatism, rheumatoid arthritis, neuritis, sciatica and allied disorders. Early in these various conditions the discovery and removal of these local suppurative foci will do much toward curing

the disease; later, however, this treatment cannot hope to cure, but will only alleviate. [As a general thing, sufficient attention is not paid in this country to pyorrhea alveolaris as cause of chronic joint infections. — J. B. H.] [J. B. H.]

British Medical Journal.

Nov. 27, 1909.

1. *Osler, W. *The Schorstein Lecture on Syphilis and Aneurism.*
2. Allbutt, T. C. *The FitzPatrick Lecture on Greek Medicine in Rome.*
3. Hill, L. *An Oxygen Generator and Inhaler: Its Use in Mountain Sickness.*
4. Hastings, J. P. *A Case of Fracture of the Radius Treated by Early Massage and Movement.*
5. White, S. *The Employment of Silver Wire to Bridge the Gap after Resection of a Portion of the Lower Jaw.*
6. Stevenson, H. *A Case of "Giant Feet."*

THE SCIENCE COMMITTEE OF THE BRITISH MEDICAL ASSOCIATION.

7. Cook, F., Schlesinger, E. G., and Todd, A. H. *Some Observations on a Twenty-Four Hours' Walking Race.*
8. Lewis, T. *Auricular Fibrillation: A Common Clinical Condition.*

1. Osler, in an article written in his most delightful style, discusses syphilis and aneurism. He presents an historical summary and a brief consideration of the work of others leading up to the recent discovery of J. H. Wright of the spirochete in the walls of aortic dilatations. Under syphilitic aortitis he discusses the pathological appearances and changes, the clinical features and statistics. Under prevention of the ravages of syphilis he considers three leading factors: (1) Education of young men in matters sexual and in regard to the dangers of venereal disease; (2) endeavors to check the flagrant and open flaunting of their wares by prostitutes upon the streets; and (3) reporting of all venereal cases, as is done in contagious diseases and in tuberculosis. [J. B. H.]

Dec. 4, 1909.

1. Gibson, G. A. *An Address on Modern University Ideals.*
2. Allbutt, T. C. *Greek Medicine in Rome.*
3. Smith, E. *On Some Uses of Opium.*
4. *Bell, W. B. *The Pituitary Body and the Therapeutic Value of the Infundibular Extract in Shock, Uterine Atony and Intestinal Paresis.*
5. Bassett-Smith, P. W. *Kala-Azar in the Far East.*

4. Bell, after first briefly stating the work hitherto done on the pituitary body and its physiology, and describing the anatomy of that organ, discusses the value of pituitary extract in shock, on the uterine muscle and on intestinal muscle. As a result of clinical investigations, he concludes that this agent will temporarily raise blood pressure. Enough of its action is not yet known to warrant its substitution for other drugs. On the pregnant, puerperal and menstruating uterus it acts with more certainty, causing powerful contractions. He believes that in the future much reliance will be placed on this drug in obstetrics. In paresis of the intestines following abdominal operations, he has never known it to fail in its powerful beneficial effect. It is of value in nose and throat work in producing local anemia, acting better in this way than adrenalin. He uses it in 1 ccm. doses contained in glass ampules, boiled before using, injected intramuscularly. [J. B. H.]

Deutsche Medizinische Wochenschrift. No. 47.

Nov. 25, 1909.

1. Fürbringer. *Prognosis of Albuminuria, with Special Regard to Insurance.*
2. *Kolle, W. *The Question of Serum Therapy in Asiatic Cholera.*
3. Gruber. *Transmission, Selection and Hygiene.*
4. Forschbach, J. *Investigations on the Treatment of Diabetes Mellitus with Zuelzer's Pancreatic Hormone.*
5. Walters, M. *The Treatment of Lupus.*
6. Faulhaber. *The Present Status of Radiotherapy.*
7. Davidsohn, F. *The Establishment of Radioscopy by Daylight.*
8. Engels, F. *Test for Albumen in Practice.*
9. Lichtenstein. *A Simple Apparatus for the Clean and Bacterial-Free Preparation of Children's Food.*
10. Feilchenfeld, L. *A Skin Irritation Caused by the Coloring Matter in Gloves.*

2. Kolle takes up the figures in regard to the use of different kinds of antitoxic serum and discusses them at some length in an endeavor to clear up the points as to which one is the best and whether or no by killing the bacteria they cause a liberation of endotoxin which aggravates the situation. On the whole, he considers that the serum does not do harm, that by itself it does some good, and that in combination with injections of warm normal salt solution it does the most good.

The Schumpoff serum used in Russia lately seems to do the most good, but the most favorable reports in no way come up to the results produced by diphtheria antitoxin. [C. F., Jr.]

Münchener Medizinische Wochenschrift. No. 48.

Nov. 30, 1909.

1. Kehr, H. *The Surgical Treatment of Chronic Icterus.*
2. Müller, E. *The Early Stages of Spinal Infantile Paralysis.*
3. Rehn, E. *Direct Massage of the Heart in Death from Narcosis.*
4. *v. Lichtenberg, A. *Can Definite Indications be Given for Intravenous Infusion in Peritonitis?*
5. *Christen, T. *Treatment of Fractures by the Methods of Steinmann and of Zuppinger.*
6. Geipel, P. *Myocarditis and Changes in the Striated Muscles in Rheumatism.*
7. Uffenheimer, A. *Complement-Binding in Scarlet Fever.*
8. Weil, F. *Moro's Ointment Test.*
9. Mandelbaum, M. *Changes in Rosol-Acid and Blood Agar Media by Acid and by Alkali-Forming Bacteria.*
10. Peterson, F., and Scripture, E. W. *Psychophysical Studies with the Galvanometer.*
11. Kölliker, T. *Contribution to Esophagoscopy.*
12. Boruttau, H., and Davidsohn, G. *"Mensan," a Preparation of Hazel Nuts as a Hemostatic.*
13. Dreyer, W. *A Case of Mixed Infection with Typhoid and Malta Fever.*
14. Rosenthal, A. *Danger of the Common Use of Oxygen.*
15. Hering, H. E. *Absence of the Auricular Wave (P.) in the Electrocardiogram in Irregularis Perpetuus.*
16. Hildebrandt, W. *The Diagnosis of German Measles.*
17. Noeggerath, C. T. *Hemolysis by Cow's Milk.*
18. Hoffmann, R. *Affinity of Adrenalin for Iodine.*
19. Grassl. *The Question of Fitness for Military Service.*
20. Crämer. *The Prevalence of Gastric Ulcer in Munich and in the Bavarian Mountains.*

4. v. Lichtenberg discusses briefly the effects of other indications for saline infusions in peritonitis. He attributes the small weak pulse in these cases to an affection of the vasomotor center with resulting splanchnic dilatation. A marked improvement in the pulse was observed in many such cases following infusion. In the less severe cases the improvement persisted, in the more severe ones it was of short duration, and in the worst cases there was none. An infusion, therefore, may be used as a functional test of the recuperative power of the circulating system before operation, and it may also ward off post-operative circulatory collapse. The intravenous method should be used first in urgent cases because absorption by other methods is uncertain. It may be supplemented afterwards by hypodermoclysis and by rectal seepage.

5. The writer gives a detailed statement of the advantages and the disadvantages of the methods in question, but his article is one which cannot be summarized without loosing much of its value. [G. C. S.]

Berliner Klinische Wochenscrhift. No. 48.

Nov. 29, 1909.

1. *Richter, P. F. *The Cause of Edema in Nephritis.*
2. Elsner, H. *A Gastroscope.*
3. Gottstein, A. *The Decrease in Mortality from Tuberculosis.*

4. Jacoby, M., and Schütze, A. *The Destruction of Complement Fixation by Shaking.*
5. Schwarz, O. *Concerning the Nature of Serum Antitrypsins.*
6. Fleischer, F. *A Method of Graphically Registering the Pulse.*
7. Siefert, G. *Indication for and Technic in Vaginal Operations.*
8. *Nagelschmidt, F. *The Use of the High-Frequency Current.*
9. Hertzell, C. *An Instrument for Determining the Visual Field.*

1. Richter points out the value of animal experimentation in determining the cause of nephritic edema. By it the older theories have been disproven. The cause of edema seems to be due to two factors working together: the impermeability of the kidney and the increased vascular permeability. After producing a toxic nephritis with uranium, the administration of amyl nitrite invariably produces edema around the dilated peripheral vessels. By further experimentation he concludes that in all cases of kidney insufficiency in which a simultaneous vascular injury is brought about artificially the tendency to edema is manifest. Vascular injury, therefore, seems to be the determining factor in the origin of nephritic edema. This experimental work is the first which has furnished definite proof of the Cohnheim-Senator hypothesis.

8. Nagelschmidt defines the high-frequency current and describes its varieties of application, its action and therapeutic value. It has been said that its beneficial effect was entirely a matter of suggestion. This view can hardly be held in view of the fact that the same current which is used therapeutically on man causes immediate death and carbonization of a frog. The current must be applied by the bipolar method.

The current is extremely beneficial when given in a variety of forms in insomnia, angina, neurasthenia. It can be used either to raise or lower the blood pressure and to produce sweating. It is of especial value in tabes, aborting, preventing and relieving the tabetic crises and lancinating pains. He reports 64 cases, in only 11% of which there was no improvement. Some showed remarkable changes; one actually recovered his knee jerks and pupillary reactions. The distressing symptom of incontinence often disappeared after treatment.

He concludes by giving the five chief methods of application: (1) To reduce congestion; (2) to influence blood pressure; (3) to test nerves for normal and pathological reactions; (4) as a general tonic; (5) to increase the vital capacity without increasing the dissipation of energy. [H. P. G.]

No. 49. Dec. 6, 1909.

1. Nolen, W. *A Case of Pseudo-Tumor of the Brain First Appearing during Pregnancy and Recurring in Two Following Pregnancies.*
2. *Foerster, O. *Symptomatology of Poliomyelitis Anterior Acuta.*
3. Katzenstein, M. *The Cure of Paralysis of Shoulder Muscles through Myoplasty.*
4. Strelitz, E. *Acute Parotitis.*
5. Skaller, M. *The Origin and Treatment of Gastric Hypersecretion in Habitual Smokers.*
6. Alexander, A. *The Therapeutic Action of Neutralon in Hyperacidity and Gastric Ulcer.*

2. Foerster reviews the pathology and symptomatology of acute anterior poliomyelitis, calling attention to the fact that it is a disease of the whole nervous system and is not restricted to the anterior horn cells. Brain, cord, spinal and cerebral ganglia and meninges may all be involved. This naturally results in a great variety of clinical symptoms. Next to the variability itself, the occurrence of meningeal symptoms and flaccid atrophic paralyses are the significant features. The disease is ushered in by fever, generally of short duration, and the symptoms of a general infection. Tenderness and pain in the back of the neck and over the muscles and nerves, with or without rigidity due to the pain, he lays especial stress on. The rigidity may even assume a high degree of hyperextension.

The author details at length the distribution and type of paralyses which may occur, which, in fact, is that the disease may hit any single muscle or group of muscles, or all of them, sometimes beginning in one place and spreading, generally but not invariably from below upward. Peculiar types of paralysis are those which involve all the back muscles and all the abdominal muscles, the latter causing very severe and intractable constipation. The paralysis generally develops early in the disease, is of sudden onset, and rapidly reaches its maximum. The disease may relapse without febrile or constitutional disturbances in the form of increasing paralysis at intervals of three to five weeks. This fact is of particular value in prognosis. The disease is generally fatal through respiratory paralysis. Bladder trouble, if it occurs, is generally not permanent. The reflexes are naturally lost or greatly diminished even before the development of paralysis. The knee jerks and Achilles jerk may be lost without paralysis of the quadriceps or gastrocnemius. [H. P. G.]

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Miscellany.

THE CULTURAL VALUE OF CERTAIN MEDICAL STUDIES AND THE ELECTIVE SYSTEM IN MEDICAL EDUCATION.

BY L. J. HENDERSON, M.D., AND E. E. SOUTHARD, M.D.

There has been rather a polemical flavor to some of the discussion which has followed our paper on "Education in Medicine" in the *Harvard Bulletin* of Nov. 3, 1909.[1] Though many of our contentions (and those the main ones) have not yet been traversed, there has been considerable misconstruing of the nature of the reforms we advocate, and not a little conservative's dread that our plan would not produce physicians so fit to practise as the products of the present rigid curriculum.

Editorially noticed in the *Crimson*[2]; in part reprinted without comment in *Science*[3]; criticised very fairly, though in part misunderstandingly, by Prof. G. V. N. Dearborn, of Tufts Medical School[4]; attacked as a proposal to lower Harvard standards by Prof. W. B. Munro, of Harvard College[5]; somewhat divergently considered in two separate editorials in the Boston Medical and Surgical Journal[6], [7]; reviewed rather favorably in *Popular Science Monthly*,[8] and now recently commented on by Prof. T. Dwight, of Harvard Medical School,[9] we have, on the whole, little to complain of in the discussion as it stands.

We have, in fact, replied rather specifically to the criticisms of Professor Dearborn,[10] and to the strange conceptions held by Professor Munro, and have called attention to the disparate views of the Journal's editorial writers.

The rapid progress of interest in the reform of medical education is evident from a discussion somewhat widely shared in by professors and students at the pathological colloquium of the Harvard Medical School, Dec. 16, 1909, following a presentation of "The Student's Attitude to the Harvard Medical Curriculum," by Mr. C. T. Ryder, Harvard Medical Class of 1910. It is too early to predict the outcome of resolutions unanimously passed, after full formal and informal discussion, by the Harvard Medical Class of 1910. It is also dubious whether the medical student is, on the whole, a better guide than the professor in medical education. Nor are we wholly convinced that the absolute freedom of the German medical student to choose his lines of attack in getting a medical education is a freedom to be sought by the American medical student.

Nevertheless, it is obvious that these matters can in no wise suffer from ventilation. Now that Professor Dwight has frankly and clearly expressed certain views which he holds are at variance with our own, and has kindly given us permission to reprint his comments (at first privately printed) in connection with our rejoinder, we have thought it best to seek the wider audience afforded by this JOURNAL. And, first, to show our main contentions and, so far as possible, the drift to which Professor Dwight takes exception, let us quote the summary and conclusions of our original paper:[11]

"The modern tendency to align medicine with the other professions as a graduate topic is a sound as well as an irresistible tendency. But we think that some authorities have fallen into a logical error in attempting to buckle end-to-end, in the required training of a physician, the present college curriculum and the medical curriculum as it grew up in pre-university days. The courses provided by medical schools comprise many which afford a high type of culture looked at from any standard. He would be exceedingly narrow who should deny that many of the courses which are indispensable ingredients of a medical education are also essentially academic and worthy components of anybody's education. We go so far as to regard practically all the studies of the first year and a half of the Harvard Medical School as in *posse*, if not in *esse*, studies of an academic rank, as cultural studies. In brief, we desire to see them, while maintaining their indispensable rôle in medical education, open to all persons who have any hygienic aims or any anthropological interests.

"We would not 'let down the bars' to all who might care to wander about in medicine unguided. We should throw proper restrictions about these courses, such as are thrown about all other advanced courses by the Faculty of Arts and Sciences. But we should offer, to be taken and counted toward the bachelor's degree under proper precautions, all these courses. Let us admit to them any persons who wish to study the fundamental facts of health and disease amongst all the other economic, sociological or anthropological facts which to-day make up the proper study of mankind.

"By this device we should destroy forthwith the familiar bugbear of 'counting twice' certain studies, under the 'combined A.B. system,' toward both A.B. and M.D. For we regard the diagnostic and therapeutic courses of the medical school as the essentially medical courses, and the other so-called fundamental courses as not merely medical, but in a broad sense biological. We consequently see no objection to including such courses in work for a bachelor's degree, though we foresee hesitation on the part of some of those who grew up when the medical school was virtually independent of the university to acknowledge the sources of some of their own culture.

"We deny categorically the danger of undue specialization in this field, and have above called attention to some random examples of greater specialization by persons who later won their doctorates in other fields.

"We insist that our plans, if carried out, would encourage academic freedom and would be in line with all that is good in the elective system. In fact, so harmonious are these ideas with the university system as it otherwise stands that we can lay claim to no originality whatever in the advocacy of our plans. In short, we ask for nothing more than a logical application to medical studies of principles which have long successfully governed the Graduate School of Arts and Sciences.

"In this event, some men would receive the degree of doctor of medicine after about six years of university residence, to which, however, there must be added at least a year of hospital work, and these men, like many doctors of philosophy, would have a rather narrow education. Such an education is, however, less narrow than that of many Harvard doctors of philosophy under our present system. Others would devote eight or even nine years to their university careers, and their training would be correspondingly broader. Surely there is room at the Harvard Medical School for these different classes of students. But, in any event, the six-year men can be excluded only by an act which will inevitably cut us off from an important and rapidly growing group of American institutions, the great middle western and western state universities. We may not need the numbers thus lost; surely we should not lose their influence, if we are to be national and not local in scope.

"As we believe, the greatest of all the needs of the Harvard Medical School is free and, so far as possible, untrammeled intercourse with every other department of Harvard and with every other American university. No small changes are necessary if our medical education is to be made thus elastic, but surely it cannot injure Harvard College to broaden the elective pamphlet by the introduction of suitable courses, nor can it hurt the Harvard Medical School to broaden its scheme of admission, to bring itself into relation with American universities in general, and into correspondence with the Harvard Graduate School, if this be done without diminishing the requirements for the degree of doctor of medicine.

"These results may be accomplished by the following arrangements:

"1. Count towards the A.B. suitable courses in medical sciences. 2. Admit unconditionally to the medical school all holders of a respectable bachelor's degree. 3. Grant the M.D. (*a*) after not less than a fixed minimum of residence; (*b*) upon evidence of theoretical and practical attainment in the medical sciences (including the present admission requirements) and in the clinical branches. 4. Establish a simple administrative mechanism for the degree of M.D., modeled after the present mechanism for the Ph.D. 5. Execute the above arrangements in the broadest spirit, to establish and preserve academic freedom, as exemplified in the greatest variety of preparation, of medical course, and of finished product. 6. Relax the present rigid organization of the medical school curriculum and lay stress upon the quality of our doctorate rather than the means of its attainment. 7. In all ways encourage the better students. Permit them to advance at their own rate and in their chosen paths."

The most recent statement concerning these reforms (at first privately printed, but now published in the current number of this JOURNAL) is by Prof. Thomas Dwight, of the Harvard Medical School.

The natural and, as we believe, the correct relation to Professor Dwight's paper is to agree thoroughly with all that he says concerning a medical school's duty. Indeed, we cannot see how what Professor Dwight says is at all inconsistent with anything in our paper. We have never sought to alter the medical school's duty, but have consistently aimed to bring about reforms which should improve the practitioner and aid society in general.

In his criticism Professor Dwight presents quotations from his address at the dedication of the new buildings of the Harvard Medical School and from our paper as antitheses. He believes that only one of these views can be right, while the other is " very wrong indeed."

Every teacher in a medical school must surely agree with Professor Dwight that the primary purpose of medical education is " to train students to practice medicine on their fellow beings." Like Professor Dwight, we, too, conceive that our principal task as teachers of medical students is to teach what is needful in such practice and also in that wider service of the community in preventive medicine and hygiene which more and more is coming to be a large part of the work of the medical profession. But in one respect we differ from our critic; we feel sure that every teacher in the Harvard Medical School is actuated by this motive, and still we hold to our view that the " laboratory " courses " are truly and in the main exclusively concerned with natural science." Is not human anatomy one of the natural sciences, and can any one say that anatomy is medicine any more than that arithmetic is bookkeeping?

Whether or not some of these laboratory courses are truly academic and worthy candidates for the elective pamphlet is another question, and, as we think, one which should be settled by a careful inquiry. Personally, we do not doubt the outcome of such an investigation. Certain it is, as Professor Dwight points out, " that in various sciences concerned in medical instruction there must be taught certain underlying principles which have no obvious practical application."

Now general principles and theories are the very soul of some of these sciences. The only practical way to study them is through their hypothetical generalizations, which unify an otherwise incoherent mass of details. The only practical way to prepare for an understanding of their future progress is to master these abstract conceptions. For instance, the whole nature of normal and pathological renal activity can be understood at all only by those who are acquainted with the modern theory of solution, and we venture to think that such physico-chemical knowledge is even of more practical value to the ordinary medical man than some of the practical anatomical knowledge cited by Professor Dwight.

Physiology may well serve as an example of such a science. There is very little difference between the subject-matter of the course in physiology at Harvard and at any other first-rate university, whether American or English or continental. Physiologists the world over are substantially agreed that the only practical way to teach physiology to medical students is from a broadly scientific point of view, just as everywhere differential calculus is taught to engineering students, or general chemistry to future technical chemists. Undoubtedly, physiology in a medical school is not precisely what physiology in a zoölogical department would be, but there are few courses in a college curriculum free from influences of one sort or another which modify them quite as effectively as the course in physiology is modified by the medical influence. Such influences are often professional: thus the philological influence upon courses in the classics.

Other sciences, like hygiene, claim consideration for another reason; they possess great practical value for many men who have nothing to do with medicine itself. Students of social science, indeed every one interested in the welfare of society, may have a legitimate claim to such instruction in hygiene as the medical school affords.

All that we contend for in the matter which Professor Dwight has discussed, is, first, that there are broadly scientific courses in the medical school whose nature is fixed by the concensus of opinion of the teachers of such subjects throughout the world, and, secondly, that it is at least an open question, not to be settled by a judgment *ex cathedra* or on medical grounds, whether or not they are well suited to count for the bachelor's degree.

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[2] Editorial. The Harvard Crimson, Nov. 3, 1909.

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[4] George V. N. Dearborn: Medical Education: Objections to the Scheme set forth by Drs. Henderson and Southard. The Harvard Bulletin Dec. 1, 1909.

[5] W. B. Munro: On the Threshold of a New Year: The Medical School's Difficult Problems. Harvard Graduates' Magazine, December, 1909.

[6] The Relations of the Medical School and the College. (Editorial.) Boston Med. and Surg. Jour., Nov. 25, 1909.

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[8] Popular Science Monthly, December, 1909.

[9] T. Dwight: The First Duty of a Medical School. Boston Med. and Surg. Jour., Dec. 30, 1909. (Current number.)

[10] E. E. Southard and L. J. Henderson: Education in Medicine: The Elevation of the Standard of the Medical Directorate. The Harvard Bulletin, Dec. 8, 1909.

[11] E. E. Southard. Communication: Cultural Value of the Medical Sciences. The Harvard Bulletin, Dec. 15, 1909.

THE FIRST DUTY OF A MEDICAL SCHOOL.

[This paper, dated Dec. 15, 1909, was printed for private circulation. Inasmuch as Dr. Henderson and Professor Southard wish to reply it is now made public.

Harvard Medical School, Dec. 22, 1909. Thomas Dwight.]

Although this paper is suggested by the article by Dr. Henderson and Professor Southard which appeared in the *Harvard Bulletin* of Nov. 3, it is not meant in the least as a criticism of their paper as a whole. I wish to discuss but a single point at any length, and then merely to allude to a side issue. There is an idea running through their article, expressed in various ways, which represents the views of many, but which, nevertheless, is a doctrine very dangerous to sound medical education. I refer to their conception of the scope and nature of the so-called " scientific courses " in the Medical School. Among the statements in this paper I may mention the following:

" The Medical School curriculum, as it stands to-day, contains many essentially non-medical subjects, and it bids fair to-morrow, if science develops, to absorb many more. In brief, it is our opinion that many so-called medical courses are, more properly speaking academic."

And again,

"The curriculum of the Harvard Medical School falls into two well-defined and uncommonly distinct groups, the so-called laboratory courses and the clinical courses. . . . The 'laboratory' courses are truly and in the main exclusively concerned with natural science. . . . The clinical courses deal with applied science and the art of medicine."

I hope I may be pardoned if I reproduce the following passage from the address I had the honor to make at the dedication of the new buildings of the Harvard Medical School, in September, 1906:

"One of the most striking phenomena of medical education during the past thirty years has been the gradual, unconscious, progressive self-arrangement of the various studies into two grand groups, that of the laboratory and that of the clinical departments. The former are in the main preparatory to the latter, in which the patient is the central figure. Sometimes the former are spoken of as the scientific courses, but this is a usage against which I protest. It is a reflection on the clinical courses, for all study and instruction should be scientific. On the other hand, the word 'scientific' may suggest that the laboratory courses are not practical. *This would be to say that they are taught under a misapprehension of the primary purpose of a medical school, which is to train students to practise medicine on their fellow-beings.** But — and here is the heart of the matter — there is a sharp distinction between courses which are esssential to a degree and those which are not. Our work lies in two very different provinces. The first and principal one is to teach the student what is needful, in which our efforts are directed towards a definite end; the other, to gain by our labors, and to help advanced students and specialists to gain by theirs, the secrets of nature."

Here are the two views plainly stated. If one is right, the other is not only wrong, but very wrong indeed, and injurious to medical education. Let it be distinctly understood that I refer only to the courses leading to the degree of M.D.

We are told by those who do not like to hear it that it is a platitude to say that the object of a medical school is to teach the practice of medicine; but a platitude is a safer foundation to build upon than a fallacy. It is no longer the fashion to quote Huxley's once familiar statement: "I entertain a very strong conviction that any one who adds to medical education one iota or tittle beyond what is absolutely necessary is guilty of a very grave offense." Nor do we hear much of his most "unscientific" but absolutely sound saying that it is less important to know where quinine comes from than where it is retailed cheapest.

The assumption that the laboratory courses are, or should be, essentially courses of abstract science is absolutely contrary to the experience of those interested in practical medicine and competent to speak of the methods by which it should be taught. It should not be necessary to point out that the mere act of teaching a scientific branch gives the teacher no claim to be considered an expert on medical education. On the contrary, those in the habit of seeing sickness and suffering, of studying the phases of human nature under trial, are far better fitted to determine the kind of instruction to be aimed at.

It is true, of course, that there are stupid practitioners, survivors of the older type, to whom everything new and "scientific" is suspicious and unwelcome. Their opinion is not worth quoting against that of the active, progressive practitioner to whom medicine is both a science and an art, but yet it is at least as good as that of the theorist.

In approaching the question it must be admitted with all frankness that in the various sciences concerned in medical instruction there must be taught certain underlying principles which have no obvious practical application; and further, that, in the different branches, the ranges of what is truly of practical importance vary very widely. Some branches, like anatomy, may be made almost wholly practical; others seem essentially abstruse; but I believe that in almost all cases there is a means of bringing the practical points into prominence, and this is what a competent instructor in a medical school will feel it his duty to do. For illustration of this, let me confine myself to anatomy, as the branch on which I am most competent to speak. Clearly there must be instruction on the general form and development of the body and its general vertebrate and mammalian features, but this must be taught as something preliminary, not as the main essential. An accurate knowledge of the structure of the spine, of its different regions and its curves and motions, is of great practical importance; while the question of the homologies of ribs with transverse processes is a matter of purely scientific interest. Surely, one of the most important things in human anatomy is the knowledge of the relations of the great arteries to the muscles, nerves and veins surrounding them, of the regions supplied by their branches, and their anastomoses with other arteries by which an interrupted circulation can be restored. These, however, are very secondary morphological considerations to the teacher who would teach anatomy without regard to medicine. It is of far greater importance to know accurately the relations to the skull of the great fissures of the brain than to compare them with those of apes. The relations of the heart to the pericardium, which in part determine the way in which its position is influenced by pleurisy, is of prime importance practically and of comparatively little scientific interest. The accurate knowledge of the relations of the surface of the lungs to the chest walls is essential to the practitioner, who can afford to smile at learned discussions as to the homologies of the bronchial branches. It is very important to know that there is but a narrow space at the lower end of the pharynx between the larynx and the spine, with unyielding walls before and behind it, in which an over-large morsel may get stuck. It is of little importance to know that in very rare cases the human larynx has pouches analogous to the roaring sacs of apes. It is well that such a fact should be mentioned as a matter of interest, but the former is the one to insist upon.

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* This paragraph was not in italics.

Human anatomy is so vast a subject, to be mastered only by successive learnings and forgettings, that there is no time for more than a glance at much that is both interesting and scientific. It must, first of all, be as practical as it may be. If the course given by the professor is one equally fitted for non-medical and for medical men, beyond question it is a bad one in a medical school. It does not follow from this that scientific research should not be pursued by the professor and his aids, nor that courses should not be given in what may be called purely scientific anatomy; but these are for the chosen few among the students and for a certain number of special students. It is not to be doubted that discoveries of real and practical value will be made in this way, but this work is not for the average student. It is eminently proper and desirable that courses should be given for outsiders, provided that it can be done without loss to the real medical students; and — a point worthy of great attention — that the medical school does not attempt to compete with the undergraduate departments.

That some, preparing themselves for biology, would like to have more or less of the teaching in the medical school is possible. Then, again, there are artists who would be glad to follow anatomy so as to gain a deeper knowledge than they get in courses of surface anatomy given at the art schools. Lawyers, even, may think it desirable for the practice of their profession to have a greater knowledge of the human frame than is the share of the man in the street. But it would be a most mistaken policy to adapt the regular teaching of the medical school to any or all of these men; and furthermore, the regular courses would be absolutely inadequate to their wants, as each of these classes has a different point of view. The special needs of these men should be met by special courses, and this is precisely a very important branch of the higher work — or perhaps I should say the special work — of the medical school, the primary object of which is to fit students for the practice of medicine.

This introduces another subject to which I am unwilling to do more than allude. It is the alleged tendency of certain teachers to train the rank and file of students to be experimenters and investigators. This is a great wrong, and even a cruelty to the average student who enters the school with the sole purpose of fitting himself for practice. He is the one whose interests should be considered first. The more brilliant ones should indeed have opportunities given them; but what I object to is forcing such work upon all.

While it is true that much might be done, and very possibly should be done, for outsiders, the fact remains that the primary purpose of the school is to fit students to practice medicine; and it is by its success in this duty that the school will be judged by an intelligent public.

Correspondence.

COPY OF A LETTER BY BENJAMIN RUSH, M.D., TO A PATIENT RETURNING FROM THE SOUTH.*

Philadelphia, April 15, 1812.

Sir, — The following remedies appear to me proper in your case —

1. Garlic taken in *substance*, that is, a bruised clove three times a day, or in *infusion*, that is, eight or ten cloves bruised and put into a pint of peppermint tea, of which a wineglassful should be taken three times a day.
2. The oil of Amber — of which from ten to fifteen drops should be taken three times a day in a tablespoonful of molasses.
3. A mixture composed of tar, molasses, lime or lemon juice, and old spirit of any kind, of each one gill, ultimately united by simmering for a few minutes over the fire. A teaspoonful of this medicine should be taken three times a day.

The above three medicines should be taken in succession and rotation in the order in which they are mentioned. A month or more may be interposed between the use of each of them.

4. A perpetual blister about the size of a French crown should be opened upon your left arm, between the shoulder and elbow. It should be kept open until your disease is removed.
5. Receive frequently into your lungs the vapor of a quart of boiling water poured upon a gill of tar in a mug through funnel placed over the mug.
6. Take as many drops of laudanum every night as will compose your cough. Continue to take laudanum in the morning. A pill of a grain or 2 gr. of opium may be taken at bedtime if the ordinary dose of laudanum should lose its effect.
7. Go to bed early. Sleep upon a mattress in summer and a feather bed in winter.
8. Wear flannel next to your skin in winter and muslin in summer. Continue your former diet and drinks.
9. Use gentle exercise daily, especially that kind of exercise which employs the arms.
10. Carefully avoid the morning and evening air, also fatigue from all its causes.
11. Should your pulse at any time from taking cold or any other cause become *tense* or *pale*, and your cough be more troublesome than usual, lose 8 or 10 oz. of blood, and abstain from animal food and from the use of the first three medicines recommended to you, until your pulse be restored to its ordinary strength. If one bleeding does not reduce your pulse, repeat it until it is reduced.
12. Spend the last month of next autumn, all the winter months and the first and part of the second month in the spring in a large room, warmed by a close stove, not only eat and drink and sit during the day in this room, but sleep in it. Exercise or gentle labor of any kind may be used in it. Its temperature should be uniformly between 65° and 75°. This remedy is to be use only in case you are not much better before the 1st of November.
13. Should the above remedies fail of relieving you in three months, recourse should be had to a salivation, after which resume them all. Should your family physician advise it, the salivation may be resorted to as soon as you reach home, and before you begin to take any of the medicines herein prescribed, except such as are intended to relieve your cough.

(Signed) Benj'n Rush.

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* The above letter was written by Dr. Benjamin Rush to a patient who had been to the South for his health and was returning to his family residing in New York. It has come to the Journal from the descendants of the patient.

RECORD OF MORTALITY

FOR THE WEEK ENDING SATURDAY, DEC. 18, 1909.

CITIES.	Reported deaths in each.	Deaths under five years.	CITIES.	Reported deaths in each.	Deaths under five years.
New York	—	—	Waltham	8	0
Chicago	—	—	Pittsfield	7	1
Philadelphia	—	—	Brookline	8	2
St. Louis	—	—	Gloucester	3	1
Baltimore	197	41	North Adams	10	1
Cleveland	—	—	Northampton	7	2
Buffalo	—	—	Chicopee	14	5
Pittsburg	—	—	Medford	8	4
Cincinnati	—	—	Beverly	9	—
Milwaukee	—	—	Leominster	6	2
Washington	—	—	Hyde Park	5	1
Providence	—	—	Melrose	2	0
Boston	215	63	Newburyport	5	—
Worcester	33	8	Revere	3	2
Fall River	28	9	Westfield	2	—
Cambridge	37	2	Woburn	4	2
Lowell	45	23	Peabody	—	—
New Bedford	33	17	Marlboro	2	0
Lynn	18	3	Attleboro	3	0
Springfield	19	9	Adams	4	1
Lawrence	17	8	Clinton	1	1
Somerville	15	0	Gardner	5	1
Brockton	13	5	Milford	0	—
Holyoke	18	2	Watertown	0	—
Malden	8	2	Plymouth	—	—
Chelsea	12	—	Southbridge	4	2
Newton	5	1	Weymouth	4	0
Salem	11	2	Framingham	—	—
Haverhill	9	2	Wakefield	—	—
Fitchburg	13	5	Webster	—	—
Everett	6	1	Arlington	—	—
Quincy	—	—	Greenfield	2	—
Taunton	18	4			

LIST OF CHANGES OF STATIONS AND DUTIES OF COMMISSIONED AND OTHER OFFICERS OF THE PUBLIC HEALTH AND MARINE-HOSPITAL SERVICE FOR THE SEVEN DAYS ENDED DEC. 15, 1909.

WHITE, J. H., surgeon. Granted eight days' leave of absence from Dec. 11, 1909.

STONER, J. B., surgeon. Upon being relieved by Passed Assistant Surgeon R. H. Creel, directed to proceed to Port Townsend, Wash., and assume command. Dec. 6, 1909.

BLUE, RUPERT, surgeon. Granted four months' leave of absence from Jan. 1, 1910, with permission to go beyond the seas.

LAVINDER, C. H., passed assistant surgeon. Granted four days' leave of absence from Dec. 13, 1909, under paragraph 191, Service Regulations.

LUMSDEN, L. L., passed assistant surgeon. Granted seven days' leave of absence from Nov. 29, 1909, under paragraph 191, Service Regulations.

CORPUT, G. M., passed assistant surgeon. Granted sixteen days' leave of absence from Dec. 15, 1909.

KORN, W. A., passed assistant surgeon. Granted one day's leave of absence, Dec. 22, 1909.

SCHERESCHEWSKY, J. W., passed assistant surgeon. Granted five days' leave of absence from Dec. 7, 1909, under paragraph 191, Service Regulations.

WILLE, C. W., passed assistant surgeon. Granted two days' leave of absence from Dec. 8, 1909.

FRANCIS, EDWARD, passed assistant surgeon. Granted six days' leave of absence from Dec. 6, 1909, under paragraph 191, Service Regulations.

CREEL, R. H., passed assistant surgeon. Relieved from duty at Baltimore, Md., and directed to proceed to Evansville, Ind., and assume temporary command. Dec. 6, 1909. Granted one day's leave of absence en route to station.

PETTYJOHN, JOSEPH, passed assistant surgeon. Relieved from duty at San Francisco, Cal., and directed to proceed to New Orleans, La., and report to the medical officer in command for duty and assignment to quarters. Dec. 9, 1909. Granted one month's leave of absence en route to station.

DE VALIN, HUGH, passed assistant surgeon. Directed to proceed to Washington, D. C., and report to the director of the Hygienic Laboratory for temporary duty. Dec. 13, 1909.

HUNT, REID, chief, Division of Pharmacology, Hygienic Laboratory. Detailed to attend the meetings of the American Association for the Advancement of Science and affiliated societies, to be held in Boston, Mass., Dec. 27, 1909, to Jan. 1, 1910. Dec. 10, 1909.

ALTREE, G. H., acting assistant surgeon. Granted four days' leave of absence from Nov. 2, 1909, without pay.

BAILEY, C. A., acting assistant surgeon. Granted twenty days' leave of absence from Dec. 12, 1909.

BRANHAM, H. M., acting assistant surgeon. Granted three days' leave of absence from Dec. 15, 1909, without pay.

FOSTER, S. B., acting assistant surgeon. Granted twenty-two days' leave of absence from Dec. 10, 1909.

SAFFORD, M. V., acting assistant surgeon. Granted seven days' leave of absence from Dec. 7, 1909, under paragraph 210, Service Regulations.

WATSON, H. J., acting assistant surgeon. Granted nineteen days' leave of absence from Dec. 13, 1909.

BROWN, F. L., pharmacist. Granted seven days' leave of absence from Dec. 23, 1909.

GOODMAN, F. S., pharmacist. Granted fourteen days' leave of absence from Dec. 18, 1909, and fifteen days from Jan. 1, 1910.

RYDER, L. W., pharmacist. Granted four days' leave of absence from Dec. 6, 1909, under paragraph 210, Service Regulations.

BOARD CONVENED.

Board of medical officers convened to meet at Montreal, Canada, Dec. 6, 1909, for the purpose of examining an alien. Detail for the board: Passed Assistant Surgeon Eugene H. Mullan, chairman; Acting Assistant Surgeon C. K. Russel; Acting Assistant Surgeon Handsford McKee, recorder.

ANNOUNCEMENT.

The Council of the New York Academy of Medicine desires to announce that the income of the Edward N. Gibbs Fund, amounting to five hundred dollars a year, will be granted for a period of years to any qualified worker to be selected by the Council from those who may apply for its use in research in the clinical, pathological or chemical problems of diseases of the kidney. Applications stating the qualifications of the applicant and the topic which he proposes to pursue should be sent to the secretary of the Council of the New York Academy of Medicine, 17 West 43d St., New York City, N. Y.

(Signed) JAMES EWING.
GEORGE E. BREWER.
W. GILMAN THOMPSON, *Chairman*.

SOCIETY NOTICE.

THE WOMEN'S STATE MEDICAL SOCIETY OF MASSACHUSETTS will hold an open meeting on Preventive Medicine at 264 Boylston St., Boston, on Jan. 5, 1910, at 7.45 P.M.

ISABELLE D. KERR, M.D., *Secretary*.

RECENT DEATHS.

CHARLES EUGENE MEADER, M.D., M.M.S.S., died in Lynn, Dec. 27, 1909, aged fifty-seven years.

GEORGE EDWIN WOODBURY, M.D., M.M.S.S., died in Methuen, Dec. 27, 1909, aged seventy-one years.

DR. SAMUEL BENEDICT ST. JOHN, who died suddenly at his home in Hartford, Conn., on Dec. 21, was well known in New York, where he was graduated from the College of Physicians and Surgeons and where he practiced for a considerable time. A number of years ago he removed to Hartford and devoted himself exclusively to ophthalmology, in which specialty he attained great success.

DR. WILLIAM KELLY NEWTON, one of the best known physicians in New Jersey, died from peritonitis at his home in Paterson, on Dec. 20. He was a native of New York City, and fifty-nine years of age. He was graduated from the College of Physicians and Surgeons, New York, in 1877, and afterwards served as interne at the Nursery and Child's Hospital. He practiced in New York for some years, and during this time was a coroner and a member of the Health Department. In 1883 he represented the American Public Health Association at the International Public Health Conference at The Hague, and on his return to America took up his residence in Washington, D. C., where he at once became prominent in the medical profession of the capital. He attended Vice-President Hobart in his last illness, and after his death removed to Paterson, the home of Mr. Hobart.

BOOKS AND PAMPHLETS RECEIVED.

An Appreciation of Evolution and Darwinism. By W. B. Konkle, M.D. Reprint.

The Management of Self-Limited Disease. By W. B. Konkle, M.D. Reprint.